INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

TO: Interested Parties / Applicant

DATE: March 31, 2008

RE: Indiana Kentucky Electric Corporation-Clifty Creek Station / 077-24304-00001

FROM: Matthew Stuckey, Branch Chief
Permits Branch
Office of Air Quality

Notice of Decision: Approval – Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-17-3-4 and 326 IAC 2, this permit modification is effective immediately, unless a petition for stay of effectiveness is filed and granted, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3-7 and IC 13-15-7-3 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office Environmental Adjudication, 100 North Senate Avenue, Government Center North, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

(1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
(2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
(3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

(1) the name and address of the person making the request;
(2) the interest of the person making the request;
(3) identification of any persons represented by the person making the request;
(4) the reasons, with particularity, for the request;
(5) the issues, with particularity, proposed for considerations at any hearing; and
(6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

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Pursuant to 326 IAC 2-7-18(d), any person may petition the U.S. EPA to object to the issuance of a Title V operating permit or modification within sixty (60) days of the end of the forty-five (45) day EPA review period. Such an objection must be based only on issues that were raised with reasonable specificity during the public comment period, unless the petitioner demonstrates that it was impractible to raise such issues, or if the grounds for such objection arose after the comment period.

To petition the U.S. EPA to object to the issuance of a Title V operating permit, contact:

U.S. Environmental Protection Agency
401 M Street
Washington, D.C. 20406

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FNTV-PMOD.doc 3/27/08

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Mitchell E. Daniels, Jr.
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100 North Senate Avenue
MC 61-53, Room 1003
Indianapolis, Indiana 46204-2251
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(800) 451-6027
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Mr. Donald T. Fulkerson
Environmental Affairs Director
Indiana-Kentucky Electric Corporation, Clifty Creek Station
P.O. Box 468
Piketon, OH 45661

March 31, 2008

Re: 077-24304-00001
Significant Permit Modification to
Part 70 Permit No.: T 077-7168-00001

Dear Mr. Fulkerson:

Indiana-Kentucky Electric Corporation, Clifty Creek Station was issued a Part 70 Operating Permit on October 18, 2006 for a stationary electric utility generating station. A letter requesting changes to this permit was received on February 2, 2007. Pursuant to the provisions of 326 IAC 2-7-12 a significant permit modification to this permit is hereby approved as described in the attached Technical Support Document.

(1) The emission unit descriptions for Units 1 through 6 were modified in Sections A, D.1, E, and F as follows to include reference to the new flue gas desulfurization (FGD) system:

~~(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). Units 1 through 5 each have a selective catalytic reduction (SCR) system and over-fire air system for NO_x control, and each unit exhausts through a "cold-side" electrostatic precipitator (ESP) for control of particulate matter. SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. Units 1, 2, and 3 exhaust to stack 1. Units 4 and 5 exhaust to stack 2. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery. Stacks 1 and 2 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_x) and sulfur dioxide (SO_2) and continuous opacity monitoring (COM) systems.~~

~~(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). NO_x emissions are reduced by an over-fire air system. Unit 6 exhausts to stack 2 through a "hot-side" electrostatic precipitator (ESP) for control of particulate matter. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery. Stack 2 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_x) and sulfur dioxide (SO_2) and a continuous opacity monitoring (COM) system.~~

(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Units 1 through 5 have the following emission controls:

- **over-fire air system (NO_X control)**
- **selective catalytic reduction (SCR) system (NO_X control)**
- **"cold-side" electrostatic precipitator (ESP) (particulate control)**
- **flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008**

(1) Prior to installation of the FGD System:
Units 1, 2, and 3 exhaust to Stack 1. Units 4 and 5 exhaust to Stack 2. Stacks 1 and 2 have continuous opacity monitoring systems (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 1, 2, and 3 exhaust to Flue 13 of Stack 14. Units 4 and 5 exhaust to Flue 46 of Stack 14. Both Flue 13 and Flue 46 of Stack 14 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Unit 6 has the following emission controls:

- **over-fire air system (NO_X control)**
- **"hot-side" electrostatic precipitator (ESP) (particulate control)**
- **flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008**

(1) Prior to installation of the FGD System:
Unit 6 exhausts to Stack 2. Stack 2 has a continuous opacity monitoring system (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 6 exhausts to Flue 46 of Stack 14. Flue 46 of Stack 14 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

The Flue Gas Desulfurization (FGD) System for Units 1 through 6, permitted to be constructed in 2008, consists of one (1) stack (Stack 14) with two flues (Flues 13 and 46), two (2) jet bubbling reactor (JBR) absorbers (JBRs 13 and 46), and associated limestone and gypsum material handling systems.

(2) New emission unit descriptions were added to Section A, Condition A.2 as paragraphs (f) through (i) to describe the components necessary for proper operation of the new flue gas desulfurization (FGD) system.

(f) One (1) Limestone Handling (LH) System, permitted to be constructed in 2008, with a maximum capacity of 1,000 tons per hour, consisting of one (1) barge unloader, one (1) barge unloading hopper and feeder, three (3) conveyors, two (2) transfer stations, and one (1) stacking tube and storage pile. Particulate emissions are controlled by partial to full enclosure and wet dust suppression.

(g) One (1) Limestone Processing (LP) System, permitted to be constructed in 2008, with a maximum transfer rate of 300 tons per hour, consisting of two (2) reclaim hoppers and feeders, one (1) reclaim conveyor, one (1) silo supply conveyor (a.k.a. transfer station), one (1) silo transfer conveyor, two (2) storage silos, two (2) ball mill feeders, two (2) wet ball mills, and one (1) emergency reclaim hopper and one (1) emergency conveyor (max cap of 10,000 TPY). Particulate emissions are controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors. The Limestone Processing (LP) System is an affected source under the Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR Part 60, Subpart OOO).

(h) One (1) Gypsum Handling (GH) System, permitted to be constructed in 2008, with a maximum capacity of 150 tons per hour, consisting of one (1) collecting conveyor, one (1) transfer conveyor, two (2) transfer stations, one (1) radial stackout conveyor, one (1) emergency collecting conveyor, one (1) emergency transfer station, one (1) emergency stackout conveyor (max cap of 10,000 TPY), and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Particulate emissions are controlled on the conveyors and transfer points by wet material and partial to full enclosure. Particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

(i) One (1) Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System, permitted to be constructed in 2008, consisting of filter cake being loaded into trucks by a wheel loader, and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Particulate emissions are controlled during loading of the filter cake into trucks by wet material and other precautionary measures. Particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

Particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area are controlled by wet material, watering, compacting, covering, and other precautionary measures.

A summary of all changes to the permit is included in the Technical Support Document for this permit. For your convenience, the entire Part 70 Operating Permit as modified will be provided at issuance.

This decision is subject to the Indiana Administrative Orders and Procedures Act – IC 4-21.5-3-5. If you have any questions on this matter, please contact Kimberly Cottrell, OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251, or call at (800) 451-6027, and ask for Kimberly Cottrell or extension (3-0870), or dial (317) 233-0870.

Sincerely/Original Signed By:

Matthew Stuckey, Deputy Branch Chief
Permits Branch
Office of Air Quality

Attachments:
Updated Permit
Technical Support Document
PTE Calculations

klc

cc: File – Jefferson County
Jefferson County Health Department
U.S. EPA, Region V
Air Compliance Inspector – Dan Hancock
Compliance Data Section
Permits Administration and Development

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PART 70 OPERATING PERMIT
OFFICE OF AIR QUALITY

Indiana-Kentucky Electric Corporation
Clifty Creek Station
S.R. 56 West
Madison, Indiana 47250

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Noncompliance with any provision of this permit, except any provision specifically designated as not federally enforceable, constitutes a violation of the Clean Air Act. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.: T 077-7168-00001	
Issued by: Nisha Sizemore, Chief Permits Branch Office of Air Quality	Issuance Date: October 18, 2006 Expiration Date: October 18, 2011

First Acid Rain Permit Renewal No.: 077-18761-00001, issued on October 18, 2006
First Administrative Amendment No.: 077-23791-00001, issued on December 4, 2006

Permit Modification No.: T 077-24304-00001	
Issued by/Original Signed By: Matthew Stuckey, Deputy Branch Chief Permits Branch Office of Air Quality	Issuance Date: March 31, 2008 Expiration Date: October 18, 2011

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SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)] [326 IAC 2-7-1(22)]

The Permittee owns and operates a stationary electric utility generating station.

Source Address:	S.R. 56 West, Madison, Indiana 47250
Mailing Address:	P.O. Box 468, Piketon, Ohio 45661
Source Telephone:	740-289-7254
SIC Code:	4911
County Location:	Jefferson
Source Location Status:	Nonattainment for $PM_{2.5}$, effective April 5, 2005 Attainment for all other criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD Rules and Emission Offset Rules; Major Source, Section 112 of the Clean Air Act; 1 of 28 Source Categories

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] 326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Units 1 through 5 have the following emission controls:

- over-fire air system (NO_X control)
- selective catalytic reduction (SCR) system (NO_X control)
- “cold-side” electrostatic precipitator (ESP) (particulate control)
- flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008

(1) Prior to installation of the FGD System:
Units 1, 2, and 3 exhaust to Stack 1. Units 4 and 5 exhaust to Stack 2. Stacks 1 and 2 have continuous opacity monitoring systems (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 1, 2, and 3 exhaust to Flue 13 of Stack 14. Units 4 and 5 exhaust to Flue 46 of Stack 14. Both Flue 13 and Flue 46 of Stack 14 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Unit 6 has the following emission controls:

- over-fire air system (NO_X control)
- "hot-side" electrostatic precipitator (ESP) (particulate control)
- flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008

(1) Prior to installation of the FGD System:
Unit 6 exhausts to Stack 2. Stack 2 has a continuous opacity monitoring system (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 6 exhausts to Flue 46 of Stack 14. Flue 46 of Stack 14 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

The Flue Gas Desulfurization (FGD) System for Units 1 through 6, permitted to be constructed in 2008, consists of one (1) stack (Stack 14) with two flues (Flues 13 and 46), two (2) jet bubbling reactor (JBR) absorbers (JBRs 13 and 46), and associated limestone and gypsum material handling systems.

(c) Coal handling facilities with a maximum design transfer rate of 2400 tons per hour, and coal storage systems, including the following:

(1) facilities installed in the 1950's, including coal conveyors and transfer house facilities, coal unloading stations 1 and 4 using clamshell barge unloaders, coal pile unloading, and coal piles; and

(2) facilities installed in 1993 to allow increased use of subbituminous coal to reduce SO_2 emissions, including transfer stations B1, B2, B3 and B4, and conveyors 5B1, B12, B23, B34 E, and B34 W.

(d) Dry fly ash handling and disposal facilities, including the following:

(1) Dry fly ash handling system installed in 1990 and 1991, including pneumatic conveyance to two (2) main silos with a maximum design transfer rate of 40 tons per hour, rotary and dry unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant paved and unpaved haul roads to onsite disposal area or for transportation offsite.

(2) Two (2) additional dry fly ash storage silos (a.k.a truck bins) installed in 1994 and 1995 for unmarketable fly ash, including pneumatic conveyance to silos with a maximum design transfer rate of 40 tons per hour, rotary unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant paved and unpaved haul roads to onsite disposal area.

(e) Wet process boiler slag handling, with hydroveyors conveying the boiler slag to a storage pond.

(f) One (1) Limestone Handling (LH) System, permitted to be constructed in 2008, with a maximum capacity of 1,000 tons per hour, consisting of one (1) barge unloader, one (1) barge unloading hopper and feeder, three (3) conveyors, two (2) transfer stations, and one (1) stacking tube and storage pile. Particulate emissions are controlled by partial to full enclosure and wet dust suppression.

(g) One (1) Limestone Processing (LP) System, permitted to be constructed in 2008, with a maximum transfer rate of 300 tons per hour, consisting of two (2) reclaim hoppers and feeders, one (1) reclaim conveyor, one (1) silo supply conveyor (a.k.a. transfer station), one (1) silo transfer conveyor, two (2) storage silos, two (2) ball mill feeders, two (2) wet ball mills, and one (1) emergency reclaim hopper and one (1) emergency conveyor (max cap of 10,000 TPY). Particulate emissions are controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors. The Limestone Processing (LP) System is an affected source under the Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR Part 60, Subpart OOO).

(h) One (1) Gypsum Handling (GH) System, permitted to be constructed in 2008, with a maximum capacity of 150 tons per hour, consisting of one (1) collecting conveyor, one (1) transfer conveyor, two (2) transfer stations, one (1) radial stackout conveyor, one (1) emergency collecting conveyor, one (1) emergency transfer station, one (1) emergency stackout conveyor (max cap of 10,000 TPY), and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Particulate emissions are controlled on the conveyors and transfer points by wet material and partial to full enclosure. Particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

(i) One (1) Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System, permitted to be constructed in 2008, consisting of filter cake being loaded into trucks by a wheel loader, and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Particulate emissions are controlled during loading of the filter cake into trucks by wet material and other precautionary measures. Particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

Particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area are controlled by wet material, watering, compacting, covering, and other precautionary measures.

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) Coal bunker and coal scale exhausts and associated dust collector vents. [326 IAC 6-3]

(b) Other activities or categories not previously identified with potential, uncontrolled emissions equal to or less than thresholds require listing only: Pb 0.6 ton per year or 3.29 pounds per day, SO_2 5 pounds per hour or 25 pounds per day, NO_X 5 pounds per hour or 25 pounds per day, CO 25 pounds per day, PM 5 pounds per hour or 25 pounds per day, VOC 3 pounds per hour or 15 pounds per day:

(1) Four (4) No. 2 fuel oil fired coal transfer station heaters, installed in 1993: [326 IAC 6-3] [326 IAC 5]

(A) One (1) with 1.25 MMBtu/hr heat input capacity for Station 2;

(B) One (1) with 1.75 MMBtu/hr heat input capacity for Station 5; and

(C) Two (2) with 2.75 MMBtu/hr heat input capacity for Stations B3 and B4.

(2) Limestone/iron ore flux handling facility, including limestone storage area, dump hopper, conveyor, and enclosed surge bin, installed in 1994, with a maximum design throughput rate of 300,000 lb/hr. [326 IAC 6-3] [326 IAC 5]

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

(a) It is a major source, as defined in 326 IAC 2-7-1(22);

(b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 – Applicability); and

(c) It is an affected source under Title IV (Acid Deposition Control) of the Clean Air Act, as defined in 326 IAC 2-7-1(3).

SECTION B GENERAL CONDITIONS

B.1 Definitions [326 IAC 2-7-1]

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

B.2 Permit Term [326 IAC 2-7-5(2)] [326 IAC 2-1.1-9.5] [326 IAC 2-7-4(a)(1)(D)] [IC13-15-3-6(a)]

(a) This permit, T 077-7168-00001, is issued for a fixed term of five (5) years from the issuance date of this permit, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date of this permit or of permits issued pursuant to Title IV of the Clean Air Act and 326 IAC 21 (Acid Deposition Control).

(b) If IDEM, OAQ, upon receiving a timely and complete renewal permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, including any permit shield provided in 326 IAC 2-7-15, until the renewal permit has been issued or denied.

B.3 Term of Conditions [326 IAC 2-1.1-9.5]

Notwithstanding the permit term of a permit to construct, a permit to operate, or a permit modification, any condition established in a permit issued pursuant to a permitting program approved in the state implementation plan shall remain in effect until:

(a) the condition is modified in a subsequent permit action pursuant to Title I of the Clean Air Act; or

(b) the emission unit to which the condition pertains permanently ceases operation.

B.4 Enforceability [326 IAC 2-7-7]

Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

B.5 Severability [326 IAC 2-7-5(5)]

The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

B.6 Property Rights or Exclusive Privilege [326 IAC 2-7-5(6)(D)]

This permit does not convey any property rights of any sort, or any exclusive privilege.

B.7 Duty to Provide Information [326 IAC 2-7-5(6)(E)]

(a) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ, may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The submittal by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34). Upon request, the Permittee shall also furnish to IDEM, OAQ, copies of records required to be kept by this permit.

(b) For information furnished by the Permittee to IDEM, OAQ, the Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U. S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

B.8 Certification [326 IAC 2-7-4(f)] [326 IAC 2-7-6(1)] [326 IAC 2-7-5(3)(C)]

(a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification. One (1) certification can cover multiple forms in one (1) submittal.

(c) A responsible official is defined at 326 IAC 2-7-1(34).

B.9 Annual Compliance Certification [326 IAC 2-7-6(5)]

(a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. The initial certification shall cover the time period from the date of final permit issuance through December 31 of the same year. All subsequent certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted no later than July 1 of each year to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Air Enforcement Branch – Indiana (AE-17J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

(b) The annual compliance certification report required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

(c) The annual compliance certification report shall include the following:

(1) The appropriate identification of each term or condition of this permit that is the basis of the certification;

(2) The compliance status;

(3) Whether compliance was continuous or intermittent; and

(4) The methods used for determining the compliance status of the source, currently and over the reporting period consistent with 326 IAC 2-7-5(3).

The submittal by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

B.10 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3]

(a) The Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) within ninety (90) days after issuance of this permit, for the source as described in 326 IAC 1-6-3. At a minimum, the PMPs shall include:

(1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;

(2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and

(3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

(b) A copy of the PMPs shall be submitted to IDEM, OAQ, upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMPs do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(c) To the extent the Permittee is required by 40 CFR Part 63 to have an Operation, Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

B.11 Emergency Provisions [326 IAC 2-7-16]

(a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation.

(b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:

(1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;

(2) The permitted facility was at the time being properly operated;

(3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;

(4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ, within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section), or
Telephone Number: 317-233-0178 (ask for Compliance Section)
Facsimile Number: 317-233-6865

(5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

(A) A description of the emergency;

(B) Any steps taken to mitigate the emissions; and

(C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(6) The Permittee immediately took all reasonable steps to correct the emergency.

(c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.

(d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.

(e) The Permittee seeking to establish the occurrence of an emergency shall make records available upon request to ensure that failure to implement a PMP did not cause or contribute to an exceedance of any limitations on emissions. However, IDEM, OAQ, may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4-(c)(9) be revised in response to an emergency.

(f) Failure to notify IDEM, OAQ, by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-7 and any other applicable rules.

(g) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.

(h) The Permittee shall include all emergencies in the Quarterly Deviation and Compliance Monitoring Report.

B.12 Permit Shield [326 IAC 2-7-15] [326 IAC 2-7-20] [326 IAC 2-7-12]

(a) Pursuant to 326 IAC 2-7-15, the Permittee has been granted a permit shield. The permit shield provides that compliance with the conditions of this permit shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that either the applicable requirements are included and specifically identified in this permit or the permit contains an explicit determination or concise summary of a determination that other specifically identified requirements are not applicable. The Indiana statutes from IC 13 and rules from 326 IAC, referenced in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a Part 70 permit under 326 IAC 2-7 or for applicable requirements for which a permit shield has been granted.

This permit shield does not extend to applicable requirements which are promulgated after the date of issuance of this permit unless this permit has been modified to reflect such new requirements.

(b) If, after issuance of this permit, it is determined that the permit is in nonconformance with an applicable requirement that applied to the source on the date of permit issuance, IDEM, OAQ, shall immediately take steps to reopen and revise this permit and issue a compliance order to the Permittee to ensure expeditious compliance with the applicable requirement until the permit is reissued. The permit shield shall continue in effect so long as the Permittee is in compliance with the compliance order.

(c) No permit shield shall apply to any permit term or condition that is determined after issuance of this permit to have been based on erroneous information supplied in the permit application. Erroneous information means information that the Permittee knew to be false, or in the exercise of reasonable care should have been known to be false, at the time the information was submitted.

(d) Nothing in 326 IAC 2-7-15 or in this permit shall alter or affect the following:

(1) The provisions of Section 303 of the Clean Air Act (emergency orders), including the authority of the U.S. EPA under Section 303 of the Clean Air Act;

(2) The liability of the Permittee for any violation of applicable requirements prior to or at the time of this permit's issuance;

(3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act; and

(4) The ability of U.S. EPA to obtain information from the Permittee under Section 114 of the Clean Air Act.

(e) This permit shield is not applicable to any change made under 326 IAC 2-7-20(b)(2) (Sections 502(b)(10) of the Clean Air Act changes) and 326 IAC 2-7-20(c)(2) (trading based on State Implementation Plan (SIP) provisions).

(f) This permit shield is not applicable to modifications eligible for group processing until after IDEM, OAQ, has issued the modifications. [326 IAC 2-7-12(c)(7)]

(g) This permit shield is not applicable to minor Part 70 permit modifications until after IDEM, OAQ, has issued the modification. [326 IAC 2-7-12(b)(8)]

B.13 Prior Permits Superseded [326 IAC 2-1.1-9.5] [326 IAC 2-7-10.5]

(a) All terms and conditions of permits established prior to T077-7168-00021 and issued pursuant to permitting programs approved into the state implementation plan have been either

(1) incorporated as originally stated,

(2) revised under 326 IAC 2-7-10.5, or

(3) deleted under 326 IAC 2-7-10.5.

(b) Provided that all terms and conditions are accurately reflected in this permit, all previous registrations and permits are superseded by this Part 70 operating permit, except for permits issued pursuant to Title IV of the Clean Air Act and 326 IAC 21 (Acid Deposition Control).

B.14 Termination of Right to Operate [326 IAC 2-7-10] [326 IAC 2-7-4(a)]

The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least nine (9) months prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-7-3 and 326 IAC 2-7-4(a).

B.15 Deviations from Permit Requirements and Conditions [326 IAC 2-7-5(3)(C)(ii)]

(a) Deviations from any permit requirements (for emergencies see Section B – Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

The Quarterly Deviation and Compliance Monitoring Report does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

B.16 Permit Modification, Reopening, Revocation and Reissuance, or Termination [326 IAC 2-7-5(6)(C)] [326 IAC 2-7-8(a)] [326 IAC 2-7-9]

(a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Part 70 permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit. [326 IAC 2-7-5(6)(C)] The notification by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ, determines any of the following:

(1) That this permit contains a material mistake.

(2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.

(3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-7-9(a)(3)]

(c) Proceedings by IDEM, OAQ, to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-7-9(b)]

(d) The reopening and revision of this permit, under 326 IAC 2-7-9(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ, may provide a shorter time period in the case of an emergency. [326 IAC 2-7-9(c)]

B.17 Permit Renewal [326 IAC 2-7-3] [326 IAC 2-7-4] [326 IAC 2-7-8(e)]

(a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ, and shall include the information specified in 326 IAC 2-7-4. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(40). The renewal application does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

(b) A timely renewal application is one that is:

(1) Submitted at least nine (9) months prior to the date of the expiration of this permit; and

(2) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

(c) If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-7 until IDEM, OAQ, takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by a reasonable deadline specified in writing by IDEM, OAQ, any additional information identified as being needed to process the application. [326 IAC 2-7-4(a)(2)(D) and (E)]

B.18 Source Modification [326 IAC 1-2-42] [326 IAC 2-7-10.5] [326 IAC 2-2-2] [326 IAC 2-3-2]

(a) The Permittee shall obtain approval as required by 326 IAC 2-7-10.5 from the IDEM, OAQ prior to making any modification to the source. Pursuant to 326 IAC 1-2-42, "Modification" means one (1) or more of the following activities at an existing source:

(1) A physical change or change in the method of operation of any existing emissions unit that increases the potential to emit any regulated pollutant that could be emitted from the emissions unit, or that results in emissions of any regulated pollutant not previously emitted.

(2) Construction of one (1) or more new emissions units that have the potential to emit regulated air pollutants.

(3) Reconstruction of one (1) or more existing emission units that increases the potential to emit of any regulated air pollutant.

(b) Any application requesting a source modification shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

Any such application shall be certified by the "responsible official" as defined by 326 IAC 2-7-1(34).

(c) The Permittee shall also comply with the applicable provisions of 326 IAC 2-7-11 (Administrative Permit Amendments) or 326 IAC 2-7-12 (Permit Modification) prior to operating the approved modification.

(d) Any modification at an existing major source is governed by the requirements of 326 IAC 2-2-2 and/or 326 IAC 2-3-2.

B.19 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12] [40 CFR 72]

(a) Permit amendments and modifications are governed by the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this permit.

(b) Pursuant to 326 IAC 2-7-11(b) and 326 IAC 2-7-12(a), administrative Part 70 permit amendments and permit modifications for purposes of the acid rain portion of a Part 70 permit shall be governed by regulations promulgated under Title IV of the Clean Air Act. [40 CFR 72]

(c) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

Any such application shall be certified by the "responsible official" as defined by 326 IAC 2-7-1(34).

(d) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

B.20 Permit Revision Under Economic Incentives and Other Programs [326 IAC 2-7-5(8)] [326 IAC 2-7-12(b)(2)]

(a) No Part 70 permit revision shall be required under any approved economic incentives, marketable Part 70 permits, emissions trading, and other similar programs or processes for changes that are provided for in a Part 70 permit.

(b) Notwithstanding 326 IAC 2-7-12(b)(1) and 326 IAC 2-7-12(c)(1), minor Part 70 permit modification procedures may be used for Part 70 modifications involving the use of economic incentives, marketable Part 70 permits, emissions trading, and other similar approaches to the extent that such minor Part 70 permit modification procedures are explicitly provided for in the applicable State Implementation Plan (SIP) or in applicable requirements promulgated or approved by the U.S. EPA.

B.21 Operational Flexibility [326 IAC 2-7-20] [326 IAC 2-7-10.5]

(a) The Permittee may make any change or changes at the source that are described in 326 IAC 2-7-20(b), (c), or (e), without a prior permit revision, if each of the following conditions is met:

(1) The changes are not modifications under any provision of Title I of the Clean Air Act;

(2) Any preconstruction approval required by 326 IAC 2-7-10.5 has been obtained;

(3) The changes do not result in emissions which exceed the limitations provided in this permit (whether expressed herein as a rate of emissions or in terms of total emissions);

(4) The Permittee notifies the:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Regulation Development Branch – Indiana (AR-18J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

(5) The Permittee maintains records on-site, on a rolling five (5) year basis, which document all such changes and emission trades that are subject to 326 IAC 2-7-20(b), (c), or (e). The Permittee shall make such records available, upon reasonable request, for public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ, in the notices specified in 326 IAC 2-7-20(b)(1), (c)(1), and (e)(2).

(b) The Permittee may make Section 502(b)(10) of the Clean Air Act changes (this term is defined at 326 IAC 2-7-1(36)) without a permit revision, subject to the constraint of 326 IAC 2-7-20(a). For each such Section 502(b)(10) of the Clean Air Act change, the required written notification shall include the following:

(1) A brief description of the change within the source;

(2) The date on which the change will occur;

(3) Any change in emissions; and

(4) Any permit term or condition that is no longer applicable as a result of the change.

The notification which shall be submitted is not considered an application form, report or compliance certification. Therefore, the notification by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(c) Emission Trades [326 IAC 2-7-20(c)]
The Permittee may trade increases and decreases in emissions in the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-7-20(c).

(d) Alternative Operating Scenarios [326 IAC 2-7-20(d)]
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-7-5(9). No prior notification of IDEM, OAQ, or U.S. EPA is required.

(e) Backup fuel switches specifically addressed in, and limited under, Section D of this permit shall not be considered alternative operating scenarios. Therefore, the notification requirements of part (a) of this condition do not apply.

(f) This condition does not apply to emission trades of SO_2 or NO_X under 326 IAC 21 or 326 IAC 10-4.

B.22 Inspection and Entry [326 IAC 2-7-6] [IC 13-14-2-2] [IC 13-17-3-2] [IC 13-30-3-1]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

(a) Enter upon the Permittee's premises where a Part 70 source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

(b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy any records that must be kept under the conditions of this permit;

(c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;

(d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and

(e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

B.23 Transfer of Ownership or Operational Control [326 IAC 2-7-11]

(a) The Permittee must comply with the requirements of 326 IAC 2-7-11 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.

(b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

The application which shall be submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

B.24 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-7-5(7)] [326 IAC 2-1.1-7]

(a) The Permittee shall pay annual fees to IDEM, OAQ, within thirty (30) calendar days of receipt of a billing. Pursuant to 326 IAC 2-7-19(b), if the Permittee does not receive a bill from IDEM, OAQ the applicable fee is due April 1 of each year.

(b) Except as provided in 326 IAC 2-7-19(e), failure to pay may result in administrative enforcement action or revocation of this permit.

(c) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-4230 (ask for OAQ, Billing, Licensing, and Training Section), to determine the appropriate permit fee.

B.25 Credible Evidence [326 IAC 2-7-5(3)] [326 IAC 2-7-6] [62 FR 8314] [326 IAC 1-1-6]

For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitations and Standards [326 IAC 2-7-5(1)]

C.1 Particulate Emission Limitations for Processes with Process Weight Rates Less Than One Hundred (100) Pounds per Hour [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2(e)(2), particulate emissions from any process not exempt under 326 IAC 6-3-1(b) or (c) which has a maximum process weight rate less than 100 pounds per hour and the methods in 326 IAC 6-3-2(b) through (d) do not apply shall not exceed 0.551 pounds per hour.

C.2 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.3 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1. 326 IAC 4-1-3 (a)(2)(A) and (B) are not federally enforceable.

C.4 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and 326 IAC 9-1-2.

C.5 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

C.6 Motor Vehicle Fugitive Dust Sources [326 IAC 6-4-4]

Pursuant to 326 IAC 6-4-4, no vehicle shall be driven or moved on any public street, road, alley, highway, or other thoroughfare, unless such vehicle is so constructed as to prevent its contents from dripping, sifting, leaking, or otherwise escaping therefrom so as to create conditions which result in fugitive dust. This section applies only to the cargo any vehicle may be conveying and mud tracked by the vehicle.

C.7 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted. The provisions of 326 IAC 1-7-1(3), 326 IAC 1-7-2, 326 IAC 1-7-3(c) and (d), 326 IAC 1-7-4, and 326 IAC 1-7-5(a), (b), and (d) are not federally enforceable.

C.8 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

The Permittee shall comply with the applicable requirements of 326 IAC 14-10, 326 IAC 18, and 40 CFR 61.140.

Testing Requirements [326 IAC 2-7-6(1)]

C.9 Performance Testing [326 IAC 3-6]

(a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ, if the Permittee submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.10 Compliance Requirements [326 IAC 2-1.1-11]

The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

Compliance Monitoring Requirements [326 IAC 2-7-5(1)] [326 IAC 2-7-6(1)]

C.11 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

Unless otherwise specified in this permit, all monitoring and record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance. If required by Section D, the Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. If due to circumstances beyond its control, that equipment cannot be installed and operated within ninety (90) days, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Unless otherwise specified in the approval for the new emission unit(s), compliance monitoring for new emission units or emission units added through a source modification shall be implemented when operation begins.

C.12 Maintenance of Continuous Opacity Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]

(a) The Permittee shall calibrate, maintain, and operate all necessary continuous opacity monitoring systems (COMS) and related equipment. For a boiler, the COMS shall be in operation at all times that the induced draft fan is in operation.

(b) All COMS shall meet the performance specifications of 40 CFR 60, Appendix B, Performance Specification No. 1, and are subject to monitor system certification requirements pursuant to 326 IAC 3-5.

(c) In the event that a breakdown of a COMS occurs, a record shall be made of the time and reason of the breakdown and efforts made to correct the problem.

(d) Whenever a COMS is malfunctioning or is down for maintenance or repairs for a period of twenty-four (24) hours or more and a backup COMS is not online within twenty-four (24) hours of shutdown or malfunction of the primary COMS, the Permittee shall provide a certified opacity reader, who may be an employee of the Permittee or an independent contractor, to self-monitor the emissions from the emission unit stack.

(1) Visible emission readings shall be performed in accordance with 40 CFR 60, Appendix A, Method 9, for a minimum of five (5) consecutive six (6) minute averaging periods beginning not more than twenty-four (24) hours after the start of the malfunction or down time.

(2) Method 9 opacity readings shall be repeated for a minimum of five (5) consecutive six (6) minute averaging periods at least twice per day during daylight operations, with at least four (4) hours between each set of readings, until a COMS is online.

(3) Method 9 readings may be discontinued once a COMS is online.

(4) Any opacity exceedances determined by Method 9 readings shall be reported with the Quarterly Opacity Exceedances Reports.

(e) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous opacity monitoring system pursuant to 326 IAC 3-5.

C.13 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]

Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60 Appendix A, 40 CFR 60 Appendix B, 40 CFR 63, or other approved methods as specified in this permit.

C.14 Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

(a) When required by any condition of this permit, an analog instrument used to measure a parameter related to the operation of an air pollution control device shall have a scale such that the expected maximum reading for the normal range shall be no less than twenty percent (20%) of full scale.

(b) The Permittee may request that the IDEM, OAQ approve the use of an instrument that does not meet the above specifications provided the Permittee can demonstrate that an alternative instrument specification will adequately ensure compliance with permit conditions requiring the measurement of the parameters.

Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]

C.15 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

(a) The Permittee prepared and submitted a written emergency reduction plan (ERP) consistent with safe operating procedures on October 18, 1989. The ERP was approved by IDEM, OAQ, on February 21, 1990.

(b) Upon direct notification by IDEM, OAQ, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate episode level. [326 IAC 1-5-3]

(c) To ensure that current ERPs are readily available, the Permittee shall review the ERPs, update if necessary, and resubmit to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

within ninety (90) days after the date of issuance of this permit.

The ERP does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

C.16 Risk Management Plan [326 IAC 2-7-5(12)] [40 CFR 68]

If a regulated substance as defined in 40 CFR 68, is present at a source in more than a threshold quantity, the Permittee must comply with the applicable requirements at 40 CFR 68.

C.17 Response to Excursions or Exceedances [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) Upon detecting an excursion or exceedance, the Permittee shall restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.

(b) The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Corrective actions may include, but are not limited to, the following:

(1) initial inspection and evaluation;

(2) recording that operations returned to normal without operator action (such as through response by a computerized distribution control system); or

(3) any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.

(c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not limited to, the following:

(1) monitoring results;

(2) review of operation and maintenance procedures and records; and

(3) inspection of the control device, associated capture system, and the process.

(d) Failure to take reasonable response steps shall be considered a deviation from the permit.

(e) The Permittee shall maintain the following records:

(1) monitoring data;

(2) monitor performance data, if applicable; and

(3) corrective actions taken.

C.18 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) When the results of a stack test performed in conformance with Section C – Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.

(b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.

(c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The response action documents submitted pursuant to this condition do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

C.19 Emission Statement [326 IAC 2-7-5(3)(C)(iii)] [326 IAC 2-7-5(7)] [326 IAC 2-7-19(c)] [326 IAC 2-6]

(a) Pursuant to 326 IAC 2-6-3(a)(1), the Permittee shall submit by July 1 of each year an emission statement covering the previous calendar year. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4(c) and shall meet the following requirements:

(1) Indicate estimated actual emissions of all pollutants listed in 326 IAC 2-6-4(a);

(2) Indicate estimated actual emissions of regulated pollutants as defined by 326 IAC 2-7-1(32) ("Regulated pollutant which is used only for purposes of Section 19 of this rule") from the source, for purposes of fee assessment.

The statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Quality
100 North Senate Avenue
MC 61-50, IGCN 1003
Indianapolis, Indiana 46204-2251

The emission statement does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(b) The emission statement required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

C.20 General Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-6] [326 IAC 2-2] [326 IAC 2-3]

(a) Records of all required monitoring data, reports and support information required by this permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

(b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

(c) If there is a reasonable possibility (as defined in 40 CFR 51.165 (a)(6)(vi)(A), 40 CFR 51.165 (a)(6)(vi)(B), 40 CFR 51.166 (r)(6)(vi)(a), and/or 40 CFR 51.166 (r)(6)(vi)(b)) that a "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, other than projects at a source with a Plantwide Applicability Limitation (PAL), which is not part of a "major modification" (as defined in 326 IAC 2-2-1(ee) and/or 326 IAC 2-3-1(z)) may result in significant emissions increase and the Permittee elects to utilize the "projected actual emissions" (as defined in 326 IAC 2-2-1(rr) and/or 326 IAC 2-3-1(mm)), the Permittee shall comply with following:

(1) Before beginning actual construction of the "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, document and maintain the following records:

(A) A description of the project.

(B) Identification of any emissions unit whose emissions of a regulated new source review pollutant could be affected by the project.

(C) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including:

(i) Baseline actual emissions;

(ii) Projected actual emissions;

(iii) Amount of emissions excluded under section 326 IAC 2-2-1(rr)(2)(A)(iii) and/or 326 IAC 2-3-1 (mm)(2)(A)(iii); and

(iv) An explanation for why the amount was excluded, and any netting calculations, if applicable.

(d) If there is a reasonable possibility (as defined in 40 CFR 51.165 (a)(6)(vi)(A) and/or 40 CFR 51.166 (r)(6)(vi)(a)) that a "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, other than projects at a source with a Plantwide Applicability Limitation (PAL), which is not part of a "major modification" (as defined in 326 IAC 2-2-1(ee) and/or 326 IAC 2-3-1(z)) may result in significant emissions increase and the Permittee elects to utilize the "projected actual emissions" (as defined in 326 IAC 2-2-1(rr) and/or 326 IAC 2-3-1(mm)), the Permittee shall comply with following:

(1) Monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any existing emissions unit identified in (1)(B) above; and

(2) Calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of five (5) years following resumption of regular operations after the change, or for a period of ten (10) years following resumption of regular operations after the change if the project increases the design capacity of or the potential to emit that regulated NSR pollutant at the emissions unit.

C.21 General Reporting Requirements [326 IAC 2-7-5(3)(C)] [326 IAC 2-1.1-11] [326 IAC 2-2] [326 IAC 2-3]

(a) The Permittee shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported. This report shall be submitted within thirty (30) days of the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

(c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

(d) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(e) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period. Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit, "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

(f) If the Permittee is required to comply with the recordkeeping provisions of (d) in Section C – General Record Keeping Requirements for any “project” (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll) at an existing Electric Utility Steam Generating Unit, then for that project the Permittee shall:

(1) Submit to IDEM, OAQ a copy of the information required by (c)(1) in Section C – General Record Keeping Requirements

(2) Submit a report to IDEM, OAQ within sixty (60) days after the end of each year during which records are generated in accordance with (d)(1) and (2) in Section C – General Record Keeping Requirements. The report shall contain all information and data describing the annual emissions for the emissions units during the calendar year that preceded the submission of report.

Reports required in this part shall be submitted to:

Indiana Department of Environmental Management
Air Compliance Section, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

(g) If the Permittee is required to comply with the recordkeeping provisions of (d) in Section C – General Record Keeping Requirements for any "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll) at an existing emissions unit other than an Electric Utility Steam Generating Unit, and the project meets the following criteria, then the Permittee shall submit a report to IDEM, OAQ:

(1) The annual emissions, in tons per year, from the project identified in (c)(1) in Section C – General Record Keeping Requirements exceed the baseline actual emissions, as documented and maintained under Section C – General Record Keeping Requirements (c)(1)(C)(i), by a significant amount, as defined in 326 IAC 2-2-1(xx) and/or 326 IAC 2-3-1(qq), for that regulated NSR pollutant, and

(2) The emissions differ from the preconstruction projection as documented and maintained under Section C – General Record Keeping Requirements (c)(1)(C)(ii).

(h) The report for a project at an existing emissions unit other than Electric Utility Steam Generating Unit shall be submitted within sixty (60) days after the end of the year and contain the following:

(1) The name, address, and telephone number of the major stationary source.

(2) The annual emissions calculated in accordance with (d)(1) and (2) in Section C – General Record Keeping Requirements.

(3) The emissions calculated under the actual-to-projected actual test stated in 326 IAC 2-2-2(d)(3) and/or 326 IAC 2-3-2(c)(3.

(4) Any other information that the Permittee deems fit to include in this report,

Reports required in this part shall be submitted to:

Indiana Department of Environmental Management
Air Compliance Section, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

(i) The Permittee shall make the information required to be documented and maintained in accordance with (c) in Section C – General Record Keeping Requirements available for review upon a request for inspection by IDEM, OAQ. The general public may request this information from the IDEM, OAQ under 326 IAC 17.1.

Stratospheric Ozone Protection

C.22 Compliance with 40 CFR 82 and 326 IAC 22-1

Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with the standards for recycling and emissions reduction:

(a) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.

(b) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.

(c) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

(d) Pursuant to 40 CFR 82, Subpart E (The Labeling of Products Using Ozone-Depleting Substances), all containers in which a Class I or Class II substance is stored or transported and all products containing a Class I substance shall be labeled as required under 40 CFR Part 82.

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Units 1 through 5 have the following emission controls:

- over-fire air system (NO_X control)
- selective catalytic reduction (SCR) system (NO_X control)
- "cold-side" electrostatic precipitator (ESP) (particulate control)
- flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008

(1) Prior to installation of the FGD System:
Units 1, 2, and 3 exhaust to Stack 1. Units 4 and 5 exhaust to Stack 2. Stacks 1 and 2 have continuous opacity monitoring systems (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 1, 2, and 3 exhaust to Flue 13 of Stack 14. Units 4 and 5 exhaust to Flue 46 of Stack 14. Both Flue 13 and Flue 46 of Stack 14 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Unit 6 has the following emission controls:

- over-fire air system (NO_X control)
- "hot-side" electrostatic precipitator (ESP) (particulate control)
- flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008

(1) Prior to installation of the FGD System:
Unit 6 exhausts to Stack 2. Stack 2 has a continuous opacity monitoring system (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 6 exhausts to Flue 46 of Stack 14. Flue 46 of Stack 14 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

The Flue Gas Desulfurization (FGD) System for Units 1 through 6, permitted to be constructed in 2008, consists of one (1) stack (Stack 14) with two flues (Flues 13 and 46), two (2) jet bubbling reactor (JBR) absorbers (JBRs 13 and 46), and associated limestone and gypsum material handling systems.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.1.1 Particulate Emission Limitations for Sources of Indirect Heating [326 IAC 6-2]

Pursuant to Amendment No. 2 to the Agreed Order entered October 26, 1973, Air Pollution Control Board vs. Indiana-Kentucky Electric Corporation (IKEC), and dated September 26, 1975, the particulate matter (PM) emissions from each boiler (Units 1 through 6) shall not exceed 0.236 pound per million Btu heat input (lb/MMBtu).

This limit is more stringent than the value that would be derived using the stack configuration information for the stacks in use on June 8, 1972 and the equation in 326 IAC 6-2-3(a); therefore, compliance with this limit is deemed compliance with 326 IAC 6-2.

D.1.2 Temporary Alternative Opacity Limitations [326 IAC 5-1-3]

Pursuant to 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), the following applies:

(a) When building a new fire in a boiler, opacity may exceed the applicable limit established in 326 IAC 5-1-2 for a period not to exceed thirty (30) minutes (five (5) six (6)-minute averaging periods) or until the flue gas temperature reaches two hundred fifty (250) degrees Fahrenheit at the inlet of the electrostatic precipitator, whichever occurs first. Operation of the electrostatic precipitator is not required during these times. [326 IAC 5-1-3(e)(2)]

(b) When shutting down a boiler, opacity may exceed the applicable limit established in 326 IAC 5-1-2; however, opacity levels shall not exceed sixty percent (60%) for any six (6)-minute averaging period. Opacity in excess of the applicable limit established in 326 IAC 5-1-2 shall not continue for more than two (2) six (6)-minute averaging periods in any twenty-four (24) hour period. [326 IAC 5-1-3(a)]

(c) When removing ashes from the fuel bed or furnace in a boiler or blowing tubes, opacity may exceed the applicable limit established in 326 IAC 5-1-2; however, opacity levels shall not exceed sixty percent (60%) for any six (6)-minute averaging period and opacity in excess of the applicable limit shall not continue for more than one (1) six (6)-minute averaging period in any sixty (60) minute period. The averaging periods shall not be permitted for more than three (3) six (6)-minute averaging periods in a twelve (12) hour period. [326 IAC 5-1-3(b)]

(d) The following operations are considered “startup conditions” pursuant to 326 IAC 1-2-76:

(1) Startup and firing of a boiler as part of a chemical cleaning operation; and

(2) Startup and firing of a boiler as part of a boiler floor refractory curing operation.

For each of these operations, opacity may exceed the applicable limit established in 326 IAC 5-1-3 for a period not to exceed thirty (30) minutes (five (5) six (6)-minute averaging periods).

D.1.3 Sulfur Dioxide (SO_2) [326 IAC 7-4-6]

Pursuant to 326 IAC 7-4-6 (Sulfur Dioxide Emission Limitations for Jefferson County), the SO_2 emissions from Units 1 through 6 shall not exceed 7.52 pounds per million Btu (lbs/MMBtu), demonstrated on a thirty (30) day rolling weighted average.

Compliance Determination Requirements

D.1.4 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) Prior to installation of the Flue Gas Desulfurization (FGD) System:
By December 31, 2009, compliance with the PM limitation in Condition D.1.1 shall be determined by a performance stack test conducted using methods as approved by the Commissioner. Testing may be conducted in the common stacks (Stack 1 shared by Units 1, 2, and 3, and Stack 2 shared by Units 4, 5, and 6).

(b) After installation of the Flue Gas Desulfurization (FGD) System:
Within 180 days after startup of the Flue Gas Desulfurization (FGD) System, compliance with the PM limitation in Condition D.1.1 shall be determined by a performance stack test conducted using methods as approved by the Commissioner. Testing may be conducted in the common flues (Flue 13 shared by Units 1, 2, and 3; Flue 46 shared by Units 4, 5, and 6).

This testing shall be repeated by December 31 of every second calendar year following this valid compliance demonstration. Testing shall be conducted with all units exhausting to the common stack in operation, or as otherwise approved by OAQ. Testing shall be conducted in accordance with Section C – Performance Testing. For the purpose of this permit, "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

D.1.5 Operation of Electrostatic Precipitator [326 IAC 2-7-6(6)]

Except as otherwise provided by statute or rule or in this permit, each electrostatic precipitator (ESP) shall be operated at all times that a boiler vented to the ESP is in operation.

D.1.6 Continuous Emissions Monitoring [326 IAC 3-5]

(a) Pursuant to 326 IAC 3-5 (Continuous Monitoring of Emissions), continuous emission monitoring systems for Boilers 1 through 6 shall be calibrated, maintained, and operated for measuring opacity and SO_2, which meet all applicable performance specifications of 326 IAC 3-5-2.

(b) All continuous emission monitoring systems are subject to monitor system certification requirements pursuant to 326 IAC 3-5-3.

(c) Pursuant to 326 IAC 3-5-4, if revisions are made to the continuous monitoring standard operating procedures (SOP), the Permittee shall submit updates to the department biennially.

(d) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to 326 IAC 3-5, 326 IAC 10-4, or 40 CFR 75.

D.1.7 Sulfur Dioxide Emissions [326 IAC 3] [326 IAC 7-2] [326 IAC 7-4-6]

Pursuant to 326 IAC 7-2-1(c), the Permittee shall demonstrate that the sulfur dioxide emissions from Units 1 through 6 do not exceed the limit specified in Condition D.1.3 (Sulfur Dioxide (SO_2)) and 326 IAC 7-4-6. Compliance with these limits shall be determined using SO_2 CEMS data.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.1.8 Transformer-Rectifier (T-R) Sets [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) The ability of the ESP to control particulate emissions shall be monitored once per day, when the unit is in operation, by measuring and recording the number of T-R sets in service and the primary and secondary voltages and the currents of the T-R sets.

(b) Reasonable response steps shall be taken in accordance with Section C - Response to Excursions or Exceedances whenever:

(i) the percentage of T-R sets in service on Unit 1, 2, or 3 falls below ninety percent (90%); or

(ii) the number of combined fields in service for Units 4-6 (exhausting to stack 2) falls below 114 out of 128 (or 89.06%).

T-R set failure resulting in less than ninety percent (90%) availability under subparagraph (i) or less than 114 combined fields under subparagraph (ii) is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

D.1.9 Opacity Readings [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) In the event of emissions exceeding thirty percent (30%) average opacity for three (3) consecutive six (6) minute averaging periods, appropriate response steps shall be taken in accordance with Section C – Response to Excursions or Exceedances such that the cause(s) of the excursion are identified and corrected and opacity levels are brought back below thirty percent (30%). Examples of expected response steps include, but are not limited to, boiler loads being reduced, adjustment of flue gas conditioning rate, and ESP T-R sets being returned to service.

(b) Opacity readings in excess of thirty percent (30%) but not exceeding the opacity limit for the unit are not a deviation from this permit. Failure to take response steps in accordance with Section C – Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(c) The Permittee may request that the IDEM, OAQ approve a different opacity trigger level than the one specified in (a) and (b) of this condition, provided the Permittee can demonstrate, through stack testing or other appropriate means, that a different opacity trigger level is appropriate for monitoring compliance with the applicable particulate matter mass emission limits.

D.1.10 SO_2 Monitoring System Downtime [326 IAC 2-7-6] [326 IAC 2-7-5(3)]

Whenever the primary SO_2 continuous emission monitoring system (CEMS) is malfunctioning or down for repairs or adjustments, the Permittee shall operate the secondary SO_2 CEMS.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.1.11 Record Keeping Requirements

(a) To document compliance with Section C – Opacity, Section C – Maintenance of Continuous Opacity Monitoring Equipment, and the particulate matter and opacity requirements in Conditions D.1.1, D.1.2, D.1.4, D.1.5, D.1.6, D.1.8, and D.1.9, the Permittee shall maintain records in accordance with (1) through (4) below. Records shall be complete and sufficient to establish compliance with the limits established in Section C – Opacity and in Conditions D.1.1 and D.1.2.

(1) Data and results from the most recent stack test;

(2) All continuous opacity monitoring data, pursuant to 326 IAC 3-5-6;

(3) The results of all Method 9 visible emission readings taken during any periods of COM downtime.

(4) All ESP parametric monitoring readings.

(b) To document compliance with SO_2 conditions D.1.3, D.1.7, and D.1.10, the Permittee shall maintain records in accordance with (1) below. Records shall be complete and sufficient to establish compliance with the SO_2 limits as required in conditions D.1.3 and D.1.7.

(1) All SO_2 continuous emissions monitoring data, pursuant to 326 IAC 3-5-6 and 326 IAC 7-2-1(g).

(c) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

D.1.12 Reporting Requirements

(a) A quarterly report of opacity exceedances and a quarterly summary of the information to document compliance with the SO_2 requirements of Condition D.1.3 shall be submitted to the address listed in Section C – General Reporting Requirements, of this permit, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(b) Pursuant to 326 IAC 3-5-7(5), reporting of continuous monitoring system instrument downtime, except for zero (0) and span checks, which shall be reported separately, shall include the following:

(1) Date of downtime.

(2) Time of commencement.

(3) Duration of each downtime.

(4) Reasons for each downtime.

(5) Nature of system repairs and adjustments.

The report submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

SECTION D.2 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(c) Coal handling facilities with a maximum design transfer rate of 2400 tons per hour, and coal storage systems, including the following:

(1) facilities installed in the 1950's, including coal conveyors and transfer house facilities, coal unloading stations 1 and 4 using clamshell barge unloaders, coal pile unloading, and coal piles; and

(2) facilities installed in 1993 to allow increased use of subbituminous coal to reduce SO_2 emissions, including transfer stations B1, B2, B3 and B4, and conveyors 5B1, B12, B23, B34 E, and B34 W.

Insignificant Activities:

Coal bunker and coal scale exhausts and associated dust collector vents.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.2.1 Particulate [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the coal handling operations shall be calculated as follows:

(a) Particulate shall not be emitted in excess of the amount shown in the table in 326 IAC 6-3-2(e). The allowable rate of emission shall be based on the process weight rate for the process.

(b) Interpolation of the data in the table in 326 IAC 6-3-2(e) for process weight rates up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour.

(c) Interpolation and extrapolation of the data in the table in 326 IAC 6-3-2(e) for process weight rates in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 55.0\ P^{0.11} - 40$ where E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour.

(d) When the process weight rate exceeds two hundred (200) tons per hour, the allowable emission may exceed that shown in the table in 326 IAC 6-3-2(e), provided the concentration of particulate in the discharge gases to the atmosphere is less than one-tenth (0.10) pound per one thousand (1,000) pounds of gases.

D.2.2 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to CP 077-2716, issued March 16, 1993, and 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive dust emissions from the coal handling shall comply with the plan submitted December 7, 1992, as revised March 4, 2002. This plan requires that:

(a) For the unloading stations, the hoppers at stations 1 and 4 shall be enclosed on three sides. Water and/or dust suppressant chemicals shall be applied as needed to minimize visible emissions.

(b) For the conveyors, the top and at least one side shall be enclosed.

(c) For the transfer stations, the foam and wetting systems will promote a reduction in emissions. Modified chutes will be provided at coal drop points.

Compliance Determination Requirements

D.2.3 Particulate Control [326 IAC 2-7-6(6)]

Except as otherwise provided by statute, rule, or in this permit, the baghouses for particulate control shall be in operation and control emissions at all times the associated coal processing points or drop point conveyors are in operation.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.2.4 Visible Emissions Notations [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) Visible emission notations of the coal unloading station shall be performed once per week during normal daylight operations when unloading coal. A trained employee shall record whether emissions are normal or abnormal.

(b) Visible emission notations of the transfer points baghouse exhausts shall be performed once per week during normal daylight operations when transferring coal. A trained employee shall record whether emissions are normal or abnormal.

(c) If abnormal emissions are observed from the coal unloading station or at any baghouse exhaust, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances. Observation of visible emissions that do not violate 326 IAC 6-4 (Fugitive Dust Emissions) or an applicable opacity limit is not a deviation from this permit. Failure to take response steps in accordance with Section C – Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(d) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(e) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(f) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

D.2.5 Broken or Failed Bag Detection [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed baghouse shall be shut down immediately, and the Permittee shall repair the failed baghouse as soon as practicable and perform visible emissions notations of the transfer points twice daily until the failed baghouse has been repaired and placed back in operation.

(b) For a single compartment baghouse controlling emissions from a batch process, a failed baghouse shall be shut down immediately, and the Permittee shall repair the failed baghouse as soon as practicable and perform visible emissions notations of the transfer points twice daily until the failed baghouse has been repaired and placed back in operation.

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.2.6 Record Keeping Requirements

(a) To document compliance with Section C – Opacity and Condition D.2.4 – Visible Emissions Notations, the Permittee shall maintain weekly records of the visible emission notations of the coal transfer point baghouse exhausts. The Permittee shall include in its weekly record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (e.g. the process did not operate that day).

(b) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

D.2.7 Reporting Requirements

The Permittee shall report all incidents of smoldering coal observed on a barge docked at a coal unloading station within four (4) daytime business hours after the initial observation. Notification shall be made to one of the following:

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section), or
Telephone Number: 317-233-0178 (ask for Compliance Section); or
Facsimile Number: 317-233-6865.

SECTION D.3 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(d) Dry fly ash handling and disposal facilities, including the following:

(1) Dry fly ash handling system installed in 1990 and 1991, including pneumatic conveyance to two (2) main silos with a maximum design transfer rate of 40 tons per hour, rotary and dry unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant paved and unpaved haul roads to onsite disposal area or for transportation offsite.

(2) Two (2) additional dry fly ash storage silos (a.k.a. truck bins) installed in 1994 and 1995 for unmarketable fly ash, including pneumatic conveyance to silos with a maximum design transfer rate of 40 tons per hour, rotary unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant paved and unpaved haul roads to onsite disposal area.

(e) Wet process boiler slag handling, with hydroveyors conveying the boiler slag to a storage pond.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.3.1 Particulate [326 IAC 6-3-2]

(a) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), the particulate emission rate from the fly ash pneumatic conveying system shall not exceed 42.5 pounds per hour when operating at a process weight rate of 40 tons per hour. This pounds per hour limitation was calculated using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of 60,000 pounds per hour shall be accomplished by use of the equation:

$E = 55.0\ P^{0.11} - 40$ where E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour.

(b) Pursuant to 326 IAC 6-3-2(e)(3) (Particulate Emission Limitations for Manufacturing Processes), for any ash transfer at a throughput rate greater than 200 tons per hour, the concentration of particulate in the discharge gases to the atmosphere shall be less than 0.10 pounds per one thousand (1,000) pounds of gases.

D.3.2 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to the Registration issued April 18, 1989, and 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive dust emissions from the fly ash handling shall comply with the plan submitted March 9, 1989, and revised November 15, 1993. This plan requires that:

(a) For intermediate storage, use of pneumatic conveyance to silos equipped with separators to collect the fly ash, ash fluidizing system to help unload the ash, and bag filter systems for dust control.

(b) For unloading from silos into trucks:

(1) Area under the silos where the unloaders are located is totally enclosed, except for the openings for the vehicles to enter and exit. The truck entrance and exit points are equipped with spray curtains.

(2) For on-site fly ash disposal: Use of rotary unloaders that condition fly ash with water and use flexible chute extensions to load ash into open-type trucks for transport to disposal area.

(3) For fly ash sold for off site use: Use of dry unloaders equipped with telescoping chutes with bellows-type shrouds which are connected to vent fans and piping to pull displaced air and fugitive fly ash emissions from the receiving vessel back into the silos.

(c) For transportation from silo area:

(1) To on-site disposal: Use of trucks which are covered while in motion and which go through a truck wash and hose down area as they exit the silo area. In-plant haul roads in silo area and to onsite disposal area are paved and are periodically swept/vacuumed. Truck routes on the surface of the disposal area are treated as needed with a combination of water and/or dust-suppressant chemicals.

(2) For ash sold for use off site: The majority of fly ash hauled off-site is in closed, dry bulk container trucks. If conditioned fly ash is purchased for off site use, it is hauled in covered dump trucks which are washed prior to leaving site.

(d) At on-site disposal area:

(1) Dumping, placement and compaction of conditioned (moistened) fly ash, with a combination of watering, dust-suppressant chemicals and/or temporary cover used to further control fugitive dust if necessary.

(2) Size of the open (uncovered) or working face of each phase of the disposal area will be limited as much as possible.

Compliance Determination Requirements

D.3.3 Particulate Control [326 IAC 2-7-6(6)]

Except as otherwise provided by statute or rule or in this permit, the bag filter systems for PM control shall be in operation and control emissions at all times the associated fly ash transfer points are in operation.

Compliance Monitoring Requirements [**326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

D.3.4 Visible Emissions Notations [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) Visible emission notations of the fly ash disposal area shall be performed at least once per day during normal daylight operations. Visible emission notations of the boiler slag storage pond area shall be performed at least once per week during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.

(b) Visible emission notations of the ash silo unloading station openings shall be performed at least once per day during normal daylight operations when ash is being unloaded. A trained employee shall record whether emissions are normal or abnormal.

(c) Visible emission notations of the fly ash transfer points bag filter system exhausts shall be performed at least once per day during normal daylight operations when transferring ash. A trained employee shall record whether emissions are normal or abnormal.

(d) If visible emissions are observed crossing the property line or boundaries of the property, right-of-way, or easement on which the source is located, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances.

(e) If abnormal emissions are observed from the ash silo unloading station openings or at any bag filter system exhaust, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances. Observation of abnormal emissions that do not violate 326 IAC 6-4 (Fugitive Dust Emissions) or an applicable opacity limit is not a deviation from this permit. Failure to take response steps in accordance with Section C – Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(f) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(g) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(h) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

D.3.5 Broken or Failed Bag Detection [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) For a single compartment baghouse controlling emissions from a process operated continuously, failed units and the associated process shall be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B – Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed units have been repaired or replaced. The emission unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B – Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.3.6 Record Keeping Requirements

(a) To document compliance with Section C – Opacity and Condition D.3.4 – Visible Emissions Notations, the Permittee shall maintain daily records of the visible emission notations of the active fly ash disposal area, the ash silo unloading station openings, and the bag filter system exhausts. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (e.g. the process did not operate that day).

(b) To document compliance with Section C – Opacity and Condition D.3.4 – Visible Emissions Notations, the Permittee shall maintain weekly records of the visible emission notations of the active boiler slag storage pond area. The Permittee shall include in its weekly record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (e.g. the process did not operate that day).

(c) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

SECTION D.4 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(f) One (1) Limestone Handling (LH) System, permitted to be constructed in 2008, with a maximum capacity of 1,000 tons per hour, consisting of one (1) barge unloader, one (1) barge unloading hopper and feeder, three (3) conveyors, two (2) transfer stations, and one (1) stacking tube and storage pile. Particulate emissions are controlled by partial to full enclosure and wet dust suppression.

(g) One (1) Limestone Processing (LP) System, permitted to be constructed in 2008, with a maximum transfer rate of 300 tons per hour, consisting of two (2) reclaim hoppers and feeders, one (1) reclaim conveyor, one (1) silo supply conveyor (a.k.a. transfer station), one (1) silo transfer conveyor, two (2) storage silos, two (2) ball mill feeders, two (2) wet ball mills, and one (1) emergency reclaim hopper and one (1) emergency conveyor (max cap of 10,000 TPY). Particulate emissions are controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors. The Limestone Processing (LP) System is an affected source under the Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR Part 60, Subpart OOO).

(h) One (1) Gypsum Handling (GH) System, permitted to be constructed in 2008, with a maximum capacity of 150 tons per hour, consisting of one (1) collecting conveyor, one (1) transfer conveyor, two (2) transfer stations, one (1) radial stackout conveyor, one (1) emergency collecting conveyor, one (1) emergency transfer station, one (1) emergency stackout conveyor (max cap of 10,000 TPY), and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Particulate emissions are controlled on the conveyors and transfer points by wet material and partial to full enclosure. Particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

(i) One (1) Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System, permitted to be constructed in 2008, consisting of filter cake being loaded into trucks by a wheel loader, and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Particulate emissions are controlled during loading of the filter cake into trucks by wet material and other precautionary measures. Particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

Particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area are controlled by wet material, watering, compacting, covering, and other precautionary measures.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.4.1 Particulate PSD Minor Limits [326 IAC 2-2] [326 IAC 2-3]

(a) Particulate emissions from the Limestone Handling (LH) System shall be controlled by partial to full enclosure and wet dust suppression as specified in the Fugitive Dust Control Plan in Attachment A.

(b) Particulate emissions from the Limestone Processing (LP) System shall be controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors as specified in the Fugitive Dust Control Plan in Attachment A.

(c) Particulate emissions on the conveyors and transfer points for the Gypsum Handling (GH) System shall be controlled by wet material and partial to full enclosure as specified in the Fugitive Dust Control Plan in Attachment A.

(d) Particulate emissions from loading of the filter cake into trucks for the Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System shall be controlled by wet material and other precautionary measures as specified in the Fugitive Dust Control Plan in Attachment A

(e) Particulate emissions on the paved and unpaved haul roads shall be controlled by wet material, watering, sweeping, and speed reduction as specified in the Fugitive Dust Control Plan in Attachment A.

(f) Fugitive particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area shall be controlled by wet material, watering, compacting, covering, and other precautionary measures as specified in the Fugitive Dust Control Plan in Attachment A.

(g) The Permittee must comply with all requirements of the Fugitive Dust Control Plan in Attachment A.

Compliance with these requirements will ensure that the potential to emit from this modification is less than twenty-five (25) tons of PM per year and less than fifteen (15) tons of PM_{10} per year and therefore will render the requirements of 326 IAC 2-2 and 326 IAC 2-3 not applicable.

D.4.2 Particulate [326 IAC 6-3-2]

(a) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the limestone handling operations shall not exceed 77.59 pounds per hour when operating at a process weight rate of 1,000 tons per hour.

(b) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the limestone processing operations shall not exceed 63.00 pounds per hour when operating at a process weight rate of 300 tons per hour.

(c) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the gypsum waste handling operations shall not exceed 55.44 pounds per hour when operating at a process weight rate of 150 tons per hour.

(d) Interpolation and extrapolation of the data in the table in 326 IAC 6-3-2(e) for process weight rates in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 55.0\ P^{0.11} - 40$ where E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour.

(e) When the process weight rate exceeds two hundred (200) tons per hour, the allowable emission may exceed that shown in the table in 326 IAC 6-3-2(e), provided the concentration of particulate in the discharge gases to the atmosphere is less than one-tenth (0.10) pound per one thousand (1,000) pounds of gases.

D.4.3 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive dust emissions from the limestone handling, limestone processing, and gypsum waste handling operations shall comply with the Fugitive Dust Control Plan in Attachment A.

Compliance Determination Requirements

D.4.4 Particulate Control [326 IAC 2-7-6(6)]

(a) Except as otherwise provided by statute, rule, or in this permit, the enclosures, wet dust suppression systems, conveyor covers, and bin filter dust collector for particulate control shall be in operation and control emissions at all times the associated limestone handling, limestone processing, and/or gypsum waste handling operations are in operation.

(b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.4.5 Visible Emissions Notations [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) Visible Emission Notations:

(1) Visible emission notations of the limestone handling operations shall be performed once per day during normal daylight operations when handling limestone.

(2) Visible emission notations of the limestone processing operations shall be performed once per day during normal daylight operations when processing limestone.

(3) Visible emission notations of the gypsum waste handling operations shall be performed once per day during normal daylight operations when handling gypsum waste.

A trained employee shall record whether emissions are normal or abnormal.

(b) Visible emission notations of the control device exhausts shall be performed once per day during normal daylight operations when handling or processing limestone or gypsum waste. A trained employee shall record whether emissions are normal or abnormal.

(c) If abnormal emissions are observed from the limestone handling, limestone processing, and/or gypsum waste handling operations or at any control device exhaust, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances. Observation of visible emissions that do not violate 326 IAC 6-4 (Fugitive Dust Emissions) or an applicable opacity limit is not a deviation from this permit. Failure to take response steps in accordance with Section C – Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(d) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(e) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(f) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

D.4.6 Broken or Failed Bag Detection [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B – Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emission unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B – Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.4.7 Record Keeping Requirements

(a) To document compliance with Section C – Opacity and Condition D.4.5, the Permittee shall maintain daily records of the visible emission notations of the limestone handling, limestone processing, and/or gypsum waste handling operations and control device exhausts. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (e.g. the process did not operate that day).

(b) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]

D.4.8 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]

(a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1 for the affected emission points of the Limestone Processing (LP) System except as otherwise specified in Table 1 of 40 CFR Part 60, Subpart OOO.

(b) Pursuant to 40 CFR 60.10, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

D.4.9 Standards of Performance for Nonmetallic Mineral Processing Plants [40 CFR Part 60, Subpart OOO] [326 IAC 12]

The Permittee which engages in nonmetallic mineral processing shall comply with the following provisions of 40 CFR Part 60, Subpart OOO (included as Attachment C of this permit):

(a) 40 CFR 60.670 (a)(1) and (d-f).

(b) Table 1: Applicability of Subpart A to Subpart OOO

(c) 40 CFR 60.671.

(d) 40 CFR 60.672, paragraphs (a)(1), (b), (d-g), and (h)(1).

(e) 40 CFR 60.673.

(f) 40 CFR 60.675.

(g) 40 CFR 60.676, paragraphs (a)(1), (a)(3-4), (f-h), (i)(1), and (j).

SECTION D.5 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

Insignificant Activities:

Limestone/iron ore flux handling facility, including limestone storage area, dump hopper, conveyor, and enclosed surge bin.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.5.1 Particulate [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), the particulate emission rate from the limestone and iron ore handling drop points shall not exceed 7.13 pounds per hour when operating at a process weight rate of 4566.2 pounds per hour. The pounds per hour limitation was calculated using the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

SECTION E TITLE IV CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Units 1 through 5 have the following emission controls:

- over-fire air system (NO_X control)
- selective catalytic reduction (SCR) system (NO_X control)
- "cold-side" electrostatic precipitator (ESP) (particulate control)
- flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008

(1) Prior to installation of the FGD System:
Units 1, 2, and 3 exhaust to Stack 1. Units 4 and 5 exhaust to Stack 2. Stacks 1 and 2 have continuous opacity monitoring systems (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 1, 2, and 3 exhaust to Flue 13 of Stack 14. Units 4 and 5 exhaust to Flue 46 of Stack 14. Both Flue 13 and Flue 46 of Stack 14 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Unit 6 has the following emission controls:

- over-fire air system (NO_X control)
- "hot-side" electrostatic precipitator (ESP) (particulate control)
- flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008

(1) Prior to installation of the FGD System:
Unit 6 exhausts to Stack 2. Stack 2 has a continuous opacity monitoring system (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 6 exhausts to Flue 46 of Stack 14. Flue 46 of Stack 14 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

The Flue Gas Desulfurization (FGD) System for Units 1 through 6, permitted to be constructed in 2008, consists of one (1) stack (Stack 14) with two flues (Flues 13 and 46), two (2) jet bubbling reactor (JBR) absorbers (JBRs 13 and 46), and associated limestone and gypsum material handling systems.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Acid Rain Program

E.1 Acid Rain Permit [326 IAC 2-7-5(1)(C)] [326 IAC 21] [40 CFR 72 through 40 CFR 78]

Pursuant to 326 IAC 21 (Acid Deposition Control), the Permittee shall comply with all provisions of the Acid Rain permit issued for this source, and any other applicable requirements contained in 40 CFR 72 through 40 CFR 78. The Acid Rain permit for this source is attached to this permit as Attachment B, and is incorporated by reference.

E.2 Title IV Emissions Allowances [326 IAC 2-7-5(4)] [326 IAC 21]

Emissions exceeding any allowances that the Permittee lawfully holds under the Title IV Acid Rain Program of the Clean Air Act are prohibited, subject to the following limitations:

(a) No revision of this permit shall be required for increases in emissions that are authorized by allowances acquired under the Title IV Acid Rain Program, provided that such increases do not require a permit revision under any other applicable requirement.

(b) No limit shall be placed on the number of allowances held by the Permittee. The Permittee may not use allowances as a defense to noncompliance with any other applicable requirement.

(c) Any such allowance shall be accounted for according to the procedures established in regulations promulgated under Title IV of the Clean Air Act.

SECTION F Nitrogen Oxides Budget Trading Program – NO_X Budget Permit for NO_X Budget Units Under 326 IAC 10-4-1(a)

ORIS Code: 983

Facility Description [326 IAC 2-7-5(15)]

(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Units 1 through 5 have the following emission controls:
- over-fire air system (NO_X control)
- selective catalytic reduction (SCR) system (NO_X control)
- "cold-side" electrostatic precipitator (ESP) (particulate control)
- flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008

(1) Prior to installation of the FGD System:
Units 1, 2, and 3 exhaust to Stack 1. Units 4 and 5 exhaust to Stack 2. Stacks 1 and 2 have continuous opacity monitoring systems (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 1, 2, and 3 exhaust to Flue 13 of Stack 14. Units 4 and 5 exhaust to Flue 46 of Stack 14. Both Flue 13 and Flue 46 of Stack 14 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Unit 6 has the following emission controls:
- over-fire air system (NO_X control)
- "hot-side" electrostatic precipitator (ESP) (particulate control)
- flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008

(1) Prior to installation of the FGD System:
Unit 6 exhausts to Stack 2. Stack 2 has a continuous opacity monitoring system (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 6 exhausts to Flue 46 of Stack 14. Flue 46 of Stack 14 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

The Flue Gas Desulfurization (FGD) System for Units 1 through 6, permitted to be constructed in 2008, consists of one (1) stack (Stack 14) with two flues (Flues 13 and 46), two (2) jet bubbling reactor (JBR) absorbers (JBRs 13 and 46), and associated limestone and gypsum material handling systems.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

F.1 Automatic Incorporation of Definitions [326 IAC 10-4-7(e)]

This NO_X budget permit is deemed to incorporate automatically the definitions of terms under 326 IAC 10-4-2.

F.2 Standard Permit Requirements [326 IAC 10-4-4(a)]

(a) The owners and operators of the NO_X budget source and each NO_X budget unit shall operate each unit in compliance with this NO_X budget permit.

(b) The NO_X budget Boilers subject to this NO_X budget permit are: Boilers 1, 2, 3, 4, 5 and 6.

F.3 Monitoring Requirements [326 IAC 10-4-4(b)]

(a) The owners and operators and, to the extent applicable, the NO_X authorized account representative of the NO_X budget source and each NO_X budget unit at the source shall comply with the monitoring requirements of 40 CFR 75 and 326 IAC 10-4-12.

(b) The emissions measurements recorded and reported in accordance with 40 CFR 75 and 326 IAC 10-4-12 shall be used to determine compliance by each unit with the NO_X budget emissions limitation under 326 IAC 10-4-4(c) and Condition F.4, Nitrogen Oxides Requirements.

F.4 Nitrogen Oxides Requirements [326 IAC 10-4-4(c)]

(a) The owners and operators of the NO_X budget source and each NO_X budget unit at the source shall hold NO_X allowances available for compliance deductions under 326 IAC 10-4-10(j), as of the NO_X allowance transfer deadline, in each unit's compliance account and the source's overdraft account in an amount:

(1) Not less than the total NO_X emissions for the ozone control period from the unit, as determined in accordance with 40 CFR 75 and 326 IAC 10-4-12;

(2) To account for excess emissions for a prior ozone control period under 326 IAC 10-4-10(k)(5); or

(3) To account for withdrawal from the NO_X budget trading program, or a change in regulatory status of a NO_X budget opt-in unit.

(b) Each ton of NO_X emitted in excess of the NO_X budget emissions limitation shall constitute a separate violation of the Clean Air Act (CAA) and 326 IAC 10-4.

(c) NO_X allowances shall be held in, deducted from, or transferred among NO_X allowance tracking system accounts in accordance with 326 IAC 10-4-9 through 11, 326 IAC 10-4-13, and 326 IAC 10-4-14.

(d) A NO_X allowance shall not be deducted, in order to comply with the requirements under (a) above and 326 IAC 10-4-4(c)(1), for an ozone control period in a year prior to the year for which the NO_X allowance was allocated.

(e) A NO_X allowance allocated under the NO_X budget trading program is a limited authorization to emit one (1) ton of NO_X in accordance with the NO_X budget trading program. No provision of the NO_X budget trading program, the NO_X budget permit application, the NO_X budget permit, or an exemption under 326 IAC 10-4-3 and no provision of law shall be construed to limit the authority of the U.S. EPA or IDEM, OAQ to terminate or limit the authorization.

(f) A NO_X allowance allocated under the NO_X budget trading program does not constitute a property right.

(g) Upon recordation by the U.S. EPA under 326 IAC 10-4-10, 326 IAC 10-4-11, or 326 IAC 10-4-13, every allocation, transfer, or deduction of a NO_X allowance to or from each NO_X budget unit's compliance account or the overdraft account of the source where the unit is located is deemed to amend automatically, and become a part of, this NO_X budget permit of the NO_X budget unit by operation of law without any further review.

F.5 Excess Emissions Requirements [326 IAC 10-4-4(d)]

The owners and operators of each NO_X budget unit that has excess emissions in any ozone control period shall do the following:

(a) Surrender the NO_X allowances required for deduction under 326 IAC 10-4-10(k)(5).

(b) Pay any fine, penalty, or assessment or comply with any other remedy imposed under 326 IAC 10-4-10(k)(7).

F.6 Record Keeping Requirements [326 IAC 10-4-4(e)] [326 IAC 2-7-5(3)]

Unless otherwise provided, the owners and operators of the NO_X budget source and each NO_X budget unit at the source shall keep, either on site at the source or at a central location within Indiana for those owners or operators with unattended sources, each of the following documents for a period of five (5) years:

(a) The account certificate of representation for the NO_X authorized account representative for the source and each NO_X budget unit at the source and all documents that demonstrate the truth of the statements in the account certificate of representation, in accordance with 326 IAC 10-4-6(h). The certificate and documents shall be retained either on site at the source or at a central location within Indiana for those owners or operators with unattended sources beyond the five (5) year period until the documents are superseded because of the submission of a new account certificate of representation changing the NO_X authorized account representative.

(b) All emissions monitoring information, in accordance with 40 CFR 75 and 326 IAC 10-4-12, provided that to the extent that 40 CFR 75 and 326 IAC 10-4-12 provide for a three (3) year period for record keeping, the three (3) year period shall apply.

(c) Copies of all reports, compliance certifications, and other submissions and all records made or required under the NO_X budget trading program.

(d) Copies of all documents used to complete a NO_X budget permit application and any other submission under the NO_X budget trading program or to demonstrate compliance with the requirements of the NO_X budget trading program.

This period may be extended for cause, at any time prior to the end of five (5) years, in writing by IDEM, OAQ or the U.S. EPA. Records retained at a central location within Indiana shall be available immediately at the location and submitted to the department or U.S. EPA within three (3) business days following receipt of a written request. Nothing in 326 IAC 10-4-4(e) shall alter the record retention requirements for a source under 40 CFR 75. Unless otherwise provided, all records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

F.7 Reporting Requirements [326 IAC 10-4-4(e)]

(a) The NO_X authorized account representative of the NO_X budget source and each NO_X budget unit at the source shall submit the reports and compliance certifications required under the NO_X budget trading program, including those under 326 IAC 10-4-8, 326 IAC 10-4-12, or 326 IAC 10-4-13.

(b) Pursuant to 326 IAC 10-4-4(e) and 326 IAC 10-4-6(e)(1), each submission shall include the following certification statement by the NO_X authorized account representative: "I am authorized to make this submission on behalf of the owners and operators of the NO_X budget sources or NO_X budget units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment."

(c) Where 326 IAC 10-4 requires a submission to IDEM, OAQ, the NO_X authorized account representative shall submit required information to:

Indiana Department of Environmental Management
Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

(d) Where 326 IAC 10-4 requires a submission to U.S. EPA, the NO_X authorized account representative shall submit required information to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue, NW
Mail Code 6204N
Washington, DC 20460

F.8 Liability [326 IAC 10-4-4(f)]

The owners and operators of each NO_X budget source shall be liable as follows:

(a) Any person who knowingly violates any requirement or prohibition of the NO_X budget trading program, a NO_X budget permit, or an exemption under 326 IAC 10-4-3 shall be subject to enforcement pursuant to applicable state or federal law.

(b) Any person who knowingly makes a false material statement in any record, submission, or report under the NO_X budget trading program shall be subject to criminal enforcement pursuant to the applicable state or federal law.

(c) No permit revision shall excuse any violation of the requirements of the NO_X budget trading program that occurs prior to the date that the revision takes effect.

(d) Each NO_X budget source and each NO_X budget unit shall meet the requirements of the NO_X budget trading program.

(e) Any provision of the NO_X budget trading program that applies to a NO_X budget source, including a provision applicable to the NO_X authorized account representative of a NO_X budget source, shall also apply to the owners and operators of the source and of the NO_X budget units at the source.

(f) Any provision of the NO_X budget trading program that applies to a NO_X budget unit, including a provision applicable to the NO_X authorized account representative of a NO_X budget unit, shall also apply to the owners and operators of the unit. Except with regard to the requirements applicable to units with a common stack under 40 CFR 75 and 326 IAC 10-4-12, the owners and operators and the NO_X authorized account representative of one (1) NO_X budget unit shall not be liable for any violation by any other NO_X budget unit of which they are not owners or operators or the NO_X authorized account representative and that is located at a source of which they are not owners or operators or the NO_X authorized account representative.

F.9 Effect on Other Authorities [326 IAC 10-4-4(g)]

No provision of the NO_X budget trading program, a NO_X budget permit application, a NO_X budget permit, or an exemption under 326 IAC 10-4-3 shall be construed as exempting or excluding the owners and operators and, to the extent applicable, the NO_X authorized account representative of a NO_X budget source or NO_X budget unit from compliance with any other provision of the applicable, approved state implementation plan, a federally enforceable permit, or the CAA.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY

PART 70 OPERATING PERMIT
CERTIFICATION

Source Name: Indiana-Kentucky Electric Corporation – Clifty Creek Station
Source Address: S.R. 56 West, Madison, Indiana 47250
Mailing Address: P.O. Box 468, Piketon, Ohio 45661
Part 70 Permit No.: T077-7168-00001

This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this permit.

Please check what document is being certified:

☐ Annual Compliance Certification Letter

☐ Test Result (specify): _____

☐ Report (specify): _____

☐ Notification (specify): _____

☐ Affidavit (specify): _____

☐ Other (specify): _____

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Signature:
Printed Name:
Title/Position:
Phone:
Date:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

OFFICE OF AIR QUALITY
COMPLIANCE BRANCH
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251
Phone: 317-233-0178
Fax: 317-233-6865

PART 70 OPERATING PERMIT
EMERGENCY OCCURRENCE REPORT

Source Name: Indiana-Kentucky Electric Corporation – Clifty Creek Station
Source Address: S.R. 56 West, Madison, Indiana 47250
Mailing Address: P.O. Box 468, Piketon, Ohio 45661
Part 70 Permit No.: T077-7168-00001

This form consists of 2 pages **Page 1 of 2**

☐ This is an emergency as defined in 326 IAC 2-7-1(12)
- The Permittee must notify the Office of Air Quality (OAQ), within four (**4**) business hours (1-800-451-6027 or 317-233-0178, ask for Compliance Section); and
- The Permittee must submit notice in writing or by facsimile within two (**2**) working days (Facsimile Number: 317-233-6865), and follow the other requirements of 326 IAC 2-7-16.

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency
Describe the cause of the Emergency

If any of the following are not applicable, mark N/A

Page 2 of 2

Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency? ☐ Y ☐ N Describe: Type of Pollutants Emitted: ☐ TSP ☐ PM-10 ☐ SO_2 ☐ VOC ☐ NO_X ☐ CO ☐ Pb ☐ other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed By: _____

Title/Position: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

PART 70 OPERATING PERMIT
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT

Source Name: Indiana-Kentucky Electric Corporation – Clifty Creek Station
Source Address: S.R. 56 West, Madison, Indiana 47250
Mailing Address: P.O. Box 468, Piketon, Ohio 45661
Part 70 Permit No.: T077-7168-00001

Months: _____ to _____ Year: _____

This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. A deviation required to be reported pursuant to an applicable requirement that exists independent of the permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period".	
☐ NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.	
☐ THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD	
Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	**Duration of Deviation:**
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Form Completed By: _____

Title/Position: _____

Date: _____

Phone: _____

Attach a signed certification to complete this report.

Indiana Department of Environmental Management
Office of Air Quality

Part 70 Operating Permit No. T 077-7168-00001
Attachment A – Fugitive Dust Control Plan
To be implemented in conjunction with the Flue Gas Desulfurization Retrofit Project

Source Description and Location

Source Name:	Indiana-Kentucky Electric Corp. – Clifty Creek Station
Source Location:	S.R. 56 West, Madison, Indiana, 47250
Source Mailing Address:	P.O. Box 468, Piketon, Ohio 45661
County:	Jefferson
SIC Code:	4911
Operation Permit No.:	T 077-7168-00001
Operation Permit Issuance Date:	October 18, 2006
Significant Source Modification No.:	077-24277-00001
Significant Permit Modification No.:	077-24304-00001
Permit Reviewer:	Kimberly Cottrell

Introduction

The control plan, when implemented, is designed to reduce fugitive dust emissions of $PM/PM_{10}/PM_{2.5}$ from the following:

(a) Limestone Handling and Storage Facilities;

(b) Limestone Processing Facilities;

(c) Gypsum Handling and Disposal;

(d) Wastewater Treatment Facility;

(e) Paved Roadways;

(f) Unpaved Roadways; and

(g) Working Landfill Face.

The plan shall be implemented on a year-round basis until such time as another plan is approved or ordered by the Indiana Department of Environmental Management. The name, title and telephone number of the person who is responsible for implementing the plan will be supplied to the OAQ Compliance Section.

General

Indiana-Kentucky Electric Corporation (IKEC) is investing in new environmental controls at the Clifty Creek Plant to meet the requirements of the Clean Air Interstate Rule (CAIR). After extensive study, IKEC has determined that installing flue gas desulfurization (FGD) systems for sulfur dioxide (SO_2) emissions reductions on Units 1 through 6 of the Clifty Creek Plant is the best option to comply with CAIR.

In order to operate the FGD, it will be necessary to install limestone handling and storage facilities, limestone processing facilities, gypsum handling and storage facilities and a wastewater treatment facility. Design basis for the FGD and associated facilities is 98% removal of sulfur dioxide (SO_2) with a 5.0-lb/MMBtu coal.

Limestone Handling and Storage Facilities

In order to supply limestone to the limestone processing facility, a new barge unloader, conveyor system, and storage area will be installed. The limestone barge unloader will be a balanced hydraulic clamshell bucket type unloader. The unloader will have a free digging rate of 1,000 tons per hour (tph) with an average unloading rate of 750 tph. The clamshell bucket will unload the limestone into a hopper with a capacity of 3.5 loads of the bucket. The hopper will be equipped with a vibrating feeder that will feed the limestone onto the first of three conveyors. Each conveyor will have a rated capacity of 1,000 tph. The conveying system will consist of three conveyors and two transfer stations. Limestone will be added to the active limestone storage pile via a stacking tube. The active limestone storage pile will have a capacity of 38,381 tons with a surface area of 3,883 m^2. In order to ensure a constant supply of limestone, an inactive (long-term) limestone storage pile will be maintained. The long-term storage pile will have a capacity of 44,280 tons with a surface area of 4,929 m^2.

Table 1: Fugitive Dust Control Measures
Limestone Transfer - Conveying

Emission Point ID	Transfer Description	Control Method
22 (LH)	Clamshell Bucket into Barge	None
23 (LH)	Clamshell Bucket into Reclaim Hopper (RH1)	Fog Suppression
23 (LH)	Reclaim Hopper (RH1) onto Vibrating Feeder	Partial Enclosure
23 (LH)	Vibrating Feeder (VF1) onto LS Unloading Belt Conveyor (LU1)	Fog Suppression
24 (LH)	LS Unloading Belt Conveyor (LU1)	3/4 Conveyor Cover
39a (LH)	Limestone Unloading Conveyor (LU1) to Limestone Transfer Conveyor (LU2)	Full Enclosure
40a (LH)	Limestone Transfer Conveyor (LU2)	3/4 Conveyor Cover
39b (LH)	Limestone Transfer Conveyor (LU2) to Limestone Transfer Conveyor (LU3)	Full Enclosure
40b (LH)	Limestone Transfer Conveyor (LU3)	3/4 Conveyor Cover
26 (LH)	Active Storage Pile into Reclaim Drawdown Hopper 1 or 2	Full Enclosure
26 (LP)	Vibratory Drawdown Hopper(DH-1 or DH-2) onto Vibratory Reclaim Feeder (VF-2 or VF-3)	Enclosed reclaim With Dust Suppression
26 (LP)	Vibratory Reclaim Feeder (VF-2 or VF-3) onto LS Reclaim Conveyor LR-1.	Full Enclosure
28 (LP)	LS Reclaim Conveyor (LR-1)	3/4 Conveyor Cover
8 (LP)	LS Reclaim Conveyor (LR-1) into LS Storage Silo A	Full Enclosure
29 (LP)	LS Reclaim Conveyor (LR-1) onto Silo Transfer Conveyor (LR-3)	Full Enclosure
29 (LP)	Silo Transfer Conveyor (LR-3)	Full Enclosure
29 (LP)	Silo Transfer Conveyor (LR-3) into LS Storage Silo B	Full Enclosure
8 (LP)	LS Storage Silo A onto Feeder A	Full Enclosure
8 (LP)	Feeder A into Wet Ball A	Full Enclosure
8 (LP)	LS Storage Silo B onto Feeder B	Full Enclosure

Table 1: Fugitive Dust Control Measures Limestone Transfer - Conveying		
Emission Point ID	**Transfer Description**	**Control Method**
8 (LP)	Feeder B into Wet Ball B	Full Enclosure
27 (LH)	Front End Loader into Emergency Reclaim Hopper	None
27 (LP)	Emergency Reclaim Hopper onto Emergency Reclaim Vibrating Feeder	None
27 (LP)	Emergency reclaim Vibrating Feeder onto Reclaim Conveyor	None

Limestone Processing Facilities

Limestone is supplied to the processing facility via an under pile reclaim system. Two limestone feeders and two hoppers are located underneath the active limestone storage pile. The feeder system supplies limestone to the limestone reclaim conveyor. The limestone reclaim conveyor supplies limestone to the silo transfer conveyor at a rated capacity of 300 tph. The silo transfer conveyor will deliver the limestone at a rated capacity of 300 tph into one of two storage silos. Each storage silo has a capacity of 940 tons of limestone.

In the event that limestone cannot be supplied to the limestone processing facility via the active pile reclaim system, limestone can be loaded from the inactive storage pile into the emergency reclaim hopper using a wheel loader or bulldozer. The limestone is then fed from the emergency reclaim hopper onto the active reclaim conveyor system and eventually to one of the two silos. The emergency reclaim hopper has a rated capacity 150 tph.

From the storage silos, limestone is supplied to one of two ball mills. Reclaim water is added to aid in the crushing of the limestone. From the ball mills, the slurry is discharged into the ball mill slurry tank, where reclaim water is added to achieve the proper slurry density. The slurry is then pumped to the reagent storage tanks that are equipped with agitators to keep the limestone in suspension.

Table 2: Fugitive Dust Control Measures Limestone Pile Transfer		
Emission Point ID	**Transfer Description**	**Control Method**
25 (LH)	Limestone Transfer Conveyor (LU3) to Active Limestone Storage Pile (Counted in Total LS Pile Emissions)	Stacking Tube
25 (LH)	Active Storage Pile into Front End Loader (Pile Maintenance)	None
25 (LH)	Front End Loader onto Active Storage Pile	None
25 (LH)	Active Storage Pile into Front End Loader	None
25 (LH)	Front End Loader onto Active Storage Pile	None
25 (LH)	Active Storage Pile into Front End Loader Emergency	None
30 (LH)	Front End Loader onto Long Term Storage Pile	None
30 (LH)	Long Term Storage Pile into Front End Loader	None

Gypsum Handling and Disposal

The FGD by-product (gypsum) will be discharged from two vacuum belt filters onto the gypsum collecting conveyor. The gypsum collecting conveyor will then transfer the gypsum to the gypsum transfer conveyor at the gypsum transfer station. Gypsum is then transferred to the gypsum radial stacker. Each conveyor and the radial stacker have a rated capacity of 150 tph. The radial stacker forms a kidney-shaped storage pile. The storage pile will have the capacity to store three days of gypsum production (8,900 tons and a surface area of 2,805 m^2). Gypsum from the storage pile will be loaded into trucks by wheel loaders for transport to the existing landfill.

In the event that the gypsum collecting conveyor fails, gypsum will be collected on the emergency gypsum collecting conveyor. At the transfer tower, gypsum is transferred to the emergency gypsum stackout conveyor. The emergency stackout conveyor discharges the gypsum onto the ground forming a conical pile. The conveyors will have a rated capacity of 150 tph. The pile will have a storage capacity of 2,900 tons and a surface area of 841 m^2. Gypsum from the storage pile will be loaded into trucks by wheel loaders for transport to the existing landfill.

Table 3: Fugitive Dust Control Measures
Gypsum Transfers

Emission Point ID	Transfer Description	Control Method
7 (GH)	Belt Filter A or B onto Gypsum Collecting Conveyor	Full Enclosure
7 (GH)	Gypsum Collecting Conveyor	3/4 Conveyor Cover
7 (GH)	Gypsum Collecting Conveyor onto Gypsum Transfer Conveyor	Full Enclosure
32 (GH)	Gypsum Transfer Conveyor	3/4 Conveyor Cover
32 (GH)	Gypsum Transfer Conveyor onto Gypsum Radial Stacker Conveyor	Full Enclosure
33 (GH)	Gypsum Radial Stacker Conveyor	3/4 Conveyor Cover
7 (GH)	Belt Filter A or B onto Emergency Gypsum Collecting Conveyor	Full Enclosure
7 (GH)	Emergency Collecting Conveyor	3/4 Conveyor Cover
31 (GH)	Emergency Collecting Conveyor onto Emergency Stock-out Conveyor	Full Enclosure
31 (GH)	Emergency Stock-out Conveyor	3/4 Conveyor Cover

Table 4: Fugitive Dust Control Measures
Gypsum Pile Transfer

Emission Point ID	Transfer Description	Control Method
34 (GH)	Gypsum Radial Stacker Conveyor onto Stockpile	None
34 (GH)	Stockpile into Front-End loader	None
34 (GH)	Front-End Loader onto Truck	None
34 (GH)	Emergency Stock-out Conveyor onto Emergency Stock-out Pile	None
34 (GH)	Stockpile into Front-End loader	None
34 (GH)	Front-End Loader onto Truck	None

Wastewater Treatment Facility

Sludge from the wastewater treatment facility will be disposed in the existing landfill. Approximately, 227 tons per day of sludge (83,000 tons per year) will be generated by the treatment facility. Sludge will be loaded into trucks by wheel loaders for transport to the existing landfill.

Table 5: Fugitive Dust Control Measures WWTP Sludge Transfer

Emission Point ID	Transfer Description	Control Method
1	Stockpile to Front-End Loaders	None
2	Load-In to Dump Truck at Facility	None

Plant Roadways

All plant roadways from the wastewater treatment plant sludge and gypsum loading areas to the point where trucks leave the main east-west haul road within the landfill will be paved. The north-south temporary roadways from the main landfill haul road to the unloading area within the working portion of the landfill will be constructed of boiler slag.

Fugitive Dust Control Measures for Paved Roadways

Wet gypsum and wastewater treatment sludge will be transported to the existing landfill via existing paved plant roadways in the vicinity of the new FGD units and wastewater treatment plant. A new paved roadway will be constructed along the north edge of the landfill to allow trucking of materials from the active portion of the plant into the landfill. The road width will be sufficient to allow two trucks to pass without leaving the roadway. Haul trucks will be limited to 20 mph while traveling on the roadway.

A new tire washing station will be constructed to allow the washing of truck tires before entering the main paved haul road. All fly ash, gypsum and wastewater treatment sludge trucks will have tires washed at the station after loading. If necessary, additional equipment will also be available to wash the frame and bodies of the trucks to remove materials that may have spilled on the truck during loading operations.

Paved roads will be watered once per hour during periods of hauling operations. Watering will be conducted using “water wagon” type trucks. A flusher type truck is also available if visible deposits are observed on the roadway. Watering will be conducted concurrent with hauling operations (expected to be during day turns only). Watering will not be done when hauling activities are not taking place or during periods of precipitation that keep the roadways visually wet. Additionally, as a safety precaution, no use of the tire washing stations or watering of the roadways will take place when the ambient air temperature is low enough to cause icing.

Unpaved Roadways

Temporary unpaved haul roads will be constructed of boiler slag to allow trucks to travel from the new paved haul road on the north side of the landfill to the active working face of the landfill without traveling on the land-filled material. These north-south roads will be constructed as needed and abandoned when no longer needed.

Fugitive Dust Control for Unpaved Roadways

Wet gypsum and wastewater treatment sludge will be transported from the new paved landfill haul road to the working face of the landfill using temporary boiler slag roads as described above. Haul trucks will be limited to 15 mph while traveling on the temporary boiler slag roads.

A new movable tire washing station will also be installed at the landfill. All fly ash, gypsum, and wastewater treatment sludge trucks will have tires washed at the station before returning to the loading area on the main paved haul road. The tire washing station will be moved periodically as development of the landfill progresses to minimize the distance between the station and the intersection of the temporary boiler slag roads on the landfill and the paved haul road that runs along the north side of the landfill.

The unpaved boiler slag roads will be watered once every three hours during periods of hauling operations. Watering will be conducted using “water wagon” type trucks. Watering will be conducted concurrent with hauling operations (expected to be during day turns only). Watering will not be done when hauling activities are not taking place or during periods of precipitation that keep the roadways visually wet. Additionally, as a safety precaution, no use of the tire washing stations or watering of the roadways will take place when the ambient air temperature is low enough to cause icing.

Fugitive Dust Control for Material Movement in Working Landfill Face

The working face of the landfill will be controlled by the use of water applied to the portion of the landfill being traveled by equipment (primarily bulldozers) spreading the materials to the final landfill grade and compacting the materials within the landfill. Watering will be conducted once every three hours using water monitors located on water trucks. Watering will take place only during periods when equipment is being used in the working face of the landfill. Additionally, watering will not take place during periods of precipitation and when the ambient air temperature is low enough to cause icing.

Table 6: Fugitive Dust Control Measures
Landfill Transfer to Working Face

Emission Point ID	Transfer Description	Control Method
NA	Transfer to Working Face	None

Monitoring of Fugitive Dust Control Effectiveness

The Plant’s Part 70 air operating permit requires that daily visible emissions notations (VENs) of the plant roadways be performed once per day by a person familiar with normal conditions. The VENs specified in the permit will be the primary method of monitoring the effectiveness of the fugitive dust control measures. If an abnormal notation is observed, corrective action of temporarily increased watering frequency in the vicinity of the abnormal notation will be immediately implemented. In addition, water truck operators will be instructed to observe the roads during watering operations. If the water truck operators observe that areas of roadways visually appear to be completely dry prior to water application, water application frequency will be temporarily increased until residual dampness of the road surface is observed.

Schedule of Compliance

The above fugitive dust control measures will be implemented upon the commencement of operation of above listed facilities.

Attachment B – Acid Rain Permit

Indiana Department of Environmental Management

Office of Air Quality

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204-2251
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TITLE IV (ACID RAIN) PERMIT RENEWAL
OFFICE OF AIR QUALITY

Indiana-Kentucky Electric Corporation (IKEC)
Clifty Creek Generating Station
P. O. Box 97, State Route 56 West, Madison, Indiana 47250

ORIS: 983

This permit is issued under the provisions of 326 Indiana Administrative Code (IAC) 21 with conditions listed on the attached pages.

Operation Permit No.: AR 077-18761-00001	
Issued by: Nisha Sizemore, Permits Branch Chief Office of Air Quality	Issuance Date: Expiration Date:

Title IV Operating Conditions

Title IV Source Description:

(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). Units 1 through 5 each have a selective catalytic reduction (SCR) system and over-fire air system for NO_X control. Units 1, 2, and 3 exhaust to stack 1. Units 4 and 5 exhaust to stack 2. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery. Stacks 1 and 2 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). NO_X emissions are reduced by an over-fire air system. Unit 6 exhausts to stack 2. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery. Stack 2 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(The information contained in this box is descriptive information and does not constitute enforceable conditions.)

1. Statutory and Regulatory Authorities

In accordance with IC 13-17-3-4 and IC 13-17-3-11 as well as Titles IV and V of the Clean Air Act, the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) issues this permit pursuant to 326 IAC 2 and 326 IAC 21 (incorporates by reference 40 Code of Federal Regulations (CFR) 72 through 78).

2. Standard Permit Requirements [326 IAC 21]

(a) The designated representative has submitted a complete acid rain permit application in accordance with 40 CFR 72.30.

(b) The owners and operators of each affected source and each affected unit shall operate Units 1, 2, 3, 4, 5, and 6 in compliance with this permit.

3. Monitoring Requirements [326 IAC 21]

(a) The owners and operators and, to the extent applicable, the designated representative of Units 1, 2, 3, 4, 5, and 6 shall comply with the monitoring requirements as provided in 40 CFR 75 and 76.

(b) The emissions measurements recorded and reported in accordance with 40 CFR 75 and 76 shall be used to determine compliance by Units 1, 2, 3, 4, 5, and 6 with the acid rain emissions limitations and emissions reduction requirements for sulfur dioxide and nitrogen oxides under the Acid Rain Program.

(c) The requirements of 40 CFR 75 and 76 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at Units 1, 2, 3, 4, 5, and 6 under other applicable requirements of the Clean Air Act and other provisions of the operating permit for the source.

4. Sulfur Dioxide Requirements [326 IAC 21]

(a) The owners and operators of each source and each affected unit at the source shall:

(1) Hold allowances, as of the allowance transfer deadline (as defined in 40 CFR 72.2), in the compliance subaccount of Units 1, 2, 3, 4, 5, and 6, after deductions under 40 CFR 73.34(c), not less than the total annual emissions of sulfur dioxide for the previous calendar year from Units 1, 2, 3, 4, 5, and 6; and,

(2) Comply with the applicable acid rain emissions limitations for sulfur dioxide.

(b) Each ton of sulfur dioxide emitted in excess of the acid rain emissions limitations for sulfur dioxide shall constitute a separate violation of the Clean Air Act.

(c) Units 1, 2, 3, 4, 5, and 6 shall be subject to the requirements under paragraph 4(a) of the sulfur dioxide requirements as follows:

(1) Starting January 1, 2000, an affected unit under 40 CFR 72.6(a)(2); or,

(2) Starting on the latter of January 1, 2000, or the deadline for monitor certification under 40 CFR 75, an affected unit under 40 CFR 72.6(a)(3).

(d) Allowances shall be held in, deducted from, or transferred among Allowance Tracking System accounts in accordance with the Acid Rain Program.

(e) An allowance shall not be deducted in order to comply with the requirements under paragraph 4(a) of the sulfur dioxide requirements prior to the calendar year for which the allowance was allocated.

(f) An allowance allocated by the U.S. EPA under the Acid Rain Program is a limited authorization to emit sulfur dioxide in accordance with the Acid Rain Program. No provision of the Acid Rain Program, the acid rain permit application, the acid rain permit, the acid rain portion of an operating permit, or the written exemption under 40 CFR 72.7 and 72.8 and 326 IAC 21, and no provision of law shall be construed to limit the authority of the United States to terminate or limit such authorization.

(g) An allowance allocated by U.S. EPA under the Acid Rain Program does not constitute a property right.

(h) No permit revision may be required for increases in emissions that are authorized by allowances acquired pursuant to the Acid Rain Program, provided that the increases do not require a permit revision under any other applicable requirement. [326 IAC 2-7-5(4)(A)]

(i) No limit shall be placed on the number of allowances held by an affected source. An affected source may not, however, use allowances as a defense to noncompliance with any applicable requirement other than the requirements of the Acid Rain Program. [326 IAC 2-7-5(4)(B)]

(j) Sulfur dioxide allowances shall be allocated to each unit at the source as follows:

SO_2 Annual Allowance Allocations (tons)					
Year:	2005	2006	2007	2008	2009
Unit 1	8,462*	8,462*	8,462*	8,462*	8,462*
Unit 2	8,321*	8,321*	8,321*	8,321*	8,321*
Unit 3	8,570*	8,570*	8,570*	8,570*	8,570*
Unit 4	8,431*	8,431*	8,431*	8,431*	8,431*
Unit 5	8,129*	8,129*	8,129*	8,129*	8,129*
Unit 6	8,557*	8,557*	8,557*	8,557*	8,557*

* The number of allowances allocated to Phase II affected units by U.S. EPA may change in a revision to 40 CFR 73 Tables 2, 3 and 4 and 326 IAC 21. In addition, the number of allowances actually held by an affected source in a unit account may differ from the number allocated by U.S. EPA. Neither of the aforementioned

conditions necessitates a revision to the unit SO_2 allowance allocations identified in this permit. (See 40 CFR 72.84)

5. Nitrogen Oxides Requirements [326 IAC 21]

(a) The owners and operators of the source and each affected unit at the source shall comply with the applicable acid rain emissions limitation of nitrogen oxides (NO_X) for Units 1, 2, 3, 4, 5, and 6.

(b) NO_X Emission Averaging Plan for Unit 1:

(1) Pursuant to 40 CFR 76.11, the Indiana Department of Environmental Management, Office of Air Quality approves a NO_X emission averaging plan for Unit 1**,** effective for calendar years 2005 through 2009. Under this plan, the combined actual BTU-weighted annual average NO_X emission rates from the common stacks serving Units 1 through 6 at the Indiana-Kentucky Electric Corporation's Clifty Creek Station and the common stack serving Units 1 through 5 at the Ohio Valley Electric Corporation's Kyger Creek Station shall not exceed 0.84 lb/MMBtu.

(2) The owner or operator must annually demonstrate that Unit 1 meets the NO_X emission limit of 0.84 lb/MMBtu by showing that emissions at the common stack (through which emissions from Units 1, 2 and 3 are vented) meet such limit, based upon the data from certified continuous emission monitoring systems (CEMS) at common stack 1. CEMS certification must be performed in accordance with the requirements and specifications delineated at 40 CFR 75.

(c) NO_X Emission Averaging Plan for Unit 2:

(1) Pursuant to 40 CFR 76.11, the Indiana Department of Environmental Management, Office of Air Quality approves a NO_X emission averaging plan for Unit 2**,** effective for calendar years 2005 through 2009. Under this plan, the combined actual BTU-weighted annual average NO_X emission rates from the common stacks serving Units 1 through 6 at the Indiana-Kentucky Electric Corporation's Clifty Creek Station and the common stack serving Units 1 through 5 at the Ohio Valley Electric Corporation's Kyger Creek Station shall not exceed 0.84 lb/MMBtu.

(2) The owner or operator must annually demonstrate that Unit 2 meets the NO_X emission limit of 0.84 lb/MMBtu by showing that emissions at the common stack (through which emissions from Units 1, 2 and 3 are vented) meet such limit, based upon the data from certified continuous emission monitoring systems (CEMS) at common stack 1. CEMS certification must be performed in accordance with the requirements and specifications delineated at 40 CFR 75.

(d) NO_X Emission Averaging Plan for Unit 3:

(1) Pursuant to 40 CFR 76.11, the Indiana Department of Environmental Management, Office of Air Quality approves a NO_X emission averaging plan for Unit 3**,** effective for calendar years 2005 through 2009. Under this plan, the combined actual BTU-weighted annual average NO_X emission rates from the common stacks serving Units 1 through 6 at the Indiana-Kentucky Electric Corporation's Clifty Creek Station and the common stack serving Units 1 through 5 at the Ohio Valley Electric Corporation's Kyger Creek Station shall not exceed 0.84 lb/MMBtu.

(2) The owner or operator must annually demonstrate that Unit 3 meets the NO_X emission limit of 0.84 lb/MMBtu by showing that emissions at the common stack (through which emissions from Units 1, 2 and 3 are vented) meet such limit, based upon the data from certified continuous emission monitoring systems

(CEMS) at common stack 1. CEMS certification must be performed in accordance with the requirements and specifications delineated at 40 CFR 75.

(e) NO_X Emission Averaging Plan for Unit 4:

(1) Pursuant to 40 CFR 76.11, the Indiana Department of Environmental Management, Office of Air Quality approves a NO_X emission averaging plan for Unit 4**,** effective for calendar years 2005 through 2009. Under this plan, the combined actual BTU-weighted annual average NO_X emission rates from the common stacks serving Units 1 through 6 at the Indiana-Kentucky Electric Corporation's Clifty Creek Station and the common stack serving Units 1 through 5 at the Ohio Valley Electric Corporation's Kyger Creek Station shall not exceed 0.84 lb/MMBtu.

(2) The owner or operator must annually demonstrate that Unit 4 meets the NO_X emission limit of 0.84 lb/MMBtu by showing that emissions at the common stack (through which all emissions from Units 4, 5, and 6 are vented) meet such limit, based upon the data from certified continuous emission monitoring systems (CEMS) at common stack 2. CEMS certification must be performed in accordance with the requirements and specifications delineated at 40 CFR 75.

(f) NO_X Emission Averaging Plan for Unit 5:

(1) Pursuant to 40 CFR 76.11, the Indiana Department of Environmental Management, Office of Air Quality approves a NO_X emission averaging plan for Unit 5**,** effective for calendar years 2005 through 2009. Under this plan, the combined actual BTU-weighted annual average NO_X emission rates from the common stacks serving Units 1 through 6 at the Indiana-Kentucky Electric Corporation's Clifty Creek Station and the common stack serving Units 1 through 5 at the Ohio Valley Electric Corporation's Kyger Creek Station shall not exceed 0.84 lb/MMBtu.

(2) The owner or operator must annually demonstrate that Unit 5 meets the NO_X emission limit of 0.84 lb/MMBtu by showing that emissions at the common stack (through which all emissions from Units 4, 5, and 6 are vented) meet such limit, based upon the data from certified continuous emission monitoring systems (CEMS) at common stack 2. CEMS certification must be performed in accordance with the requirements and specifications delineated at 40 CFR 75.

(g) NO_X Emission Averaging Plan for Unit 6:

(1) Pursuant to 40 CFR 76.11, the Indiana Department of Environmental Management, Office of Air Quality approves a NO_X emission averaging plan for Unit 6**,** effective for calendar years 2005 through 2009. Under this plan, the combined actual BTU-weighted annual average NO_X emission rates from the common stacks serving Units 1 through 6 at the Indiana-Kentucky Electric Corporation's Clifty Creek Station and the common stack serving Units 1 through 5 at the Ohio Valley Electric Corporation's Kyger Creek Station shall not exceed 0.84 lb/MMBtu.

(2) The owner or operator must annually demonstrate that Unit 6 meets the NO_X emission limit of 0.84 lb/MMBtu by showing that emissions at the common stack (through which emissions from Units 4, 5, and 6 are vented) meet such limit, based upon the data from certified continuous emission monitoring systems (CEMS) at common stack 2. CEMS certification must be performed in accordance with the requirements and specifications delineated at 40 CFR 75.

(h) Under the plan, the actual Btu-weighted annual average NO_X emission rate for Units 1, 2, 3, 4, 5, and 6 shall be less than or equal to the Btu-weighted annual average NO_X emission rate for the same units had they each been operated, during the same period of

time, in compliance with the applicable emission limitations under 40 CFR 76.5. If the designated representative demonstrates that the requirement of the prior sentence (as set forth in 40 CFR 76.11(d)(1)(ii)(A)) is met for a year under the plan, then Units 1, 2, 3, 4, 5, and 6 shall be deemed to be in compliance for that year with its alternative contemporaneous annual emission limitation and annual heat input limit.

(i) In accordance with 40 CFR 72.40(b)(2), approval of the averaging plan shall be final only when the Ohio Environmental Protection Agency has also approved this averaging plan.

(j) In addition to the described NO_X compliance plan, Units 1, 2, 3, 4, 5, and 6 shall comply with all other applicable requirements of 40 CFR 76, including the duty to reapply for a NO_X compliance plan and requirements covering excess emissions.

6. Excess Emissions Requirements [40 CFR 77] [326 IAC 21]

(a) If Unit 1, 2, 3, 4, 5, or 6 has excess emissions of sulfur dioxide in any calendar year, the designated representative shall submit a proposed offset plan to U.S. EPA and IDEM, OAQ as required under 40 CFR 77 and 326 IAC 21.

(b) The designated representative shall submit required information to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204-2251

and

Ms. Cecilia Mijares
Air and Radiation Division
U.S. Environmental Protection Agency, Region V
77 West Jackson Boulevard
Chicago, IL 60604-3590

and

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue, NW
Mail Code (6204N)
Washington, DC 20460

(c) If Unit 1, 2, 3, 4, 5, or 6 has excess emissions, as defined in 40 CFR 72.2, in any calendar year the owners and operators shall:

(1) Pay to U.S. EPA without demand the penalty required, and pay to U.S. EPA upon demand the interest on that penalty, as required by 40 CFR 77 and 326 IAC 21; and,

(2) Comply with the terms of an approved sulfur dioxide offset plan, as required by 40 CFR 77 and 326 IAC 21.

7. Record Keeping and Reporting Requirements [326 IAC 21]

(a) Unless otherwise provided, the owners and operators of the source and each affected unit at the source shall keep on site each of the following documents for a period of 5 years, as required by 40 CFR 72.9(f), from the date the document is created. This period may be extended for cause, at any time prior to the end of the 5 years, in writing by U.S. EPA or IDEM, OAQ:

(1) The certificate of representation for the designated representative of Units 1, 2, 3, 4, 5, and 6 and all documents that demonstrate the truth of the statements in the

certificate of representation, in accordance with 40 CFR 72.24; provided that the certificate and documents shall be retained on site at the source beyond such 5 year period until such documents are superseded because of the submission of a new certificate of representation changing the designated representative;

(2) All emissions monitoring information collected in accordance with 40 CFR 75 shall be retained on site for 3 years;

(3) Copies of all reports, compliance certifications, and other submissions and all records made or required under the Acid Rain Program; and,

(4) Copies of all documents used to complete an acid rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.

(b) The designated representative of Units 1, 2, 3, 4, 5, and 6 shall submit the reports and compliance certifications required under the Acid Rain Program, including those under 40 CFR 72.90, Subpart I, 40 CFR 75, and 326 IAC 21. The required information is to be submitted to the appropriate authority(ies) as specified in 40 CFR 72.90, Subpart I, and 40 CFR 75.

8. Submissions [326 IAC 21]

(a) The designated representative of Units 1, 2, 3, 4, 5, and 6 shall submit a certificate of representation, and any superseding certificate of representation, to U.S. EPA and IDEM, OAQ in accordance with 40 CFR 72 and 326 IAC 21.

(b) The designated representative shall submit required information to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204-2251

and

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue, NW
Mail Code (6204N)
Washington, DC 20460

(c) Each such submission under the Acid Rain Program shall be submitted, signed and certified by the designated representative for all sources on behalf of which the submission is made.

(d) In each submission under the Acid Rain Program, the designated representative shall certify, by his or her signature, the following statements which shall be included verbatim in the submission:

(1) “I am authorized to make this submission on behalf of the owners and operators of the affected source or affected units for which the submission is made.”; and,

(2) “I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.”

(e) The designated representative of Units 1, 2, 3, 4, 5, and 6 shall notify each owner and operator of the source and of an affected unit at the source:

(1) By the date of submission, of any Acid Rain Program submissions by the designated representative;

(2) Within 10 business days of receipt of any written determination by U.S. EPA or IDEM, OAQ; and,

(3) Provided that the submission or determination covers Unit 1, 2, 3, 4, 5, or 6.

(f) The designated representative of Units 1, 2, 3, 4, 5, and 6 shall provide each owner and operator of an affected unit at the source a copy of any submission or determination under paragraph 8(e), unless the owner or operator expressly waives the right to receive a copy.

9. Severability [326 IAC 21]

Invalidation of the acid rain portion of an operating permit does not affect the continuing validity of the rest of the operating permit, nor shall invalidation of any other portion of the operating permit affect the continuing validity of the acid rain portion of the permit. [40 CFR 72.72(b), 326 IAC 21, and 326 IAC 2-7-5(5)]

10. Liability [326 IAC 21]

(a) Any person who knowingly violates any requirement or prohibition of the Acid Rain Program, an acid rain permit, an acid rain portion of an operation permit, or a written exemption under 40 CFR 72.7 or 72.8, including any requirement for the payment of any penalty owed to the United States, shall be subject to enforcement by U.S. EPA pursuant to Section 113(c) of the Clean Air Act and shall be subject to enforcement by IDEM pursuant to 326 IAC 21 and IC 13-30-3.

(b) Any person who knowingly makes a false, material statement in any record, submission, or report under the Acid Rain Program shall be subject to criminal enforcement pursuant to Section 113(c) of the Clean Air Act, 18 U.S.C. 1001 and IDEM pursuant to 326 IAC 21 and IC 13-30-6-2.

(c) No permit revision shall excuse any violation of the requirements of the Acid Rain Program that occurs prior to the date that the revision takes effect.

(d) Units 1, 2, 3, 4, 5, and 6 shall meet the requirements of the Acid Rain Program.

(e) Any provision of the Acid Rain Program that applies to Unit 1, 2, 3, 4, 5, or 6, including a provision applicable to the designated representative of Unit 1, 2, 3, 4, 5, or 6 shall also apply to the owners and operators of such source and of the affected units at the source.

(f) Any provision of the Acid Rain Program that applies to Unit 1, 2, 3, 4, 5, or 6, including a provision applicable to the designated representative, shall also apply to the owners and operators of such unit. Except as provided under 40 CFR 72.44 (Phase II repowering extension plans) and 40 CFR 76.11 (NO_X averaging plans), and except with regard to the requirements applicable to units with a common stack under 40 CFR 75, including 40 CFR 75.16, 75.17, and 75.18, the owners and operators and the designated representative of one affected unit shall not be liable for any violation by any other affected unit of which they are not owners or operators or the designated representative and that is located at a source of which they are not owners or operators or the designated representative.

(g) Each violation of a provision of 40 CFR Parts 72, 73, 75, 76, 77, and 78 by Unit 1, 2, 3, 4, 5, or 6, or by an owner or operator or designated representative shall be a separate violation of the Clean Air Act.

11. Effect on Other Authorities [326 IAC 21]

No provision of the Acid Rain Program, an acid rain permit application, an acid rain permit, an acid rain portion of an operation permit, or a written exemption under 40 CFR 72.7 or 72.8 shall be construed as:

(a) Except as expressly provided in Title IV of the Clean Air Act (42 USC 7651 to 7651(o)), exempting or excluding the owners and operators and, to the extent applicable, the designated representative of Unit 1, 2, 3, 4, 5, or 6 from compliance with any other provision of the Clean Air Act, including the provisions of Title I of the Clean Air Act relating to applicable National Ambient Air Quality Standards or State Implementation Plans;

(b) Limiting the number of allowances a unit can hold; provided, that the number of allowances held by the unit shall not affect the source's obligation to comply with any other provisions of the Clean Air Act;

(c) Requiring a change of any kind in any state law regulating electric utility rates and charges, affecting any state law regarding such state regulation, or limiting such state regulation, including any prudence review requirements under such state law;

(d) Modifying the Federal Power Act (16 USC 791(a) et seq.) or affecting the authority of the Federal Energy Regulatory Commission under the Federal Power Act; or,

(e) Interfering with or impairing any program for competitive bidding for power supply in a state in which such a program is established.

Attachment C – Applicable Portions of the Standards of Performance for Nonmetallic Mineral Processing Plants [40 CFR Part 60, Subpart OOO] [326 IAC 12]

Source Description and Location

Source Name:	Indiana-Kentucky Electric Corp. – Clifty Creek Station
Source Location:	S.R. 56 West, Madison, Indiana, 47250
Source Mailing Address:	P. O. Box 468, Piketon, Ohio 45661
Responsible Official:	Donald T. Fulkerson – Environmental Affairs Director
County:	Jefferson
SIC Code:	4911
Operation Permit No.:	T 077-7168-00001
Operation Permit Issuance Date:	October 18, 2006
Significant Source Modification No.:	077-24277-00001
Significant Permit Modification No.:	077-24304-00001
Permit Reviewer:	Kimberly Cottrell

One-Time Deadlines Relating to NSPS [40 CFR Part 60, Subpart OOO]

The Permittee shall comply with the provisions of the Standards of Performance for Nonmetallic Mineral Processing Plants, 40 CFR Part 60, Subpart OOO, for limestone processing operations no later than 60-180 days after startup of the affected emission points of the Limestone Processing (LP) System.

Applicable Portions of the NSPS

§ 60.670 Applicability and designation of affected facility.

(a)(1) Except as provided in paragraphs (a)(2), (b), (c), and (d) of this section, the provisions of this subpart are applicable to the following affected facilities in fixed or portable nonmetallic mineral processing plants: each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station. Also, crushers and grinding mills at hot mix asphalt facilities that reduce the size of nonmetallic minerals embedded in recycled asphalt pavement and subsequent affected facilities up to, but not including, the first storage silo or bin are subject to the provisions of this subpart.

(d)(1) When an existing facility is replaced by a piece of equipment of equal or smaller size, as defined in §60.671, having the same function as the existing facility, the new facility is exempt from the provisions of §§60.672, 60.674, and 60.675 except as provided for in paragraph (d)(3) of this section.

(2) An owner or operator complying with paragraph (d)(1) of this section shall submit the information required in §60.676(a).

(3) An owner or operator replacing all existing facilities in a production line with new facilities does not qualify for the exemption described in paragraph (d)(1) of this section and must comply with the provisions of §§60.672, 60.674 and 60.675.

(e) An affected facility under paragraph (a) of this section that commences construction, reconstruction, or modification after August 31, 1983 is subject to the requirements of this part.

(f) Table 1 of this subpart specifies the provisions of subpart A of this part 60 that apply and those that do not apply to owners and operators of affected facilities subject to this subpart.

Table 1: Applicability of Subpart A to Subpart OOO

Subpart A reference	Applies to Subpart OOO	Comment
60.1, Applicability	Yes	
60.2, Definitions	Yes	
60.3, Units and abbreviations	Yes	
60.4, Address:		
(a)	Yes	
(b)	Yes	
60.5, Determination of construction or modification	Yes	
60.6, Review of plans	Yes	
60.7, Notification and recordkeeping	Yes	Except in (a)(2) report of anticipated date of initial startup is not required (§ 60.676(h)).
60.8, Performance tests	Yes	Except in (d), after 30 days notice for an initially scheduled performance test, any rescheduled performance test requires 7 days notice, not 30 days (§ 60.675(g)).
60.9, Availability of information	Yes	
60.10, State authority	Yes	
60.11, Compliance with standards and maintenance requirements.	Yes	Except in (b) under certain conditions (§§ 60.675 (c)(3) and (c)(4)), Method 9 observation may be reduced from 3 hours to 1 hour. Some affected facilities exempted from Method 9 tests (§ 60.675(h)).
60.12, Circumvention	Yes	
60.13, Monitoring requirements	Yes	
60.14, Modification	Yes	
60.15, Reconstruction	Yes	
60.16, Priority list	Yes	
60.17, Incorporations by reference	Yes	
60.18, General control device	No	Flares will not be used to comply with the emission limits.
60.19, General notification and reporting requirements.	Yes	

§ 60.671 Definitions.

All terms used in this subpart, but not specifically defined in this section, shall have the meaning given them in the Act and in subpart A of this part.

Bagging operation means the mechanical process by which bags are filled with nonmetallic minerals.

Belt conveyor means a conveying device that transports material from one location to another by means of an endless belt that is carried on a series of idlers and routed around a pulley at each end.

Bucket elevator means a conveying device of nonmetallic minerals consisting of a head and foot assembly which supports and drives an endless single or double strand chain or belt to which buckets are attached.

Building means any frame structure with a roof.

Capacity means the cumulative rated capacity of all initial crushers that are part of the plant.

Capture system means the equipment (including enclosures, hoods, ducts, fans, dampers, etc.) used to capture and transport particulate matter generated by one or more process operations to a control device.

Control device means the air pollution control equipment used to reduce particulate matter emissions released to the atmosphere from one or more process operations at a nonmetallic mineral processing plant.

Conveying system means a device for transporting materials from one piece of equipment or location to another location within a plant. Conveying systems include but are not limited to the following: Feeders, belt conveyors, bucket elevators and pneumatic systems.

Crusher means a machine used to crush any nonmetallic minerals, and includes, but is not limited to, the following types: jaw, gyratory, cone, roll, rod mill, hammermill, and impactor.

Enclosed truck or railcar loading station means that portion of a nonmetallic mineral processing plant where nonmetallic minerals are loaded by an enclosed conveying system into enclosed trucks or railcars.

Fixed plant means any nonmetallic mineral processing plant at which the processing equipment specified in §60.670(a) is attached by a cable, chain, turnbuckle, bolt or other means (except electrical connections) to any anchor, slab, or structure including bedrock.

Fugitive emission means particulate matter that is not collected by a capture system and is released to the atmosphere at the point of generation.

Grinding mill means a machine used for the wet or dry fine crushing of any nonmetallic mineral. Grinding mills include, but are not limited to, the following types: hammer, roller, rod, pebble and ball, and fluid energy. The grinding mill includes the air conveying system, air separator, or air classifier, where such systems are used.

Initial crusher means any crusher into which nonmetallic minerals can be fed without prior crushing in the plant.

Nonmetallic mineral means any of the following minerals or any mixture of which the majority is any of the following minerals:

(a) Crushed and Broken Stone, including Limestone, Dolomite, Granite, Traprock, Sandstone, Quartz, Quartzite, Marl, Marble, Slate, Shale, Oil Shale, and Shell.

(b) Sand and Gravel.

(c) Clay including Kaolin, Fireclay, Bentonite, Fuller's Earth, Ball Clay, and Common Clay.

(d) Rock Salt.

(e) Gypsum.

(f) Sodium Compounds, including Sodium Carbonate, Sodium Chloride, and Sodium Sulfate.

(g) Pumice.

(h) Gilsonite.

(i) Talc and Pyrophyllite.

(j) Boron, including Borax, Kernite, and Colemanite.

(k) Barite.

(l) Fluorospar.

(m) Feldspar.

(n) Diatomite.

(o) Perlite.

(p) Vermiculite.

(q) Mica.

(r) Kyanite, including Andalusite, Sillimanite, Topaz, and Dumortierite.

Nonmetallic mineral processing plant means any combination of equipment that is used to crush or grind any nonmetallic mineral wherever located, including lime plants, power plants, steel mills, asphalt concrete plants, portland cement plants, or any other facility processing nonmetallic minerals except as provided in §60.670 (b) and (c).

Portable plant means any nonmetallic mineral processing plant that is mounted on any chassis or skids and may be moved by the application of a lifting or pulling force. In addition, there shall be no cable, chain, turnbuckle, bolt or other means (except electrical connections) by which any piece of equipment is attached or clamped to any anchor, slab, or structure, including bedrock that must be removed prior to the application of a lifting or pulling force for the purpose of transporting the unit.

Production line means all affected facilities (crushers, grinding mills, screening operations, bucket elevators, belt conveyors, bagging operations, storage bins, and enclosed truck and railcar loading stations) which are directly connected or are connected together by a conveying system.

Screening operation means a device for separating material according to size by passing undersize material through one or more mesh surfaces (screens) in series, and retaining oversize material on the mesh surfaces (screens).

Size means the rated capacity in tons per hour of a crusher, grinding mill, bucket elevator, bagging operation, or enclosed truck or railcar loading station; the total surface area of the top screen of a screening operation; the width of a conveyor belt; and the rated capacity in tons of a storage bin.

Stack emission means the particulate matter that is released to the atmosphere from a capture system.

Storage bin means a facility for storage (including surge bins) or nonmetallic minerals prior to further processing or loading.

Transfer point means a point in a conveying operation where the nonmetallic mineral is transferred to or from a belt conveyor except where the nonmetallic mineral is being transferred to a stockpile.

Truck dumping means the unloading of nonmetallic minerals from movable vehicles designed to transport nonmetallic minerals from one location to another. Movable vehicles include but are not limited to: trucks, front end loaders, skip hoists, and railcars.

Vent means an opening through which there is mechanically induced air flow for the purpose of exhausting from a building air carrying particulate matter emissions from one or more affected facilities.

Wet mining operation means a mining or dredging operation designed and operated to extract any nonmetallic mineral regulated under this subpart from deposits existing at or below the water table, where the nonmetallic mineral is saturated with water.

Wet screening operation means a screening operation at a nonmetallic mineral processing plant which removes unwanted material or which separates marketable fines from the product by a washing process which is designed and operated at all times such that the product is saturated with water.

§ 60.672 Standard for particulate matter.

(a) On and after the date on which the performance test required to be conducted by §60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any transfer point on belt conveyors or from any other affected facility any stack emissions which:

(1) Contain particulate matter in excess of 0.05 g/dscm (0.022 gr/dscf); and

(b) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.11 of this part, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any transfer point on belt conveyors or from any other affected facility any fugitive emissions which exhibit greater than 10 percent opacity, except as provided in paragraphs (c), (d), and (e) of this section.

(d) Truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section.

(e) If any transfer point on a conveyor belt or any other affected facility is enclosed in a building, then each enclosed affected facility must comply with the emission limits in paragraphs (a), (b) and (c) of this section, or the building enclosing the affected facility or facilities must comply with the following emission limits:

(1) No owner or operator shall cause to be discharged into the atmosphere from any building enclosing any transfer point on a conveyor belt or any other affected facility any visible fugitive emissions except emissions from a vent as defined in §60.671.

(2) No owner or operator shall cause to be discharged into the atmosphere from any vent of any building enclosing any transfer point on a conveyor belt or any other affected facility emissions which exceed the stack emissions limits in paragraph (a) of this section.

(f) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup as required under §60.11 of this part, no owner or operator shall cause to be discharged into the atmosphere from any baghouse that controls emissions from only an individual, enclosed storage bin, stack emissions which exhibit greater than 7 percent opacity.

(g) Owners or operators of multiple storage bins with combined stack emissions shall comply with the emission limits in paragraph (a)(1) and (a)(2) of this section.

(h) On and after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup, no owner or operator shall cause to be discharged into the atmosphere any visible emissions from:

(1) Wet screening operations and subsequent screening operations, bucket elevators, and belt conveyors that process saturated material in the production line up to the next crusher, grinding mill or storage bin.

§ 60.673 Reconstruction.

(a) The cost of replacement of ore-contact surfaces on processing equipment shall not be considered in calculating either the “fixed capital cost of the new components” or the “fixed capital cost that would be required to construct a comparable new facility” under §60.15. Ore-contact surfaces are crushing surfaces; screen meshes, bars, and plates; conveyor belts; and elevator buckets.

(b) Under §60.15, the “fixed capital cost of the new components” includes the fixed capital cost of all depreciable components (except components specified in paragraph (a) of this section) which are or will be replaced pursuant to all continuous programs of component replacement commenced within any 2-year period following August 31, 1983.

§ 60.675 Test methods and procedures.

(a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in Appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b). Acceptable alternative methods and procedures are given in paragraph (e) of this section.

(b) The owner or operator shall determine compliance with the particulate matter standards in §60.672(a) as follows:

(1) Method 5 or Method 17 shall be used to determine the particulate matter concentration. The sample volume shall be at least 1.70 dscm (60 dscf). For Method 5, if the gas stream being sampled is at ambient temperature, the sampling probe and filter may be operated without heaters. If the gas stream is above ambient temperature, the sampling probe and filter may be operated at a temperature high enough, but no higher than 121 °C (250 °F), to prevent water condensation on the filter.

(2) Method 9 and the procedures in §60.11 shall be used to determine opacity.

(c)(1) In determining compliance with the particulate matter standards in §60.672 (b) and (c), the owner or operator shall use Method 9 and the procedures in §60.11, with the following additions:

(i) The minimum distance between the observer and the emission source shall be 4.57 meters (15 feet).

(ii) The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources (e.g., road dust). The required observer position relative to the sun (Method 9, Section 2.1) must be followed.

(iii) For affected facilities using wet dust suppression for particulate matter control, a visible mist is sometimes generated by the spray. The water mist must not be confused with particulate matter emissions and is not to be considered a visible emission. When a water mist of this nature is present, the observation of emissions is to be made at a point in the plume where the mist is no longer visible.

(2) In determining compliance with the opacity of stack emissions from any baghouse that controls emissions only from an individual enclosed storage bin under §60.672(f) of this subpart, using Method 9, the duration of the Method 9 observations shall be 1 hour (ten 6-minute averages).

(3) When determining compliance with the fugitive emissions standard for any affected facility described under §60.672(b) of this subpart, the duration of the Method 9 observations may be reduced from 3 hours (thirty 6-minute averages) to 1 hour (ten 6-minute averages) only if the following conditions apply:

(i) There are no individual readings greater than 10 percent opacity; and

(ii) There are no more than 3 readings of 10 percent for the 1-hour period.

(4) When determining compliance with the fugitive emissions standard for any crusher at which a capture system is not used as described under §60.672(c) of this subpart, the duration of the Method 9 observations may be reduced from 3 hours (thirty 6-minute averages) to 1 hour (ten 6-minute averages) only if the following conditions apply:

(i) There are no individual readings greater than 15 percent opacity; and

(ii) There are no more than 3 readings of 15 percent for the 1-hour period.

(d) In determining compliance with §60.672(e), the owner or operator shall use Method 22 to determine fugitive emissions. The performance test shall be conducted while all affected facilities inside the building are operating. The performance test for each building shall be at least 75 minutes in duration, with each side of the building and the roof being observed for at least 15 minutes.

(e) The owner or operator may use the following as alternatives to the reference methods and procedures specified in this section:

(1) For the method and procedure of paragraph (c) of this section, if emissions from two or more facilities continuously interfere so that the opacity of fugitive emissions from an individual affected facility cannot be read, either of the following procedures may be used:

(i) Use for the combined emission stream the highest fugitive opacity standard applicable to any of the individual affected facilities contributing to the emissions stream.

(ii) Separate the emissions so that the opacity of emissions from each affected facility can be read.

(f) To comply with §60.676(d), the owner or operator shall record the measurements as required in §60.676(c) using the monitoring devices in §60.674 (a) and (b) during each particulate matter run and shall determine the averages.

(g) If, after 30 days notice for an initially scheduled performance test, there is a delay (due to operational problems, etc.) in conducting any rescheduled performance test required in this section, the owner or operator of an affected facility shall submit a notice to the Administrator at least 7 days prior to any rescheduled performance test.

(h) Initial Method 9 performance tests under §60.11 of this part and §60.675 of this subpart are not required for:

(1) Wet screening operations and subsequent screening operations, bucket elevators, and belt conveyors that process saturated material in the production line up to, but not including the next crusher, grinding mill or storage bin.

(2) Screening operations, bucket elevators, and belt conveyors in the production line downstream of wet mining operations, that process saturated materials up to the first crusher, grinding mill, or storage bin in the production line.

§ 60.676 Reporting and recordkeeping.

(a) Each owner or operator seeking to comply with §60.670(d) shall submit to the Administrator the following information about the existing facility being replaced and the replacement piece of equipment.

(1) For a crusher, grinding mill, bucket elevator, bagging operation, or enclosed truck or railcar loading station:

(i) The rated capacity in megagrams or tons per hour of the existing facility being replaced and

(ii) The rated capacity in tons per hour of the replacement equipment.

(3) For a conveyor belt:

(i) The width of the existing belt being replaced and

(ii) The width of the replacement conveyor belt.

(4) For a storage bin:

(i) The rated capacity in megagrams or tons of the existing storage bin being replaced and

(ii) The rated capacity in megagrams or tons of replacement storage bins.

(f) The owner or operator of any affected facility shall submit written reports of the results of all performance tests conducted to demonstrate compliance with the standards set forth in §60.672 of this subpart, including reports of opacity observations made using Method 9 to demonstrate compliance with §60.672(b), (c), and (f), and reports of observations using Method 22 to demonstrate compliance with §60.672(e).

(g) The owner or operator of any screening operation, bucket elevator, or belt conveyor that processes saturated material and is subject to §60.672(h) and subsequently processes unsaturated materials, shall submit a report of this change within 30 days following such change. This screening operation, bucket elevator, or belt conveyor is then subject to the 10 percent opacity limit in §60.672(b) and the emission test requirements of §60.11 and this subpart. Likewise a screening operation, bucket elevator, or belt conveyor that processes unsaturated material but subsequently processes saturated material shall submit a report of this change within 30 days following such change. This screening operation, bucket elevator, or belt conveyor is then subject to the no visible emission limit in §60.672(h).

(h) The subpart A requirement under §60.7(a)(2) for notification of the anticipated date of initial startup of an affected facility shall be waived for owners or operators of affected facilities regulated under this subpart.

(i) A notification of the actual date of initial startup of each affected facility shall be submitted to the Administrator.

(1) For a combination of affected facilities in a production line that begin actual initial startup on the same day, a single notification of startup may be submitted by the owner or operator to the Administrator. The notification shall be postmarked within 15 days after such date and shall include a description of each affected facility, equipment manufacturer, and serial number of the equipment, if available.

(j) The requirements of this section remain in force until and unless the Agency, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such States. In that event, affected facilities within the State will be relieved of the obligation to comply with the reporting requirements of this section, provided that they comply with requirements established by the State.

Indiana Department of Environmental Management
Office of Air Quality

Addendum to the Technical Support Document (TSD) for a Significant Source Modification and Significant Permit Modification

Source Description and Location

Source Name:	Indiana-Kentucky Electric Corp. – Clifty Creek Station
Source Location:	S.R. 56 West, Madison, Indiana, 47250
County:	Jefferson
SIC Code:	4911
Operation Permit No.:	T 077-7168-00001
Operation Permit Issuance Date:	October 18, 2006
Significant Source Modification No.:	077-24277-00001
Significant Permit Modification No.:	077-24304-00001
Permit Reviewer:	Kimberly Cottrell

Public Notice Information

On February 7, 2008, the Office of Air Quality (OAQ) had a notice published in The Madison Courier in Madison, Indiana, stating that the Indiana-Kentucky Electric Corp. – Clifty Creek Station had applied for a significant modification to their Part 70 Operating Permit issued on October 18, 2006, to install and operate a flue gas desulfurization (FGD) system and associated limestone and gypsum material handling systems for Units 1 through 6. The notice also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

IKEC Comments and IDEM's Responses

On March 5, 2008, OAQ received comments from Donald T. Fulkerson, on behalf of Indiana-Kentucky Electric Corp. – Clifty Creek Station. The summary of the comments and IDEM, OAQ responses, including changes to the permit (language deleted is shown in ~~strikeout~~ and language added is shown in **bold**) are as follows:

IKEC Comment 1:

The Appendix A of the Technical Support Document that was attached to the Significant Permit Modification No. 077-24304-00001 is not correct. IKEC Requests that the Significant Permit Modification be proposed to U.S. EPA with the most recent version of the emissions calculations that was public noticed with the Significant Source Modification (No. 077-24277-00001).

IDEM Response 1:

IDEM agrees. The version of the Appendix A of the Technical Support Document that was public noticed with the Significant Source Modification No. 077-24277-00001 is the most current version of the emissions calculations; therefore, this version shall be proposed to the U.S. EPA for Significant Permit Modification No. 077-24304-00001.

Other Changes

Upon further review, the OAQ has decided to make the following revisions to the permit:

Change No. 1:

The testing requirements that currently apply to Stack 1 will apply to the new Stack 14. Since the proposed new stack is designed with a dual flue system, and the two flues will be identical, IDEM will allow testing to be conducted in the common flues (Flue 13 shared by Units 1, 2, and 3; Flue 46 shared by Units 4, 5, and 6). The testing methods and frequency will not change. The revised Testing Requirements are as follows:

~~D.1.4 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]~~

~~By December 31 of the second calendar year following the most recent stack test, or within 180 days after issuance of this permit, whichever is later, compliance with the PM limitation in Condition D.1.1 shall be determined by a performance stack test conducted using methods as approved by the Commissioner. This testing shall be repeated by December 31 of every second calendar year following this valid compliance demonstration. Testing may be conducted in the common stacks (Stack 1 shared by Units 1, 2, and 3, and Stack 2 shared by Units 4, 5, and 6). Testing shall be conducted with all units exhausting to the common stack in operation, or as otherwise approved by OAQ. Testing shall be conducted in accordance with Section C – Performance Testing.~~

~~For the purpose of this permit, "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.~~

D.1.4 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) Prior to installation of the Flue Gas Desulfurization (FGD) System:
By December 31, 2009, compliance with the PM limitation in Condition D.1.1 shall be determined by a performance stack test conducted using methods as approved by the Commissioner. Testing may be conducted in the common stacks (Stack 1 shared by Units 1, 2, and 3, and Stack 2 shared by Units 4, 5, and 6).

(b) After installation of the Flue Gas Desulfurization (FGD) System:
Within 180 days after startup of the Flue Gas Desulfurization (FGD) System, compliance with the PM limitation in Condition D.1.1 shall be determined by a performance stack test conducted using methods as approved by the Commissioner. Testing may be conducted in the common flues (Flue 13 shared by Units 1, 2, and 3; Flue 46 shared by Units 4, 5, and 6).

This testing shall be repeated by December 31 of every second calendar year following this valid compliance demonstration. Testing shall be conducted with all units exhausting to the common stack in operation, or as otherwise approved by OAQ. Testing shall be conducted in accordance with Section C – Performance Testing. For the purpose of this permit, "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

IDEM Contact

Questions regarding this proposed permit can be directed to Kimberly Cottrell at the Indiana Department Environmental Management, Office of Air Quality, MC 61-53, Room 1003, 100 North Senate Avenue, Indianapolis, Indiana 46204-2251 or by telephone at (317) 233-0870 or toll free at 1-800-451-6027 extension 3-0870.

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Part 70 Significant Source Modification and Significant Permit Modification

Source Description and Location

Source Name:	Indiana-Kentucky Electric Corp. – Clifty Creek Station
Source Location:	S.R. 56 West, Madison, Indiana, 47250
County:	Jefferson
SIC Code:	4911
Operation Permit No.:	T 077-7168-00001
Operation Permit Issuance Date:	October 18, 2006
Significant Source Modification No.:	077-24277-00001
Significant Permit Modification No.:	077-24304-00001
Permit Reviewer:	Kimberly Cottrell

Existing Approvals

The source was issued Part 70 Operating Permit No. 077-7168-00001 on October 18, 2006. The source has since received the following approvals:

(a) First Acid Rain Permit Renewal No.: 077-18761-00001, issued on October 18, 2006; and

(b) First Administrative Amendment No.: 077-23791-00001, issued on December 4, 2006.

County Attainment Status

The source is located in Jefferson County.

Table 1: County Attainment Status

Pollutant	Status
PM_{10}	attainment
$PM_{2.5}$	nonattainment
SO_2	attainment
NO_2	attainment
8-hour Ozone	attainment
CO	attainment
Lead	attainment

(a) Volatile organic compounds (VOC) and nitrogen oxides (NO_X) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NO_X emissions are considered when evaluating the rule applicability relating to ozone. Jefferson County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_X emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) U.S. EPA, in the Federal Register Notice 70 FR 943 dated January 5, 2005, has designated Jefferson County Madison Township as nonattainment for $PM_{2.5}$. On March 7, 2005 the Indiana Attorney General's Office, on behalf of IDEM, filed a law suit with the Court of Appeals for the District of Columbia Circuit challenging U.S. EPA's designation of nonattainment areas without sufficient data. However, in order to ensure that sources are not potentially liable for a violation of the Clean Air Act, the OAQ is following the U.S. EPA's guidance to regulate PM_{10} emissions as a surrogate for $PM_{2.5}$ emissions pursuant to the requirements of Emission Offset, 326 IAC 2-3.

(c) Jefferson County has been classified as attainment or unclassifiable for CO, PM_{10}, NO_2, SO_2, and Lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(d) Since this source is classified as a fossil fuel-fired steam electric plant of more than 250 MMBtu/hr heat input, it is considered one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1).

(e) Fugitive Emissions
Since this type of operation is in one of the twenty-eight (28) listed source categories under 326 IAC 2-2 or 326 IAC 2-3, fugitive emissions are counted toward the determination of PSD and Emission Offset applicability.

(f) On October 25, 2006, a final rule took effect revoking the one-hour ozone standard in Indiana.

Source Status

The table below summarizes the potential to emit of the entire source, prior to the proposed modification, after consideration of all enforceable limits established in the effective permits:

Table 2: Source Status PTE

Pollutant	**Emissions** (ton/yr)
PM	> 100
PM_{10}	> 100
SO_2	> 100
VOC	> 100
CO	> 100
NO_X	> 100

(a) This existing source is a major stationary source, under PSD (326 IAC 2-2), because a regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1).

(b) This existing source is a major stationary source, under Emission Offset (326 IAC 2-3), because $PM_{2.5}$, a nonattainment regulated pollutant, is emitted at a rate of 100 tons per year or more.

(c) These emissions are based upon the potential to emit stated in the Part 70 Operating Permit, T 077-7168-00001, issued on October 18, 2006.

The table below summarizes the potential to emit HAPs for the entire source, prior to the proposed modification, after consideration of all enforceable limits established in the effective permits:

Table 3: Source Status HAP PTE	
HAPs	**Potential To Emit** (ton/yr)
Acetaldehyde	< 10
Arsenic	< 10
Benzene	< 10
Benzyl Chloride	< 10
Cyanide	< 10
Hydrogen Chloride	**> 10**
Hydrogen Fluoride	**> 10**
Isophorone	< 10
Manganese	< 10
Methane	**> 10**
Methyl Chloride	< 10
Selenium	< 10
Total	**> 25**

Note: Only HAPS with Potential to Emit of 1 ton per year or more are listed.

This existing source is a major source of HAPs, as defined in 40 CFR 63.41, because HAP emissions are greater than ten (10) tons per year for a single HAP and greater than twenty-five (25) tons per year for a combination of HAPs. Therefore, this source is a major source under Section 112 of the Clean Air Act (CAA).

Actual Emissions

The following table shows the actual emissions from the source. This information reflects the 2005 OAQ emission data.

Table 4: Actual Emissions	
Pollutant	**Actual Emissions** (ton/yr)
CO	1,104.82
NO_X	22,620.94
PM	1339.06
PM_{10}	497.36
SO_2	74,659.00
VOC	154.54
HAP Cadmium	0.46

Table 4: Actual Emissions	
Pollutant	**Actual Emissions** (ton/yr)
HAP Lead	0.39
HAP Mercury	0.18
Total HAPs	1.03

Description of Proposed Modification

The Office of Air Quality (OAQ) has reviewed a modification application, submitted by Indiana-Kentucky Electric Corp. – Clifty Creek Station on February 2, 2007, relating to the installation and operation a flue gas desulfurization (FGD) system and associated limestone and gypsum handling systems for Units 1 through 6. The following is a list of the proposed and modified emission units and pollution control devices:

~~(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). Units 1 through 5 each have a selective catalytic reduction (SCR) system and over-fire air system for NO_X control, and each unit exhausts through a "cold-side" electrostatic precipitator (ESP) for control of particulate matter. SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. Units 1, 2, and 3 exhaust to stack 1. Units 4 and 5 exhaust to stack 2. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery. Stacks 1 and 2 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2) and continuous opacity monitoring (COM) systems.~~

~~(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). NO_X emissions are reduced by an over-fire air system. Unit 6 exhausts to stack 2 through a "hot-side" electrostatic precipitator (ESP) for control of particulate matter. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery. Stack 2 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2) and a continuous opacity monitoring (COM) system.~~

(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Units 1 through 5 have the following emission controls:

- **over-fire air system (NO_X control)**
- **selective catalytic reduction (SCR) system (NO_X control)**
- **"cold-side" electrostatic precipitator (ESP) (particulate control)**
- **flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008**

(1) Prior to installation of the FGD System:
Units 1, 2, and 3 exhaust to Stack 1. Units 4 and 5 exhaust to Stack 2. Stacks 1 and 2 have continuous opacity monitoring systems (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 1, 2, and 3 exhaust to Flue 13 of Stack 14. Units 4 and 5 exhaust to Flue 46 of Stack 14. Both Flue 13 and Flue 46 of Stack 14 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Unit 6 has the following emission controls:

- **over-fire air system (NO_X control)**
- **"hot-side" electrostatic precipitator (ESP) (particulate control)**
- **flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008**

(1) Prior to installation of the FGD System:
Unit 6 exhausts to Stack 2. Stack 2 has a continuous opacity monitoring system (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 6 exhausts to Flue 46 of Stack 14. Flue 46 of Stack 14 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

The Flue Gas Desulfurization (FGD) System for Units 1 through 6, permitted to be constructed in 2008, consists of one (1) stack (Stack 14) with two flues (Flues 13 and 46), two (2) jet bubbling reactor (JBR) absorbers (JBRs 13 and 46), and associated limestone and gypsum material handling systems.

(c) …

(d) Dry fly ash handling and disposal facilities, including the following:

(1) Dry fly ash handling system installed in 1990 and 1991, including pneumatic conveyance to two (2) main silos with a maximum design transfer rate of 40 tons per hour, rotary and dry unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant **paved and unpaved** haul roads to onsite disposal area or for transportation offsite.

(2) Two (2) additional dry fly ash storage silos (a.k.a truck bins) installed in 1994 and 1995 for unmarketable fly ash, including pneumatic conveyance to silos with a maximum design transfer rate of 40 tons per hour, rotary unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant **paved and unpaved** haul roads to onsite disposal area.

(e) Wet process **boiler slag** ~~bottom ash~~ handling, with hydroveyors conveying **the boiler slag** ~~ash~~ to **a** storage pond.

(f) One (1) Limestone Handling (LH) System, permitted to be constructed in 2008, with a maximum capacity of 1,000 tons per hour, consisting of one (1) barge unloader, one (1) barge unloading hopper and feeder, three (3) conveyors, two (2) transfer stations, and one (1) stacking tube and storage pile. Particulate emissions are controlled by partial to full enclosure and wet dust suppression.

(g) One (1) Limestone Processing (LP) System, permitted to be constructed in 2008, with a maximum transfer rate of 300 tons per hour, consisting of two (2) reclaim hoppers and feeders, one (1) reclaim conveyor, one (1) silo supply conveyor (a.k.a. transfer station), one (1) silo transfer conveyor, two (2) storage silos, two (2) ball mill feeders, two (2) wet ball mills, and one (1) emergency reclaim hopper and one (1) emergency conveyor (max cap of 10,000 TPY). Particulate emissions are controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors. The Limestone Processing (LP) System is an affected source under the Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR Part 60, Subpart OOO).

(h) One (1) Gypsum Handling (GH) System, permitted to be constructed in 2008, with a maximum capacity of 150 tons per hour, consisting of one (1) collecting conveyor, one (1) transfer conveyor, two (2) transfer stations, one (1) radial stackout conveyor, one (1) emergency collecting conveyor, one (1) emergency transfer station, one (1) emergency stackout conveyor (max cap of 10,000 TPY), and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Particulate emissions are controlled on the conveyors and transfer points by wet material and partial to full enclosure. Particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

(i) One (1) Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System, permitted to be constructed in 2008, consisting of filter cake being loaded into trucks by a wheel loader, and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Particulate emissions are controlled during loading of the filter cake into trucks by wet material and other precautionary measures. Particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

Particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area are controlled by wet material, watering, compacting, covering, and other precautionary measures.

Enforcement Issues

There are no pending enforcement actions.

Stack Summary

The following table summarizes the stacks that correspond to the new emission units.

Table 5: Stack Summary

Stack ID	Operation	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (^{0}F)
14*	FGD	982	31.167	2,267,282	130.7
14*	FGD	982	31.167	2,322,875	130.7

* There are two (2) different flow rates listed for stack 14 because each jet bubbling reactor (JBR) for the flue gas desulfurization (FGD) system discharges into a separate flue within the common stack. Each JBR services three (3) generating units. The flow rates are different because one generating unit has a hot-side electrostatic precipitator (ESP) and the other five (5) generating units have cold side electrostatic precipitators (ESP).

Emission Calculations

See Appendix A of this Technical Support Document for detailed emission calculations.

Permit Level Determination – Part 70

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emission unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, IDEM, or the appropriate local air pollution control agency."

The following table is used to determine the appropriate permit level under 326 IAC 2-7-10.5. This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Table 6: PTE Before Controls of the Modification

Pollutant	Potential To Emit (ton/yr)
CO	0.00
NO_X	0.00
PM	**168.35**
PM_{10}	**43.27**
$PM_{2.5}$	**5.57**
SO_2	0.00
VOC	0.00
HAPs	0.00

This source modification is subject to 326 IAC 2-7-10.5(f)(4) because the potential to emit particulate matter (PM) is greater than twenty-five (25) tons per year before control and particulate matter with aerometric diameter less than 10 micron (PM_{10}) is greater than fifteen (15) tons per year before control. Additionally, the modification will be incorporated into the Part 70 Operating Permit through a significant permit modification issued pursuant to 326 IAC 2-7-12(d), because the modification requires significant changes in existing monitoring Part 70 permit terms and conditions, and because the modification incorporates applicable portions of the New Source Performance Standards for Nonmetallic Mineral Processing Plants (40 CFR 60, Subpart OOO) under Title I of the Clean Air Act (CAA).

Permit Level Determination – PSD or Emission Offset

The table below summarizes the potential to emit, reflecting all limits, of the emission units. Any control equipment is considered federally enforceable only after issuance of this Part 70 source modification, and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

	Table 7: Limited Potential to Emit (ton/yr)						
Process / Emission Unit	**CO**	**PM**	**PM_{10}**	**NO_X**	**SO_2**	**VOC**	**HAP**
Limestone Handling	0.00	3.99	1.94	0.00	0.00	0.00	0.00
Limestone Processing	0.00	0.17	0.08	0.00	0.00	0.00	0.00
Gypsum Handling	0.00	1.83	0.89	0.00	0.00	0.00	0.00
Landfill	0.00	3.15	1.07	0.00	0.00	0.00	0.00
Water Treatment Plant	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paved Roads	0.00	9.20	1.79	0.00	0.00	0.00	0.00
Unpaved Roads	0.00	5.82	1.61	0.00	0.00	0.00	0.00
Total for Modification	0.00	**24.16**	**7.38**	0.00	0.00	0.00	0.00
PSD Major Source Threshold	NA	25	15	NA	NA	NA	NA

Jefferson County has been designated as nonattainment for $PM_{2.5}$ in 70 FR 943 dated January 5, 2005. According to the April 5, 2005 EPA memo titled "Implementation of New Source Review Requirements in $PM_{2.5}$ Nonattainment Areas" authored by Steve Page, Director of OAQPS, until EPA promulgates the $PM_{2.5}$ major NSR regulations, states should assume that a major stationary source's PM_{10} emissions represent $PM_{2.5}$ emissions. IDEM will use the PM_{10} nonattainment major NSR program as a surrogate to address the requirements of nonattainment major NSR for the $PM_{2.5}$ NAAQS. A significant emissions increase would be a net emissions increase or the potential of fifteen (15) tons per year or greater of PM_{10}. Indiana-Kentucky Electric Corp. – Clifty Creek Station has limited the potential to emit of PM_{10} from the modification to less than fifteen (15) tons per year. Therefore, assuming that PM_{10} emissions represent $PM_{2.5}$ emissions, 326 IAC 2-3 does not apply for $PM_{2.5}$.

Since this source is considered a major PSD source and the unrestricted potential to emit of this modification is greater than twenty-five (25) tons of PM per year and fifteen (15) tons of PM_{10} per year, this source has elected to limit the potential to emit of this modification as follows:

(a) Particulate emissions from the Limestone Handling (LH) System shall be controlled by partial to full enclosure and wet dust suppression as specified in the Fugitive Dust Control Plan in Attachment A.

(b) Particulate emissions from the Limestone Processing (LP) System shall be controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors as specified in the Fugitive Dust Control Plan in Attachment A.

(c) Particulate emissions on the conveyors and transfer points for the Gypsum Handling (GH) System shall be controlled by wet material and partial to full enclosure as specified in the Fugitive Dust Control Plan in Attachment A.

(d) Particulate emissions from loading of the filter cake into trucks for the Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System shall be controlled by wet material and other precautionary measures as specified in the Fugitive Dust Control Plan in Attachment A

(e) Particulate emissions on the paved and unpaved haul roads shall be controlled by wet material, watering, sweeping, and speed reduction as specified in the Fugitive Dust Control Plan in Attachment A.

(f) Fugitive particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area shall be controlled by wet material, watering, compacting, covering, and other precautionary measures as specified in the Fugitive Dust Control Plan in Attachment A.

(g) The Permittee must comply with all requirements of the Fugitive Dust Control Plan in Attachment A of the Part 70 Operating Permit.

Compliance with these requirements will ensure that the potential to emit from this modification is less than twenty-five (25) tons of PM per year and less than fifteen (15) tons of PM_{10} per year and therefore will render the requirements of 326 IAC 2-2 and 326 IAC 2-3 not applicable. OAQ is following the U.S. EPA's guidance to regulate PM_{10} emissions as a surrogate for $PM_{2.5}$ emissions pursuant to the requirements of Emission Offset, 326 IAC 2-3.

Federal Rule Applicability Determination

The following federal rules are applicable to the source due to this modification:

(a) This modification is subject to the New Source Performance Standards for Nonmetallic Mineral Processing Plants (40 CFR 60, Subpart OOO), which is incorporated by reference as 326 IAC 12. The emission units subject to this rule include the following:

One (1) Limestone Processing (LP) System, permitted to be constructed in 2008, with a maximum transfer rate of 300 tons per hour, consisting of two (2) reclaim hoppers and feeders, one (1) reclaim conveyor, one (1) silo supply conveyor (a.k.a. transfer station), one (1) silo transfer conveyor, two (2) storage silos, two (2) ball mill feeders, two (2) wet ball mills, and one (1) emergency reclaim hopper and one (1) emergency conveyor (max cap of 10,000 TPY). Fugitive particulate emissions are controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors.

Nonapplicable portions of the NSPS will not be included in the permit. These emission units are subject to the following portions of Subpart OOO.

(1) 40 CFR 60.670 (a)(1) and (d-f).

(2) Table 1: Applicability of Subpart A to Subpart OOO
(3) 40 CFR 60.671.
(4) 40 CFR 60.672, paragraphs (a)(1), (b), (d-g), and (h)(1).
(5) 40 CFR 60.673.
(6) 40 CFR 60.675.
(7) 40 CFR 60.676, paragraphs (a)(1), (a)(3-4), (f-h), (i)(1), and (j).

40 CFR 60.670(a)(1): Clarification on Applicability:
40 CFR 60, Subpart OOO defines a production line as "all affected facilities (crushers, grinding mills, screening operations, bucket elevators, belt conveyors, bagging operations, storage bins and enclosed truck and railcar unloading stations) which are directly connected or are connected together by a conveying system." The limestone barge unloader, barge unloading hopper and feeder, conveyors, and limestone storage piles at Clifty Creek Station are not directly connected or connected by conveyor to the remainder of the limestone processing system which contains the limestone ball mills. Consequently, this equipment is not subject to 40 CFR 60, Subpart OOO.

Only the following emission points for the Limestone Processing (LP) System are subject to 40 CFR 60, Subpart OOO:
(1) Two (2) reclaim feeders,
(2) One (1) reclaim conveyor,
(3) One (1) silo supply conveyor (a.k.a. transfer station),
(4) One (1) silo transfer conveyor,
(5) Two (2) storage silos,
(6) Two (2) storage silo bin vent filter dust collectors,
(7) Two (2) ball mill feeders, and
(8) Two (2) wet ball mills.

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) applicable to this proposed modification.

(c) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is applicable to new or modified emission units that involve a pollutant-specific emission unit and meet the following criteria:

(1) has a potential to emit before controls equal to or greater than the major source threshold for the pollutant involved;

(2) is subject to an emission limitation or standard for that pollutant; and

(3) uses a control device, as defined in 40 CFR 64.1, to comply with that emission limitation or standard.

The proposed modification will not add any additional control devices for the following sources of fugitive emissions: Limestone Handling (LH), Gypsum Handling (GH), Landfill, Wastewater Treatment Plant (WWTP), Paved Roads, and Unpaved Roads. Therefore, the requirements of 40 CFR Part 64, CAM, are not applicable to any of theses new and modified emission units as part of this modification.

The following table is used to identify the applicability of each of the criteria, under 40 CFR 64.1, to the Limestone Processing (LP) operations:

Table 8: CAM Applicability Analysis

Emission Unit & Pollutant	**Control Device Used**	**Emission Limitation** (Y/N)	**Uncontrolled PTE** (ton/yr)	**Controlled PTE** (ton/yr)	**Major Source Threshold** (ton/yr)	**CAM Applicable** (Y/N)	**Large Unit** (Y/N)
Limestone Processing (LP) – PM	Y-BH	Y	3.06	0.29	25	N	N
Limestone Processing (LP) – PM_{10}	Y-BH	Y	1.45	0.14	15	N	N

Based on this evaluation, the requirements of 40 CFR Part 64, CAM are not applicable to any of the new emission units as part of this new source construction permit and permit modification.

State Rule Applicability Determination

The following state rules are applicable to the source due to the modification:

326 IAC 2-2 and 2-3 (PSD and Emission Offset)
PSD and Emission Offset applicability is discussed under the Permit Level Determination – PSD and Emission Offset section.

326 IAC 2-6 (Emission Reporting)
Since this source has a potential to emit NO_X greater than or equal to 2,500 tons per year and SO_2 greater than or equal to 2,500 tons per year, an emission statement covering the previous calendar year must be submitted by July 1 of each year. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4.

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

(a) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the limestone handling operations shall not exceed 77.59 pounds per hour when operating at a process weight rate of 1,000 tons per hour.

(b) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the limestone processing operations shall not exceed 63.00 pounds per hour when operating at a process weight rate of 300 tons per hour.

The bin filter dust collector shall be in operation at all times the limestone processing operation is in operation, in order to comply with this limit.

(c) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the gypsum waste handling operations shall not exceed 55.44 pounds per hour when operating at a process weight rate of 150 tons per hour.

(d) Interpolation and extrapolation of the data in the table in 326 IAC 6-3-2(e) for process weight rates in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 55.0\ P^{0.11} - 40$ where E = rate of emission in pounds per hour; and

P = process weight rate in tons per hour.

(e) When the process weight rate exceeds two hundred (200) tons per hour, the allowable emission may exceed that shown in the table in 326 IAC 6-3-2(e), provided the concentration of particulate in the discharge gases to the atmosphere is less than one-tenth (0.10) pound per one thousand (1,000) pounds of gases.

Compliance Determination and Monitoring Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with all applicable state and federal rules on a continuous basis. All state and federal rules contain compliance provisions; however, these provisions do not always fulfill the requirement for a continuous demonstration. When this occurs, IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, Compliance Determination Requirements are included in the permit. The Compliance Determination Requirements in Section D of the permit are those conditions that are found directly within state and federal rules and the violation of which serves as grounds for enforcement action.

If the Compliance Determination Requirements are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also in Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

New compliance determination and monitoring requirements applicable per 40 CFR Part 60, Subpart OOO are added to Section D.5 of the permit as shown in the Proposed Changes section below. Changes to the compliance determination and monitoring requirements are detailed in the Proposed Changes section of this document.

The Compliance Determination Requirements applicable to this modification are as follows:

(a) Limestone Handling (LH), Limestone Processing (LP), and Gypsum Handling (GH): The enclosures, wet dust suppression systems, conveyor covers, and bin filter dust collector for particulate control shall be in operation and control emissions at all times the associated limestone handling, limestone processing, and/or gypsum waste handling operations are in operation.

The compliance monitoring requirements applicable to this modification are as follows:

(a) Limestone Handling (LH), Limestone Processing (LP), and Gypsum Handling (GH): Visible emission notations shall be performed once per day during normal daylight operations.

These monitoring conditions are necessary because the particulate control measures for the limestone handling and processing operations and gypsum handling operations must operate properly to ensure compliance with 326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes) and 326 IAC 2-7 (Part 70)).

Changes Due to the Proposed Modification

The changes listed below have been made to Part 70 Operating Permit No. T 077-7168-00001. Deleted language appears as ~~strikethroughs~~ and new language appears in **bold**:

Modification No. 1:

The emission unit descriptions for Units 1 through 6 were modified in Sections A, D.1, E, and F as follows to include reference to the new flue gas desulfurization (FGD) system:

~~(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). Units 1 through 5 each have a selective catalytic reduction (SCR) system and over-fire air system for NO_X control, and each unit exhausts through a "cold-side" electrostatic precipitator (ESP) for control of particulate matter. SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. Units 1, 2, and 3 exhaust to stack 1. Units 4 and 5 exhaust to stack 2. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery. Stacks 1 and 2 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2) and continuous opacity monitoring (COM) systems.~~

~~(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). NO_X emissions are reduced by an over-fire air system. Unit 6 exhausts to stack 2 through a "hot-side" electrostatic precipitator (ESP) for control of particulate matter. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery. Stack 2 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2) and a continuous opacity monitoring (COM) system.~~

(a) Five (5) wet-bottom pulverized coal-fired boilers identified as Units 1 through 5, with construction completed in 1955, each with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). SO_3 flue gas conditioning systems are utilized as needed on Units 1 through 5 to maintain opacity and particulate limits. No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Units 1 through 5 have the following emission controls:

- **over-fire air system (NO_X control)**
- **selective catalytic reduction (SCR) system (NO_X control)**
- **"cold-side" electrostatic precipitator (ESP) (particulate control)**
- **flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008**

(1) Prior to installation of the FGD System:
Units 1, 2, and 3 exhaust to Stack 1. Units 4 and 5 exhaust to Stack 2. Stacks 1 and 2 have continuous opacity monitoring systems (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 1, 2, and 3 exhaust to Flue 13 of Stack 14. Units 4 and 5 exhaust to Flue 46 of Stack 14. Both Flue 13 and Flue 46 of Stack 14 have continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

(b) One (1) wet-bottom pulverized coal-fired boiler identified as Unit 6, with construction completed in 1956, with a rated capacity of 1,869 million Btu per hour (MMBtu/hr). No. 2 fuel oil is combusted during startup and stabilization periods. Used oil generated at facilities within the OVEC-IKEC system may be combusted as supplemental fuel for energy recovery.

Unit 6 has the following emission controls:

- **over-fire air system (NO_X control)**
- **"hot-side" electrostatic precipitator (ESP) (particulate control)**
- **flue gas desulfurization (FGD) system (SO_2 control), permitted to be constructed in 2008**

(1) Prior to installation of the FGD System:
Unit 6 exhausts to Stack 2. Stack 2 has a continuous opacity monitoring system (COMS) and continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X) and sulfur dioxide (SO_2).

(2) After installation of the FGD System:
Units 6 exhausts to Flue 46 of Stack 14. Flue 46 of Stack 14 has continuous emissions monitoring systems (CEMS) for nitrogen oxides (NO_X), sulfur dioxide (SO_2), and mercury (Hg). Continuous opacity monitoring systems (COMS) will be located in the combined unit ducts between the outlets of the electrostatic precipitators (ESPs) and the inlet to the flue gas desulfurization (FGD) system.

The Flue Gas Desulfurization (FGD) System for Units 1 through 6, permitted to be constructed in 2008, consists of one (1) stack (Stack 14) with two flues (Flues 13 and 46), two (2) jet bubbling reactor (JBR) absorbers (JBRs 13 and 46), and associated limestone and gypsum material handling systems.

Modification No. 2:

New emission unit descriptions were added to Section A, Condition A.2 as paragraphs (g) through (h) to describe the components necessary for proper operation of the new flue gas desulfurization (FGD) system.

(f) One (1) Limestone Handling (LH) System, permitted to be constructed in 2008, with a maximum capacity of 1,000 tons per hour, consisting of one (1) barge unloader, one (1) barge unloading hopper and feeder, three (3) conveyors, two (2) transfer stations, and one (1) stacking tube and storage pile. Fugitive particulate emissions are controlled by partial to full enclosure and wet dust suppression.

(g) One (1) Limestone Processing (LP) System, permitted to be constructed in 2008, with a maximum transfer rate of 300 tons per hour, consisting of two (2) reclaim hoppers and feeders, one (1) reclaim conveyor, one (1) silo supply conveyor (a.k.a. transfer station), one (1) silo transfer conveyor, two (2) storage silos, two (2) ball mill feeders, two (2) wet ball mills, and one (1) emergency reclaim hopper and one (1) emergency conveyor (max cap of 10,000 TPY). Fugitive particulate emissions are controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors. The Limestone Processing (LP) System is an affected source under the Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR Part 60, Subpart OOO).

(h) One (1) Gypsum Handling (GH) System, permitted to be constructed in 2008, with a maximum capacity of 150 tons per hour, consisting of one (1) collecting conveyor, one (1) transfer conveyor, two (2) transfer stations, one (1) radial stackout conveyor, one (1) emergency collecting conveyor, one (1) emergency transfer station, one (1) emergency stackout conveyor (max cap of 10,000 TPY), and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Fugitive particulate emissions are controlled on the conveyors and transfer points by wet material and partial to full enclosure. Fugitive particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

(i) One (1) Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System, permitted to be constructed in 2008, consisting of filter cake being loaded into trucks by a wheel loader, and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Fugitive particulate emissions are controlled during loading of the filter cake into trucks by wet material and other precautionary measures. Fugitive particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

Fugitive particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area are controlled by wet material, watering, compacting, covering, and other precautionary measures.

Modification No. 3:

New Section D.4 was added to specify the applicable requirements for proper operation of the new flue gas desulfurization (FGD) system and supporting material handling and processing operations.

SECTION D.4 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(f) One (1) Limestone Handling (LH) System, permitted to be constructed in 2008, with a maximum capacity of 1,000 tons per hour, consisting of one (1) barge unloader, one (1) barge unloading hopper and feeder, three (3) conveyors, two (2) transfer stations, and one (1) stacking tube and storage pile. Fugitive particulate emissions are controlled by partial to full enclosure and wet dust suppression.

(g) One (1) Limestone Processing (LP) System, permitted to be constructed in 2008, with a maximum transfer rate of 300 tons per hour, consisting of two (2) reclaim hoppers and feeders, one (1) reclaim conveyor, one (1) silo supply conveyor (a.k.a. transfer station), one (1) silo transfer conveyor, two (2) storage silos, two (2) ball mill feeders, two (2) wet

ball mills, and one (1) emergency reclaim hopper and one (1) emergency conveyor (max cap of 10,000 TPY). Fugitive particulate emissions are controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors. The Limestone Processing (LP) System is an affected source under the Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR Part 60, Subpart OOO).

(h) One (1) Gypsum Handling (GH) System, permitted to be constructed in 2008, with a maximum capacity of 150 tons per hour, consisting of one (1) collecting conveyor, one (1) transfer conveyor, two (2) transfer stations, one (1) radial stackout conveyor, one (1) emergency collecting conveyor, one (1) emergency transfer station, one (1) emergency stackout conveyor (max cap of 10,000 TPY), and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Fugitive particulate emissions are controlled on the conveyors and transfer points by wet material and partial to full enclosure. Fugitive particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

(i) One (1) Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System, permitted to be constructed in 2008, consisting of filter cake being loaded into trucks by a wheel loader, and transportation by truck via in-plant paved and unpaved haul roads to and within the onsite disposal area. Fugitive particulate emissions are controlled during loading of the filter cake into trucks by wet material and other precautionary measures. Fugitive particulate emissions are controlled on the paved and unpaved haul roads by wet material, watering, sweeping, and speed reduction.

Fugitive particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area are controlled by wet material, watering, compacting, covering, and other precautionary measures.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.4.1 Particulate PSD Minor Limits [326 IAC 2-2] [326 IAC 2-3]

(a) Particulate emissions from the Limestone Handling (LH) System shall be controlled by partial to full enclosure and wet dust suppression as specified in the Fugitive Dust Control Plan in Attachment A.

(b) Particulate emissions from the Limestone Processing (LP) System shall be controlled by partial to full enclosure and two (2) storage silo bin vent filter dust collectors as specified in the Fugitive Dust Control Plan in Attachment A.

(c) Particulate emissions on the conveyors and transfer points for the Gypsum Handling (GH) System shall be controlled by wet material and partial to full enclosure as specified in the Fugitive Dust Control Plan in Attachment A.

(d) Particulate emissions from loading of the filter cake into trucks for the Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System shall be controlled by wet material and other precautionary measures as specified in the Fugitive Dust Control Plan in Attachment A

(e) Particulate emissions on the paved and unpaved haul roads shall be controlled by wet material, watering, sweeping, and speed reduction as specified in the Fugitive Dust Control Plan in Attachment A.

(f) Fugitive particulate emissions from handling and placement of Gypsum and CPS WWTP Filter Cake in onsite disposal area shall be controlled by wet material, watering, compacting, covering, and other precautionary measures as specified in the Fugitive Dust Control Plan in Attachment A.

(g) The Permittee must comply with all requirements of the Fugitive Dust Control Plan in Attachment A.

Compliance with these requirements will ensure that the potential to emit from this modification is less than twenty-five (25) tons of PM per year and less than fifteen (15) tons of PM_{10} per year and therefore will render the requirements of 326 IAC 2-2 and 326 IAC 2-3 not applicable.

D.4.2 Particulate [326 IAC 6-3-2]

(a) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the limestone handling operations shall not exceed 77.59 pounds per hour when operating at a process weight rate of 1,000 tons per hour.

(b) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the limestone processing operations shall not exceed 63.00 pounds per hour when operating at a process weight rate of 300 tons per hour.

(c) Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), allowable particulate emissions for the gypsum waste handling operations shall not exceed 55.44 pounds per hour when operating at a process weight rate of 150 tons per hour.

(d) Interpolation and extrapolation of the data in the table in 326 IAC 6-3-2(e) for process weight rates in excess of sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 55.0\ P^{0.11} - 40$$

where E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour.

(e) When the process weight rate exceeds two hundred (200) tons per hour, the allowable emission may exceed that shown in the table in 326 IAC 6-3-2(e), provided the concentration of particulate in the discharge gases to the atmosphere is less than one-tenth (0.10) pound per one thousand (1,000) pounds of gases.

D.4.3 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive dust emissions from the limestone handling, limestone processing, and gypsum waste handling operations shall comply with the Fugitive Dust Control Plan in Attachment A.

Compliance Determination Requirements

D.4.4 Particulate Control [326 IAC 2-7-6(6)]

(a) Except as otherwise provided by statute, rule, or in this permit, the enclosures, wet dust suppression systems, conveyor covers, and bin filter dust collector for particulate control shall be in operation and control emissions at all times the associated limestone handling, limestone processing, and/or gypsum waste handling operations are in operation.

(b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.4.5 Visible Emissions Notations [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) Visible Emission Notations:

(1) Visible emission notations of the limestone handling operations shall be performed once per day during normal daylight operations when handling limestone.

(2) Visible emission notations of the limestone processing operations shall be performed once per day during normal daylight operations when processing limestone.

(3) Visible emission notations of the gypsum waste handling operations shall be performed once per day during normal daylight operations when handling gypsum waste.

A trained employee shall record whether emissions are normal or abnormal.

(b) Visible emission notations of the control device exhausts shall be performed once per day during normal daylight operations when handling or processing limestone or gypsum waste. A trained employee shall record whether emissions are normal or abnormal.

(c) If abnormal emissions are observed from the limestone handling, limestone processing, and/or gypsum waste handling operations or at any control device exhaust, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances. Observation of visible emissions that do not violate 326 IAC 6-4 (Fugitive Dust Emissions) or an applicable opacity limit is not a deviation from this permit. Failure to take response steps in accordance with Section C – Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(d) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(e) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(f) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

D.4.6 Broken or Failed Bag Detection [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B – Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emission unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B – Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.4.7 Record Keeping Requirements

(a) To document compliance with Section C – Opacity and Condition D.4.5, the Permittee shall maintain daily records of the visible emission notations of the limestone handling, limestone processing, and/or gypsum waste handling operations and control device exhausts. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (e.g., the process did not operate that day).

(b) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

New Source Performance Standards (NSPS) Requirements [326 IAC 2-7-5(1)]

D.4.8 General Provisions Relating to New Source Performance Standards [326 IAC 12-1] [40 CFR Part 60, Subpart A]

(a) Pursuant to 40 CFR 60.1, the Permittee shall comply with the provisions of 40 CFR Part 60 Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1 for the affected emission points of the Limestone Processing (LP) System except as otherwise specified in Table 1 of 40 CFR Part 60, Subpart OOO.

(b) Pursuant to 40 CFR 60.10, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

D.4.9 Standards of Performance for Nonmetallic Mineral Processing Plants [40 CFR Part 60, Subpart OOO] [326 IAC 12]

The Permittee which engages in nonmetallic mineral processing shall comply with the following provisions of 40 CFR Part 60, Subpart OOO (included as Attachment C of this permit):

(a) 40 CFR 60.670 (a)(1) and (d-f).

(b) Table 1: Applicability of Subpart A to Subpart OOO

(c) 40 CFR 60.671.

(d) 40 CFR 60.672, paragraphs (a)(1), (b), (d-g), and (h)(1).

(e) 40 CFR 60.673.

(f) 40 CFR 60.675.

(g) 40 CFR 60.676, paragraphs (a)(1), (a)(3-4), (f-h), (i)(1), and (j).

Other Permit Changes

Upon further review, the OAQ has decided to make the following revisions to the permit:

IDEM Change No. 1:

To minimize future amendments to the issued Part 70 Permits, OAQ has decided to delete the name and/or title of the Responsible Official (RO) in Section A.1, General Information, of the permit. However, OAQ will still be evaluating if a change in RO meets the criteria specified in 326 IAC 2-7-1(34). The revised permit condition is as follows:

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)] [326 IAC 2-7-1(22)]

The Permittee owns and operates a stationary electric utility generating station.

~~Responsible Official:~~	~~Title IV Designated Representative~~
Source Address:	S.R. 56 West, Madison, Indiana, 47250
Mailing Address:	P.O. Box 468, Piketon, Ohio 45661
Source Telephone:	740-289-7254
SIC Code:	4911
County Location:	Jefferson
Source Location Status:	Nonattainment for $PM_{2.5}$, effective April 5, 2005 Attainment for all other criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD Rules and Emission Offset Rules; Major Source, Section 112 of the Clean Air Act; 1 of 28 Source Categories

IDEM Change No. 2:

Paragraphs (d) (1) and (d)(2) of Condition A.2, Emission Units and Pollution Control Equipment Summary, were revised as follows to be consistent with the descriptions for the Gypsum Handling (GH) System and the Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling System in paragraphs (h) and (i) of Condition A.2:

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] 326 IAC 2-7-5(15)]

(d) Dry fly ash handling and disposal facilities, including the following:

(1) Dry fly ash handling system installed in 1990 and 1991, including pneumatic conveyance to two (2) main silos with a maximum design transfer rate of 40 tons per hour, rotary and dry unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant haul **paved and unpaved** roads to onsite disposal area or for transportation offsite.

(2) Two (2) additional dry fly ash storage silos (a.k.a truck bins) installed in 1994 and 1995 for unmarketable fly ash, including pneumatic conveyance to silos with a maximum design transfer rate of 40 tons per hour, rotary unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant haul **paved and unpaved** roads to onsite disposal area.

IDEM Change No. 3:

Appropriate numbering was added to paragraph (b)(1) of Condition A.3, Specifically Regulated Insignificant Activities, and the description for the two 60,000 gallon diesel fuel storage tanks was updated to reflect what will be the correct year of installation. The revisions are as follows:

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

(b) Other activities or categories not previously identified with potential, uncontrolled emissions equal to or less than thresholds require listing only: Pb 0.6 ton per year or 3.29 pounds per day, SO_2 5 pounds per hour or 25 pounds per day, NO_X 5 pounds per hour or 25 pounds per day, CO 25 pounds per day, PM 5 pounds per hour or 25 pounds per day, VOC 3 pounds per hour or 15 pounds per day:

(1) Four (4) No. 2 fuel oil fired coal transfer station heaters, installed in 1993: [326 IAC 6-3] [326 IAC 5]

(A) One (1) with 1.25 MMBtu/hr heat input capacity for Station 2;

(B) One (1) with 1.75 MMBtu/hr heat input capacity for Station 5; and

(C) Two (2) with 2.75 MMBtu/hr heat input capacity for Stations B3 and B4.

(2) Two (2) 60,000 gallon diesel fuel storage tanks, installed in ~~2007~~ **2008**, for start-up and flame stabilization at low loads for Units 1-6. The annual throughput is approximately 250,000 gallons, each. [326 IAC 12] [40 CFR 60, Subpart Kb]

IDEM Change No. 4:

The IDEM address has been updated throughout the permit as follows to include the mail code specific to each section of the Office of Air Quality:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Quality
100 North Senate Avenue
MC 61-50 IGCN 1003
Indianapolis, Indiana 46204-2251

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue
MC 61-52 IGCN 1003
Indianapolis, Indiana 46204-2251

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Indiana Department of Environmental Management
Air Compliance Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

IDEM Change No. 5:

Paragraph (b) of Condition C.15, Actions Related to Noncompliance Demonstrated by a Stack Test, is revised as follows to correct a typographical error:

C.15 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]

(b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in ~~one-hundred and twenty (120) days~~ **one hundred twenty (120) days** is not practicable, IDEM, OAQ may extend the retesting deadline.

IDEM Change No. 6:

IDEM has clarified the General Record Keeping Requirements pertaining to "reasonable possibility" in Condition C.20 (original paragraph (c), now paragraphs (c) and (d)) as follows:

C.20 General Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-6] [326 IAC 2-2]

~~(c) If there is a reasonable possibility that a "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll) at an existing emissions unit, which is not part of a "major modification" (as defined in 326 IAC 2-2-1(ee) and/or 326 IAC 2-3-1(z) may result in significant emissions increase and the Permittee elects to utilize the "projected actual emissions" (as defined in 326 IAC 2-2-1(rr) and/or 326 IAC 2-3-1(mm), the Permittee shall comply with following:~~

~~(1) Before beginning actual construction of the "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll) at an existing emissions unit, document and maintain the following records:~~

~~(A) A description of the project.~~

~~(B) Identification of any emissions unit whose emissions of a regulated new source review pollutant could be affected by the project.~~

~~(C) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including:~~

~~(i) Baseline actual emissions;~~

~~(ii) Projected actual emissions;~~

~~(iii) Amount of emissions excluded under section 326 IAC 2-2-1(rr)(2)(A)(iii) and/or 326 IAC 2-3-1(mm)(2)(A)(3); and~~

~~(iv) An explanation for why the amount was excluded, and any netting calculations, if applicable.~~

~~(2) Monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any existing emissions unit identified in (1)(B) above; and~~

~~(3) Calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of five (5) years following resumption of regular operations after the change, or for a period of ten (10) years following resumption of regular operations after the change if the project increases the design capacity of or the potential to emit that regulated NSR pollutant at the emissions unit.~~

(c) If there is a reasonable possibility (as defined in 40 CFR 51.165 (a)(6)(vi)(A), 40 CFR 51.165 (a)(6)(vi)(B), 40 CFR 51.166 (r)(6)(vi)(a), and/or 40 CFR 51.166 (r)(6)(vi)(b)) that a "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, other than projects at a source with a Plantwide Applicability Limitation (PAL), which is not part of a "major modification" (as defined in 326 IAC 2-2-1(ee) and/or 326 IAC 2-3-1(z)) may result in significant emissions increase and the Permittee elects to utilize the "projected actual emissions" (as defined in 326 IAC 2-2-1(rr) and/or 326 IAC 2-3-1(mm)), the Permittee shall comply with following:

(1) Before beginning actual construction of the "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, document and maintain the following records:

(A) A description of the project.

(B) Identification of any emissions unit whose emissions of a regulated new source review pollutant could be affected by the project.

(C) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including:

(i) Baseline actual emissions;

(ii) Projected actual emissions;

(iii) Amount of emissions excluded under section 326 IAC 2-2-1(rr)(2)(A)(iii) and/or 326 IAC 2-3-1 (mm)(2)(A)(iii); and

(iv) An explanation for why the amount was excluded, and any netting calculations, if applicable.

(d) If there is a reasonable possibility (as defined in 40 CFR 51.165 (a)(6)(vi)(A) and/or 40 CFR 51.166 (r)(6)(vi)(a)) that a "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, other than projects at a source with a Plantwide Applicability Limitation (PAL), which is not part of a "major modification" (as defined in 326 IAC 2-2-1(ee) and/or 326 IAC 2-3-1(z)) may result in significant emissions increase and the Permittee elects to utilize the "projected actual emissions" (as defined in 326 IAC 2-2-1(rr) and/or 326 IAC 2-3-1(mm)), the Permittee shall comply with following:

(1) Monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any existing emissions unit identified in (1)(B) above; and

(2) Calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of five (5) years following resumption of regular operations after the change, or for a period of ten (10) years following resumption of regular operations after the change if the project increases the design capacity of or the potential to emit that regulated NSR pollutant at the emissions unit.

IDEM Change No. 7:

IDEM has updated the General Reporting Requirements in Condition C.21, paragraphs (f), (f)(2), (g) and (h)(2) as follows to correct the references to Condition C.20:

C.21 General Reporting Requirements [326 IAC 2-7-5(3)(C)] [326 IAC 2-1.1-11] [326 IAC 2-2] [326 IAC 2-3]

(f) If the Permittee is required to comply with the recordkeeping provisions of ~~(c)~~ **(d)** in Section C - General Record Keeping Requirements for any "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll) at an existing Electric Utility Steam Generating Unit, then for that project the Permittee shall:

(2) Submit a report to IDEM, OAQ within sixty (60) days after the end of each year during which records are generated in accordance with ~~(c)(2) and (3)~~ **(d)(1) and (2)** in Section C - General Record Keeping Requirements. The report shall contain all information and data describing the annual emissions for the emissions units during the calendar year that preceded the submission of report.

(g) If the Permittee is required to comply with the recordkeeping provisions of ~~(c)~~ **(d)** in Section C - General Record Keeping Requirements for any "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll) at an existing emissions unit other than an Electric Utility Steam Generating Unit, and the project meets the following criteria, then the Permittee shall submit a report to IDEM, OAQ:

(h)

(2) The annual emissions calculated in accordance with ~~(c)(2) and (3)~~ **(d)(1) and (2)** in Section C - General Record Keeping Requirements.

IDEM Change No. 8:

The visible emissions notations and associated record keeping requirements for the wet process boiler slag handling, with hydroveyors conveying the boiler slaq to a storage pond have been moved from Section D.4 to Section D.3.

The intent of Record Keeping Requirements for Visible Emission Notations and Parametric Monitoring is that the Permittee needs to make a record of some sort every week. An example for Visible Emission Notations would be "normal" or "abnormal". Additionally, if Visible Emission Notations were not done on a particular day, the Permittee needs to specify the reason why the observation was not done. An example of this record would be "the unit was not operating".

Paragraph (a) of Condition D.2.6, Record Keeping Requirements, the Facility Description for Section D.3, paragraph (a) of Condition D.3.4, Visible Emissions Notations, and paragraph (a) of Condition D.3.6, Record Keeping Requirements, are revised as follows:

D.2.6 Record Keeping Requirements

(a) To document compliance with Section C – Opacity and Condition D.2.4 – Visible Emissions Notations, the Permittee shall maintain **weekly** ~~daily~~ records of the visible emission notations of the coal transfer point baghouse exhausts. The Permittee shall include in its ~~daily~~ **weekly** record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (e.g. the process did not operate that day).

(b) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

SECTION D.3 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(d) Dry fly ash handling and disposal facilities, including the following:

(1) Dry fly ash handling system installed in 1990 and 1991, including pneumatic conveyance to two (2) main silos with a maximum design transfer rate of 40 tons per hour, rotary and dry unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant haul paved and unpaved roads to onsite disposal area or for transportation offsite.

(2) Two (2) additional dry fly ash storage silos (a.k.a. truck bins) installed in 1994 and 1995 for unmarketable fly ash, including pneumatic conveyance to silos with a maximum design transfer rate of 40 tons per hour, rotary unloaders with a maximum design unloading rate of 250 tons per hour for each silo, and transportation by truck via in-plant haul paved and unpaved roads to onsite disposal area.

(e) Wet process boiler slag handling, with hydroveyors conveying the boiler slag to a storage pond.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

D.3.4 Visible Emissions Notations [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) Visible emission notations of the fly ash disposal area shall be performed at least once per day during normal daylight operations. **Visible emission notations of the boiler slag storage pond area shall be performed at least once per week during normal daylight operations.** A trained employee shall record whether emissions are normal or abnormal.

D.3.6 Record Keeping Requirements

(a) To document compliance with Section C – Opacity and Condition D.3.4 – Visible Emissions Notations, the Permittee shall maintain daily records of the visible emission notations of the active fly ash disposal area~~(s) and ash storage pond area(s)~~, the ash silo unloading station openings, and the bag filter system exhausts. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (e.g. the process did not operate that day).

(b) **To document compliance with Section C – Opacity and Condition D.3.4 – Visible Emissions Notations, the Permittee shall maintain weekly records of the visible emission notations of the active boiler slag storage pond area. The Permittee shall include in its weekly record when a visible emission notation is not taken and the reason for the lack of visible emission notation, (e.g. the process did not operate that day).**

(c) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

IDEM Change No. 9:

The rule citation for the New Source Performance Standard for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984, 40 CFR Part 60, Subpart Kb, was added to the title line for Condition D.5.1.

D.5.1 Record Keeping Requirements [326 IAC 12] **[40 CFR Part 60, Subpart Kb]**

Pursuant to 326 IAC 1-1-3, 326 IAC 12 and 40 CFR 60.116b (2002 version):

(a) The Permittee shall keep copies of the record required by paragraph (b) of this section for the life of the source.

(b) The Permittee of each storage vessel as specified in 40 CFR 60.110b(a) (2002 version) shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.

These requirements are incorporated by reference from the July 1, 2002, version of 40 CFR 60 Subpart Kb and are no longer federally enforceable.

Appeal Resolution

IDEM and IKEC have agreed upon the following revisions to the permit pursuant to Settlement Agreement No. 06-A-J-3841:

Appeal Resolution No. 1:

IDEM agrees that revisions to the following conditions are reasonable modifications that are protective of human health and the environment:

- D.1.2, Temporary Alternative Opacity Limitations
- D.1.8, Transformer-Rectifier (T-R) Sets
- D.1.10, SO_2 Monitoring System Downtime
- D.1.11(b)(2) and (3), Record Keeping Requirements
- D.2.4 and D.4.2 (now included in D.3.4), Visible Emission Notations (Changes to Condition D.3.4 are shown above - See IDEM Change No. 8.)
- D.2.5, Broken or Failed Bag Detection

D.1.2 Temporary Alternative Opacity Limitations [326 IAC 5-1-3]

Pursuant to 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), the following applies:

(a) When building a new fire in a boiler, opacity may exceed the applicable limit established in 326 IAC 5-1-2 for a period not to exceed thirty (30) minutes (five (5) six (6)-minute averaging periods) or until the flue gas temperature reaches two hundred fifty (250) degrees Fahrenheit at the inlet of the electrostatic precipitator, whichever occurs first. Operation of the electrostatic precipitator is not required during these times. [326 IAC 5-1-3(e)(2)]

(b) When shutting down a boiler, opacity may exceed the applicable limit established in 326 IAC 5-1-2; however, opacity levels shall not exceed sixty percent (60%) for any six (6)-minute averaging period. Opacity in excess of the applicable limit established in 326 IAC 5-1-2 shall not continue for more than two (2) six (6)-minute averaging periods in any twenty-four (24) hour period. [326 IAC 5-1-3(a)]

(c) When removing ashes from the fuel bed or furnace in a boiler or blowing tubes, opacity may exceed the applicable limit established in 326 IAC 5-1-2; however, opacity levels shall not exceed sixty percent (60%) for any six (6)-minute averaging period and opacity in excess of the applicable limit shall not continue for more than one (1) six (6)-minute averaging period in any sixty (60) minute period. The averaging periods shall not be permitted for more than three (3) six (6)-minute averaging periods in a twelve (12) hour period. [326 IAC 5-1-3(b)]

(d) The following operations are considered "startup conditions" pursuant to 326 IAC 1-2-76:

(1) Startup and firing of a boiler as part of a chemical cleaning operation; and

(2) Startup and firing of a boiler as part of a boiler floor refractory curing operation.

For each of these operations, opacity may exceed the applicable limit established in 326 IAC 5-1-3 for a period not to exceed thirty (30) minutes (five (5) six (6)-minute averaging periods).

D.1.8 Transformer-Rectifier (T-R) Sets [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) The ability of the ESP to control particulate emissions shall be monitored once per day, when the unit is in operation, by measuring and recording the number of T-R sets in service and the primary and secondary voltages and the currents of the T-R sets.

(b) Reasonable response steps shall be taken in accordance with Section C - Response to Excursions or Exceedances whenever**:**

(i) the percentage of T-R sets in service **on Unit 1, 2, or 3** falls below ninety percent (90%)**; or**

(ii) the number of combined fields in service for Units 4-6 (exhausting to stack 2) falls below 114 out of 128 (or 89.06%).

T-R set failure resulting in less than ninety percent (90%) availability **under subparagraph (i) or less than 114 combined fields under subparagraph (ii)** is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

D.1.10 SO_2 Monitoring System Downtime [326 IAC 2-7-6] [326 IAC 2-7-5(3)]

Whenever the **primary** SO_2 continuous emission monitoring system (CEMS) is malfunctioning or down for repairs or adjustments, the **Permittee shall operate the secondary SO_2 CEMS.**~~following shall be used to provide information related to SO_2 emissions:~~

~~(a) If the CEMS is down for less than twenty four (24) hours, the Permittee shall substitute an average of the quality-assured data from the hour immediately before and the hour immediately after the missing data period for each hour of missing data.~~

~~(b) If the CEMS is down for twenty-four (24) hours or more, fuel sampling shall be conducted as follows:~~

~~Fuel sampling shall be conducted as specified in 326 IAC 3-7-2(b). Fuel sample preparation and analysis shall be conducted as specified in 326 IAC 3-7-2(c), 326 IAC 3-7-2(d), and 326 IAC 3-7-2(e). Pursuant to 326 IAC 3-7-3, manual or other non-ASTM automatic sampling and analysis procedures may be used upon a demonstration, submitted to the department for approval, that such procedures provide sulfur dioxide emission estimates representative either of estimates based on coal sampling and analysis procedures specified in 326 IAC 3-7-2 or of continuous emissions monitoring.~~

D.1.11 Record Keeping Requirements

(a) To document compliance with Section C – Opacity, Section C – Maintenance of Continuous Opacity Monitoring Equipment, and the particulate matter and opacity requirements in Conditions D.1.1, D.1.2, D.1.4, D.1.5, D.1.6, D.1.8, and D.1.9, the Permittee shall maintain records in accordance with (1) through (4) below. Records shall be complete and sufficient to establish compliance with the limits established in Section C – Opacity and in Conditions D.1.1 and D.1.2.

(1) Data and results from the most recent stack test;

(2) All continuous opacity monitoring data, pursuant to 326 IAC 3-5-6;

(3) The results of all Method 9 visible emission readings taken during any periods of COM downtime.

(4) All ESP parametric monitoring readings.

(b) To document compliance with SO_2 conditions D.1.3, D.1.7, and D.1.10, the Permittee shall maintain records in accordance with (1) below. Records shall be complete and sufficient to establish compliance with the SO_2 limits as required in conditions D.1.3 and D.1.7.~~ The Permittee shall maintain records in accordance with (2) and (3) below during SO_2 CEMS malfunction or downtime.~~

(1) All SO_2 continuous emissions monitoring data, pursuant to 326 IAC 3-5-6 and 326 IAC 7-2-1(g).

~~(2) All fuel sampling and analysis data collected for SO_2 CEMS downtime, in accordance with Condition D.1.10.~~

~~(3) Actual fuel usage during each SO_2 CEMS downtime.~~

(c) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

D.2.4 Visible Emissions Notations [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) Visible emission notations of the coal unloading station shall be performed once per ~~day~~ **week** during normal daylight operations when unloading coal. A trained employee shall record whether emissions are normal or abnormal.

(b) Visible emission notations of the transfer points baghouse exhausts shall be performed once per ~~day~~ **week** during normal daylight operations when transferring coal. A trained employee shall record whether emissions are normal or abnormal.

D.2.5 Broken or Failed Bag Detection [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed **baghouse** ~~unit and the associated process~~ shall be shut down immediately**, and the Permittee shall repair the failed baghouse as soon as practicable and perform visible emissions notations of the transfer points twice daily until the failed baghouse has been repaired and placed back in operation.** ~~until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B – Emergency Provisions).~~

(b) For a single compartment baghouse controlling emissions from a batch process, ~~the feed to the process~~ **a failed baghouse** shall be shut down immediately**, and the Permittee shall repair the failed baghouse as soon as practicable and perform visible emissions notations of the transfer points twice daily until the failed baghouse has been repaired and placed back in operation** ~~until the failed unit has been repaired or replaced. The emission unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B – Emergency Provisions)~~.

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

Appeal Resolution No. 2:

IDEM agrees that as a result of the 2003 revisions to the New Source Performance Standards (NSPS) at 40 CFR Part 60, Subpart KB (§§60.110(b) et seq.), promulgated at 68 Fed. Reg. 59238 (Oct. 15, 2003), the two (2) 60,000 gallon and one (1) 20,000 gallon diesel fuel storage tanks listed in Condition A.3 of the Operating Permit are not subject to the NSPS because the vapor pressure of diesel fuel is less than 15.0 kPa, and therefore, these tanks would not qualify as "specifically regulated insignificant activities" under 326 IAC 2-7-1(21). IDEM has removed paragraphs (b)(2) and (b)(3) of Condition A.3, Specifically Regulated Insignificant Activities, and Condition D.5.1, Recordkeeping Requirements.

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) Coal bunker and coal scale exhausts and associated dust collector vents. [326 IAC 6-3]

(b) Other activities or categories not previously identified with potential, uncontrolled emissions equal to or less than thresholds require listing only: Pb 0.6 ton per year or 3.29 pounds per day, SO_2 5 pounds per hour or 25 pounds per day, NO_X 5 pounds per hour or 25 pounds per day, CO 25 pounds per day, PM 5 pounds per hour or 25 pounds per day, VOC 3 pounds per hour or 15 pounds per day:

(1) Four (4) No. 2 fuel oil fired coal transfer station heaters, installed in 1993: [326 IAC 6-3] [326 IAC 5]

(A) One (1) with 1.25 MMBtu/hr heat input capacity for Station 2;

(B) One (1) with 1.75 MMBtu/hr heat input capacity for Station 5; and

(C) Two (2) with 2.75 MMBtu/hr heat input capacity for Stations B3 and B4.

(2) ~~Two (2) 60,000 gallon diesel fuel storage tanks, installed in 2008, for start-up and flame stabilization at low loads for Units 1-6. The annual throughput is approximately 250,000 gallons, each. [326 IAC 12] [40 CFR 60, Subpart Kb]~~

~~(3) One (1) 20,000 gallon diesel fuel storage tank installed in 1995 for refueling equipment working in the coal yard. The annual throughput is approximately 150,000 gallons. [326 IAC 12] [40 CFR 60, Subpart Kb]~~

~~(4)~~ Limestone/iron ore flux handling facility, including limestone storage area, dump hopper, conveyor, and enclosed surge bin, installed in 1994, with a maximum design throughput rate of 300,000 lb/hr. [326 IAC 6-3] [326 IAC 5]

~~SECTION D.5 FACILITY OPERATION CONDITIONS~~

~~Facility Description [326 IAC 2-7-5(15)]~~

~~Insignificant Activities:~~

~~(2) Two (2) 60,000 gallon diesel fuel storage tanks, installed in 2008, for start-up and flame stabilization at low loads for Units 1-6. The annual throughput is approximately 250,000 gallons, each. [326 IAC 12] [40 CFR 60, Subpart Kb]~~

~~(3) One (1) 20,000 gallon diesel fuel storage tank installed in 1995 for refueling equipment working in the coal yard. The annual throughput is approximately 150,000 gallons. [326 IAC 12] [40 CFR 60, Subpart Kb]~~

~~(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)~~

~~Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]~~

~~D.5.1 Record Keeping Requirements [326 IAC 12] [40 CFR Part 60, Subpart Kb]~~

~~Pursuant to 326 IAC 1-1-3, 326 IAC 12 and 40 CFR 60.116b (2002 version):~~

~~(a) The Permittee shall keep copies of the record required by paragraph (b) of this section for the life of the source.~~

~~(b) The Permittee of each storage vessel as specified in 40 CFR 60.110b(a) (2002 version) shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.~~

~~These requirements are incorporated by reference from the July 1, 2002, version of 40 CFR 60 Subpart Kb and are no longer federally enforceable.~~

Conclusion and Recommendation

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Source Modification No. 077-24277-00001 and Significant Permit Modification No. 077-24304-00001. The staff recommend to the Commissioner that this Part 70 Significant Source and Significant Permit Modification be approved.

Indiana Department of Environmental Management
Office of Air Quality

Appendix A to the
Technical Support Document (TSD)
Emission Calculations

Source Description and Location

Company Name:	Indiana-Kentucky Electric Corporation – Clifty Creek Station
Address City IN Zip:	S.R. 56 West, Madison, Indiana, 47250
County:	Jefferson
SIC / NAICS Code:	4911
Part 70 Operating Permit Number:	077-7168-00001
Source Modification Number:	077-24277-00001
Permit Modification Number:	077-24304-00001
Permit Reviewer:	Kimberly Cottrell
Date:	January 25, 2008

Summary of Potential to Emit

The tables below summarize the potential to emit calculations submitted by IKEC. The subsequent pages of this document (pages 2-49) are the complete calculations provided by IKEC. IDEM has reviewed these calculations and verified their accuracy.

	Limited Potential To Emit (ton/yr)							
Process / Emission Unit	**CO**	**PM**	**PM_{10}**	**NO_X**	**SO_2**	**VOC**	**Single HAP**	**Combination HAPs**
Limestone Handling (LH)	0	3.99	1.94	0	0	0	0	0
Limestone Processing (LP)	0	0.17	0.08	0	0	0	0	0
Gypsum Handling (GH)	0	1.83	0.89	0	0	0	0	0
Landfill	0	3.15	1.07	0	0	0	0	0
Wastewater Treatment Plant (WWTP)	0	0.00	0.00	0	0	0	0	0
Paved Roads	0	9.20	1.79	0	0	0	0	0
Unpaved Roads	0	5.82	1.61	0	0	0	0	0
Total for Modification:	**0**	**24.16**	**7.38**	**0**	**0**	**0**	**0**	**0**
PSD Significant Emissions Increase Threshold:	NA	25.00	15.00	NA	NA	NA	NA	NA

	Limited Potential To Emit (lb/hr)							
Process / Emission Unit	**CO**	**PM**	**PM_{10}**	**NO_X**	**SO_2**	**VOC**	**Single HAP**	**Combination HAPs**
Limestone Handling (LH)	0	0.91	0.44	0	0	0	0	0
Limestone Processing (LP)	0	0.04	0.02	0	0	0	0	0
Gypsum Handling (GH)	0	0.42	0.20	0	0	0	0	0
Landfill	0	0.72	0.24	0	0	0	0	0
Wastewater Treatment Plant (WWTP)	0	0.00	0.00	0	0	0	0	0
Paved Roads	0	2.10	0.41	0	0	0	0	0
Unpaved Roads	0	1.33	0.37	0	0	0	0	0
Total for Modification:	**0**	**5.52**	**1.68**	**0**	**0**	**0**	**0**	**0**
Equivalent Threshold:	NA	5.71	3.42	NA	NA	NA	NA	NA

Notes:

The potential PM and PM_{10} emissions listed above are associated with the fugitive emissions generated form the Limestone Handling (LH), Limestone Processing (LP), the Gypsum Handling (GH), and the Chloride Purge Stream (CPS) Wastewater Treatment Plant (WWTP) Filter Cake Handling Systems for the Flue Gas Desulfurization (FGD) System. There will be a decrease in PM, PM_{10}, $PM_{2.5}$, and SO_2 emissions from existing Units 1 through 6 (wet-bottom pulverized coal-fired boilers) resulting from operation of the Flue Gas Desulfurization (FGD) System.

Clifty Creek Plant - FGD Fugitive Emissions Summary

	TSP	PM-10	PM-2.5		TSP	PM-10	PM-2.5
	ton/yr	*ton/yr*	*ton/yr*		*ton/yr*	*ton/yr*	*ton/yr*
Limestone Handling	*Uncontrolled*	*Uncontrolled*	*Uncontrolled*		*Controlled*	*Controlled*	*Controlled*
Limestone - Conveying	4.36	2.06	0.31		1.37	0.65	0.10
Limestone Pile Transfers	1.11	0.52	0.08		0.74	0.35	0.05
Limestone Active Storage Pile	0.77	0.39	0.06		0.77	0.39	0.06
Limestone Inactive Storage Pile	1.11	0.56	0.08		1.11	0.56	0.08
Total	**7.35**	**3.53**	**0.53**		**3.99**	**1.94**	**0.29**
	TSP	**PM-10**	**PM-2.5**		**TSP**	**PM-10**	**PM-2.5**
Limestone Processing	*Uncontrolled*	*Uncontrolled*	*Uncontrolled*		*Controlled*	*Controlled*	*Controlled*
Limestone Conveying and Crushing	3.06	1.45	0.22		0.17	0.08	0.01
Total	**3.06**	**1.45**	**0.22**		**0.17**	**0.08**	**0.01**
	TSP	**PM-10**	**PM-2.5**		**TSP**	**PM-10**	**PM-2.5**
Gysum Handling	*Uncontrolled*	*Uncontrolled*	*Uncontrolled*		*Controlled*	*Controlled*	*Controlled*
Gypsum Transfers	1.56	0.74	0.11		0.24	0.11	0.02
Gypsum Pile Transfers	0.78	0.37	0.06		0.78	0.37	0.06
Gypsum Storage Pile	0.63	0.32	0.05		0.63	0.32	0.05
Gypsum Emergency Storage Pile	0.17	0.08	0.01		0.17	0.08	0.01
Total	**3.15**	**1.51**	**0.23**		**1.83**	**0.89**	**0.13**
	TSP	**PM-10**	**PM-2.5**		**TSP**	**PM-10**	**PM-2.5**
Landfill	*Uncontrolled*	*Uncontrolled*	*Uncontrolled*		*Controlled*	*Controlled*	*Controlled*
Gypsum Transfer to Working Face	0.26	0.12	0.02		0.26	0.12	0.02
Gypsum Landfill Wind Erosion (Active Face Potential)	1.27	0.63	0.09		0.32	0.16	0.02
Gypsum Landfill Wind Erosion (Open Cell Potential)	0.13	0.06	0.01		0.03	0.02	2.4E-03
Gypsum Dozier Working on Face	41.18	12.56	1.26		2.54	0.78	0.08
Total	**42.83**	**13.38**	**1.38**		**3.15**	**1.07**	**0.12**
	TSP	**PM-10**	**PM-2.5**		**TSP**	**PM-10**	**PM-2.5**
Water Treatment Plant	*Uncontrolled*	*Uncontrolled*	*Uncontrolled*		*Controlled*	*Controlled*	*Controlled*
Sludge Transfer	3.2E-03	1.5E-03	2.3E-04		3.2E-03	1.5E-03	2.3E-04
Total	**3.2E-03**	**1.5E-03**	**2.3E-04**		**3.2E-03**	**1.5E-03**	**2.3E-04**
	TSP	**PM-10**	**PM-2.5**		**TSP**	**PM-10**	**PM-2.5**
Paved Roads	*Uncontrolled*	*Uncontrolled*	*Uncontrolled*		*Controlled*	*Controlled*	*Controlled*
Gypsum Trucking Paved Roads	83.34	16.25	2.43		8.52	1.66	0.25
Sludge Trucking Paved	6.50	1.27	0.19		0.66	0.13	0.02
Bulk Chemicals	0.14	0.03	4.0E-03		0.01	2.7E-03	4.0E-04
Total	**89.98**	**17.54**	**2.62**		**9.20**	**1.79**	**0.27**
	TSP	**PM-10**	**PM-2.5**		**TSP**	**PM-10**	**PM-2.5**
Unpaved Roads	*Uncontrolled*	*Uncontrolled*	*Uncontrolled*		*Controlled*	*Controlled*	*Controlled*
Gypsum Trucking Landfill Unpaved Roads	17.27	4.79	0.48		5.30	1.47	0.15
Sludge Trucking Unpaved	1.34	0.37	0.04		0.41	0.11	0.01
Limestone Unpaved Roads	3.37	0.69	0.07		0.12	0.02	2.4E-03
Total	**21.98**	**5.85**	**0.59**		**5.82**	**1.61**	**0.16**
	TSP	**PM-10**	**PM-2.5**		**TSP**	**PM-10**	**PM-2.5**
	Uncontrolled	*Uncontrolled*	*Uncontrolled*		*Controlled*	*Controlled*	*Controlled*
Project Total	**168.35**	**43.27**	**5.57**		**24.16**	**7.38**	**0.99**

Uncontrolled emissions and controlled emissions were calculated based on 8760 hours at 100% capacity of all six boilers burning a 5 lb/mmbtu sulfur coal.

Limestone Transfer Annual Emissions - Conveying Option

Emission Factor (EF) Equation[1]

EF (lb/ton) = k * 0.0032 * ((U / 5) ^ 1.3 / (M/2) ^ 1.4)

k =	Particle size multiplier =	0.74	for TSP
		0.35	for PM-10
		0.053	for PM-2.5
U =	mean wind speed, mph =	8.3	2003 LCD For Louisville KY (SDF) Station No. 93821
M =	material moisture content, % =	5	

Material Transfer Emission Factor =	**1.27E-03**	**lb TSP/ton Limestone**	
	6.00E-04	**lb PM-10/ton Limestone**	1,476.00
	9.09E-05	**lb PM-2.5/ton Limestone**	

TSP/PM10/PM2.5 Emissions Calculation

Annual emissions based on maximum transfer rates 1,880.00 tons/day 686,200 tons/yr

Emission Point ID	Transfer Description		Max Limestone Transferred	Potential Uncontrolled TSP Emissions	Potential Uncontrolled PM-10 Emissions	Potential Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency [2]	Potential Controlled TSP Emission	Potential Controlled PM-10 Emission	Potential Controlled PM-2.5 Emission
			ton/yr	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
22 (LH)	Clamshell Bucket into Barge		686,200	0.44	0.21	0.03	None	0%	0.44	0.21	0.03
23 (LH)	Clamshell Bucket into Reclaim Hopper (RH1)		686,200	0.44	0.21	0.03	Fog Suppression	55%	0.20	0.09	0.01
23 (LH)	Reclaim Hopper (RH1) ontoVibrating Feeder		686,200	0.44	0.21	0.03	Partial Enlcosure	70%	0.13	0.06	0.01
23 (LH)	Vibrating Feeder (VF1) onto LS Unloading Belt Conveyor (LU1)		686,200	0.44	0.21	0.03	Fog Suppression	55%	0.20	0.09	0.01
24 (LH)	LS Unloading Belt Conveyor (LU1)		686,200	0.44	0.21	0.03	3/4 Conveyor Cover	70%	0.13	0.06	0.01
39a (LH)	Limestone Unloading Conveyor (LU1) to Limestone Transfer Conveyor (LU2)		686,200	0.44	0.21	0.03	Full Enclosure	99%	4.4E-03	2.1E-03	3.1E-04
40a (LH)	Limestone Transfer Conveyor (LU2)		686,200	0.44	0.21	0.03	3/4 Conveyor Cover	70%	0.13	0.06	0.01
39b (LH)	Limestone Transfer Conveyor (LU2) to Limestone Transfer Conveyor (LU3)		686,200	0.44	0.21	0.03	Full Enclosure	99%	4.4E-03	2.1E-03	3.1E-04
40b (LH)	Limestone Transfer Conveyor (LU3)		686,200	0.44	0.21	0.03	3/4 Conveyor Cover	70%	0.13	0.06	0.01
Landfill	Active Storage Pile into Reclaim Drawdown Hopper 1 or 2		686,200	0.44	0.21	0.03	Full Enclosure	99%	4.4E-03	2.1E-03	0.00
26 (LP)	Vibratory Drawndown Hopper(DH-1 or DH-2) onto Vibratory Reclaim Feeder (VF-2 or VF-3)		686,200	0.44	0.21	0.03	Enclosed reclaim With Dust Suppression	99%	4.4E-03	2.1E-03	3.1E-04
26 (LP)	Vibratory Reclaim Feeder (VF-2 or VF-3) onto LS Reclaim Conveyor LR-1.		686,200	0.44	0.21	0.03	Full Enclosure	99%	4.4E-03	2.1E-03	3.1E-04
28 (LP)	LS Reclaim Conveyor (LR-1)		686,200	0.44	0.21	0.03	3/4 Conveyor Cover	70%	0.13	0.06	0.01
8 (LP)	LS Reclaim Conveyor (LR-1) into LS Storage Silo A		343,100	0.22	0.10	0.02	Full Enclosure	99%	2.2E-03	1.0E-03	1.6E-04
29 (LP)	LS Reclaim Conveyor (LR-1) onto Silo Transfer Conveyor (LR-3)		343,100	0.22	0.10	0.02	Full Enclosure	99%	2.2E-03	1.0E-03	1.6E-04
29 (LP)	Silo Transfer Conveyor (LR-3)		343,100	0.22	0.10	0.02	Full Enclosure	99%	2.2E-03	1.0E-03	1.6E-04
29 (LP)	Silo Transfer Conveyor (LR-3) into LS Storage Silo B		343,100	0.22	0.10	0.02	Full Enclosure	99%	2.2E-03	1.0E-03	1.6E-04
8 (LP)	LS Storage Silo A onto Feeder A		343,100	0.22	0.10	0.02	Full Enclosure	99%	2.2E-03	1.0E-03	1.6E-04
8 (LP)	Feeder A into Wet Ball A		343,100	0.22	0.10	0.02	Full Enclosure	99%	2.2E-03	1.0E-03	1.6E-04
8 (LP)	LS Storage Silo B onto Feeder B		343,100	0.22	0.10	0.02	Full Enclosure	99%	2.2E-03	1.0E-03	1.6E-04
8 (LP)	Feeder B into Wet Ball B		343,100	0.22	0.10	0.02	Full Enclosure	99%	2.2E-03	1.0E-03	1.6E-04

Emission Point ID	Transfer Description		Max Limestone Transferred	Potential Uncontrolled TSP Emissions	Potential Uncontrolled PM-10 Emissions	Potential Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency [2]	Potential Controlled TSP Emission	Potential Controlled PM-10 Emission	Potential Controlled PM-2.5 Emission
			ton/yr	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
27 (LH)	Front End Loader into Emergency Reclaim Hopper		10,000	0.01	3.0E-03	4.5E-04	None	0%	6.3E-03	3.0E-03	4.5E-04
27 (LP)	Emergency Reclaim Hopper onto Emergency Reclaim Vibrating Feeder		10,000	0.01	3.0E-03	4.5E-04	None	0%	6.3E-03	3.0E-03	4.5E-04
27 (LP)	Emergency reclaim Vibrating Feeder onto Reclaim Conveyor		10,000	0.01	3.0E-03	4.5E-04	None	0%	6.3E-03	3.0E-03	4.5E-04
	Conveying Option Transfers Limestone Handling	**Uncontrolled Potential Emissions**		**4.36**	**2.06**	**0.31**	**Controlled Potential Emissions**		**1.37**	**0.65**	**0.10**
	Conveying and Crushing Limestone Processing	**Uncontrolled Potential Emissions**		**3.06**	**1.45**	**0.22**	**Controlled Potential Emissions**		**0.17**	**0.08**	**0.01**

Notes:
1. AP-42, Chapter 13.2.4, November 2006.
2. Control Efficiencies based on Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998
Enclosures - Document states that partial to full enclosures can result in particulate emission reductions ranging from 70% to 99%, study conservatively assume 70% for partial enclosures

Limestone Pile Transfer

Emission Factor (EF) Equation[1]

EF (lb/ton) = k * 0.0032 * ((U / 5) ^ 1.3 / (M/2) ^ 1.4)

k =	Particle size multiplier =	0.74	for TSP
		0.35	for PM-10
		0.053	for PM-2.5
U =	mean wind speed, mph =	8.3	2003 LCD For Louisville KY (SDF) Station No. 93821
M =	material moisture content, % =	5	

Material Transfer Emission Factor =	**1.27E-03**	**lb TSP/ton Limestone**
	6.00E-04	**lb PM-10/ton Limestone**
	9.09E-05	**lb PM-2.5/ton Limestone**

TSP/PM10/PM2.5 Emissions Calculation

Calculations for maximum limestone transfer based on operation
of the FGD's and all six units 8760 hours at 100% rated capacity using 5 lb/mmbtu sulfur coal*

Annual emissions based on maximum transfer rates*	1,880.00	tons/day	686,200	tons/yr	For Active Pile
Annual emissions based on 80.4% of the pile being dead storage**					
Annual emissions based on one months supply being transferred between piles***					

	Transfer Description		Max Limestone Transferred	Potential Uncontrolled TSP Emissions	Potential Uncontrolled PM-10 Emissions	Potential Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency [2]	Potential Controlled TSP Emission	Potential Controlled PM-10 Emission	Potential Controlled PM 2.5 Emission
			ton/yr	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
25 (LH)	Limestone Transfer Conveyor (LU3) to Active Limestone Storage Pile (Counted in Total LS Pile Emissions)*		686,200	0.44	0.21	0.03	Stacking Tube	85%	0.07	0.03	4.7E-03
25 (LH)	Active Storage Pile into Front End Loader (Pile Maintenance)**		433,147	0.27	0.13	0.02	None	0%	0.27	0.13	0.02
25 (LH)	Front End Loader onto Active Storage Pile**		433,147	0.27	0.13	0.02	None	0%	0.27	0.13	0.02
25 (LH)	Active Storage Pile into Front End Loader ***		44,895	0.03	0.01	2.0E-03	None	0%	0.03	0.01	2.0E-03
25 (LH)	Front End Loader onto Active Storage Pile***		44,895	0.03	0.01	2.0E-03	None	0%	0.03	0.01	2.0E-03
Landfill	Active Storage Pile into Front End Loader Emergency		10,000	0.01	3.0E-03	4.5E-04	None	0%	0.01	3.0E-03	4.5E-04
30 (LH)	Front End Loader onto Long Term Storage Pile		44,895	0.03	0.01	2.0E-03	None	0%	0.03	0.01	2.0E-03
30 (LH)	Long Term Storage Pile into Front End Loader		44,895	0.03	0.01	2.0E-03	None	0%	0.03	0.01	2.0E-03
	Total	**Uncontrolled Potential Emissions**		**1.11**	**0.52**	**0.08**	**Controled Potential Emissions**		**0.74**	**0.35**	**0.05**

Notes:
1. AP-42, Chapter 13.2.4, November 2006.
2. Control Efficiencies based on Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998
   Enclosures - Document states that partial to full enclosures can result in particulate emission reductions ranging from 70% to 99%, study conservatively assume 70% for partial enclosures and 99% for full enclosures. Here tube is more than a partial enclosure but not a full enclosure and assumed control to be in the middle.

Unpaved Road Emissions - Limestone Pile Maintenance and Pile Transfer Emissions

Emission Factor (EF) Equation

EF= k*(s/12)^a*(w/3)^b*((365-p)/365)

k=	Particle Size Multiplier=	4.9	for TSP	3.318738736
		1.5	for PM-10	
		0.15	for PM-2.5	
a=	constant=	0.7	for TSP	
		0.9	for PM-10/PM-2.5	
s=	surface material silt content, %=	1.6	Crushed Limestone (AP-42 Table 13.2.1-1	
b=	constant=	0.45	For TSP/PM-10/PM-2.5	
W=	average vehicle weight, tons=	see Table Below		
p=	number of days per year with at least .01in of precipitation	126	2004 LCD Louisville, KY (POR: 30 years)	
			m	

Control Efficiency (CE) Equation[2]

CE = 100 - (0.8pdt)/i

p =	Potential average hourly daytime evaporation rate (mm/hr)	0.0049*r	0.220500
r =	reading from table	45	
d =	average hr daytime traffic rate (h-	1.12	
t =	time between applications (hr)	3	
i =	application intensity, (L/m^2)	0.1715	

CE = 96.54%

LS transported between piles	44895	assumes one month of limestone transported between piles
FE Loader Capacity (tons)	15.39	based on 12 cu yd per bucket
FE Loader Round Trips per year	2917	
One Way Distance Pile to Pile (ft)	200	
One Way Distance Pile to Pile (mi)	0.04	

Emission Point ID	Maintenance or Transfer Activity	Average Vehicle Weight tons	TSP Emission Factor lbs/VMT	PM-10 Emission Factor lbs/VMT	PM-2.5 Emission Factor lbs/VMT	Number of Trips Trips/yr	Total Trip Distance miles	Vehicle Mile Traveled mile/yr	Uncontrolled TSP Emissions ton/yr	Uncontrolled PM-10 Emissions ton/yr	Uncontrolled PM-2.5 Emissions ton/yr	Control Method	Control Efficiency %	Controlled TSP Emissions ton/yr	Controlled PM-10 Emissions ton/yr	Controlled PM-2.5 Emissions ton/yr
25 (LH)	Active Pile Maintenance	85.8	3.54	0.72	0.07			1460	2.58	0.53	0.05	Watering	96.54%	0.09	0.02	1.8E-03
UPR (LH)	Transport to long term storage pile from active storage pile	85.8	3.54	0.72	0.07	2917	0.08	221	0.39	0.08	0.01	Watering	96.54%	0.01	2.8E-03	2.8E-04
UPR (LH)	Transport to active term storage pile from long storage pile	85.8	3.54	0.72	0.07	2917	0.08	221	0.39	0.08	0.01	Watering	96.54%	0.01	2.8E-03	2.8E-04
Landfill				**Totals**		**Uncontrolled Potential Emissions**			**3.37**	**0.69**	**0.07**	**Controlled Potential Emissions**		**0.12**	**0.02**	**0.002**

Notes:
1. AP-42, Chapter 13.2.2, November 2006.
2. Air Pollution Control Manual, 1992, Air & Waste Management Assoc. p. 141, as referenced in Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998.
3. Control efficiency is conservatively calculated using 2600 operating hours per year.

Limestone Active Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ $Pi, (g/m^2)$		
January	1	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	2	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	3	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	4	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	6	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	7	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	8	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
January	9	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
January	10	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
January	12	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	14	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
January	15	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	17	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	18	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
January	19	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
January	20	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
Landfill	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	22	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	24	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	25	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
January	27	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	28	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	29	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	30	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
January	31	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	1	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
February	2	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	3	41	0.86	0.39	2.59	1.16	3.88	1.73	0.00	0.99	37.28
February	4	37	0.78	0.35	2.34	1.04	3.50	1.57	0.00	0.00	22.64
February	5	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
February	6	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
February	7	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	8	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	9	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	10	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
February	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
February	12	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
February	13	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
February	14	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	15	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
February	16	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
February	17	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	18	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	19	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	20	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	21	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
February	22	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
February	23	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00

Limestone Active Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
February	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	25	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
February	26	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	27	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
February	28	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
March	1	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
March	2	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	3	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
March	4	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	5	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	6	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	7	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
March	8	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
March	9	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	10	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	11	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	12	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
March	13	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
March	14	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	15	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
March	16	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
March	17	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
March	18	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
March	19	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	20	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
March	21	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	22	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
March	23	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
March	24	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	25	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	26	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	27	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	28	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
March	29	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
March	30	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	31	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	1	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
April	2	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
April	3	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	4	48	1.01	0.45	3.03	1.35	4.54	2.03	0.00	9.02	70.89
April	5	48	1.01	0.45	3.03	1.35	4.54	2.03	0.00	9.02	70.89
April	6	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	7	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
April	8	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	9	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	10	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	11	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	12	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
April	14	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
April	15	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
April	16	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
April	17	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	18	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00

Limestone Active Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2)		
April	19	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
April	20	67	1.41	0.63	4.23	1.89	6.34	2.83	0.00	53.62	213.41
April	21	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
April	22	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
April	23	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
April	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	25	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
April	26	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
April	27	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
April	28	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
April	29	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
April	30	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	1	46	0.97	0.43	2.90	1.30	4.35	1.95	0.00	6.26	60.25
May	2	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	3	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	5	44	0.93	0.41	2.78	1.24	4.17	1.86	0.00	3.88	50.44
May	6	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
May	7	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
May	8	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
May	9	43	0.90	0.40	2.71	1.21	4.07	1.82	0.00	2.82	45.85
May	10	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
May	11	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
May	12	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
May	13	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	14	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	15	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
May	16	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
May	17	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	18	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
May	19	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
May	20	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	21	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	22	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
May	23	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	24	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
May	25	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
May	26	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
May	27	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
May	28	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
May	29	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	30	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
May	31	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
June	1	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
June	2	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
June	3	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	6	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	7	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	8	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
June	9	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
June	10	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
June	11	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00

Limestone Active Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
June	12	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
June	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	14	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	15	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	16	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	17	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	18	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	19	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	20	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
June	21	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	22	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	23	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	24	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	26	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
June	27	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	28	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	29	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
June	30	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	1	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	2	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	3	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
July	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
July	5	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
July	6	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
July	7	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	8	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
July	9	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
July	10	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
July	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
July	12	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
July	13	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
July	14	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
July	15	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
July	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	17	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
July	18	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	19	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	20	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
July	21	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
July	22	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
July	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
July	24	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
July	25	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
July	26	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	27	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	28	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	29	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	30	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
July	31	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
August	1	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
August	2	45	0.95	0.42	2.84	1.27	4.26	1.90	0.00	5.02	55.24
August	3	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
August	4	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86

Limestone Active Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2)		
August	5	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
August	6	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	7	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	8	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	9	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
August	10	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
August	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
August	12	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
August	13	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
August	14	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
August	15	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	17	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	18	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	19	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	20	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	22	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
August	23	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	24	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
August	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	26	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	27	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
August	28	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
August	29	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
August	30	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	31	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	1	40	0.84	0.38	2.52	1.13	3.79	1.69	0.00	0.21	33.31
September	2	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
September	3	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	4	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
September	5	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	6	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	7	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
September	8	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	9	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	10	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
September	11	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
September	12	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
September	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
September	14	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
September	15	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
September	16	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	17	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
September	18	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	19	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	20	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	21	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	22	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
September	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
September	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
September	25	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
September	27	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34

Limestone Active Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
September	28	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
September	29	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	30	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	1	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	2	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
October	3	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
October	4	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	6	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	7	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
October	8	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	9	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	10	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	11	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	12	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
October	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	14	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
October	15	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
October	16	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	17	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	18	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	19	8	0.17	0.08	0.50	0.23	0.76	0.34	0.00	0.00	0.00
October	20	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
October	21	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
October	22	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
October	23	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	24	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
October	25	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
October	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	27	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
October	28	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
October	29	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	30	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
October	31	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	1	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
November	2	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	3	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	4	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	5	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
November	6	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
November	7	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
November	8	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	9	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	10	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	12	38	0.80	0.36	2.40	1.07	3.60	1.61	0.00	0.00	25.99
November	13	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
November	14	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
November	15	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	16	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
November	17	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	18	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
November	19	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
November	20	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00

Limestone Active Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2)		
November	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	22	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
November	23	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
November	24	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
November	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	26	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	27	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
November	28	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
November	29	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
November	30	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
December	1	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	2	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	3	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	4	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
December	5	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	6	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
December	7	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
December	8	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	9	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
December	10	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
December	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	12	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
December	14	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
December	15	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
December	16	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	17	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	18	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	19	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
December	20	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
December	21	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	22	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	23	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
December	24	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
December	25	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
December	26	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
December	27	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	28	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
December	29	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
December	30	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
December	31	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00

Threshold wind speed (u^*)[5]	1.12	m/s	AP-42 Table 13.2.5-2
Convert threshold to equiv fastest mile (mph)	45.59	mph	
Roughness length (z_0)[5]	0.003	m	AP-42 Table 13.2.5-2
Measurement anemometer height (z_a)	6.71	m	2004 LCD Louisville, KY
No. disturbances per day	1		Estimate
Percent of area disturbed between events	100	%	Conservative
Control efficiency	0	%	None

Limestone Pile Potential TSP/PM10/PM2.5 Emissions (based on 8,760 hours per year)

Limestone Active Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ *Pi, (g/m^2)*		

Height of Pile	25.82	m
Diameter of Pile	61.54	m
Surface area of pile [6]	3,883	m^2

	40% of Pile	48% of Pile	12% of Pile	Total	
Uncontrolled TSP Emissions	**0.00**	**0.19**	**0.58**	**0.77**	**(tons/year)**
Uncontrolled PM-10 Emissions	**0.00**	**0.09**	**0.29**	**0.39**	**(tons/year)**
Uncontrolled PM-2.5 Emissions	**0.00**	**0.01**	**0.04**	**0.06**	**(tons/year)**
Controlled TSP Emissions	**0.00**	**0.19**	**0.58**	**0.77**	**(tons/year)**
Controlled PM-10 Emissions	**0.00**	**0.09**	**0.29**	**0.39**	**(tons/year)**
Controlled PM-2.5 Emissions	**0.00**	**0.01**	**0.04**	**0.06**	**(tons/year)**

1. AP-42, Chapter 13.2.5 Industrial Wind Erosion, November 2006.
2. Maximum daily 5-second wind speed. 2003 Local Climatological Data for Louisville, Kentucky (SDF) (Station No.: 93821).
3. us/ur = 0.2 for 40%, us/ur = 0.6 for 48%, and us/ur = 0.9 for 12% of elevated pile surface area from AP-42, Chp. 13.2.5
4. Equation from AP-42, Chp. 13.2.5 = P = 58 * (u*-u*t)^2 + 25 * (u* - u*t)
5. Assumed uncrusted coal pile similar to limestone pile.
6. Assume storage capacity of 38381 tons.

Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
January	1	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	2	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	3	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	4	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	6	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	7	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	8	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
January	9	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
January	10	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
January	12	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	14	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
January	15	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	17	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	18	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
January	19	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
January	20	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
Landfill	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	22	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	24	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	25	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
January	27	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	28	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	29	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	30	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
January	31	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	1	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
February	2	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	3	41	0.86	0.39	2.59	1.16	3.88	1.73	0.00	0.99	37.28
February	4	37	0.78	0.35	2.34	1.04	3.50	1.57	0.00	0.00	22.64
February	5	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
February	6	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
February	7	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	8	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	9	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	10	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
February	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
February	12	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
February	13	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
February	14	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	15	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
February	16	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
February	17	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	18	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	19	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	20	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	21	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
February	22	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
February	23	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00

Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
February	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	25	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
February	26	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	27	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
February	28	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
March	1	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
March	2	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	3	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
March	4	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	5	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	6	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	7	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
March	8	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
March	9	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	10	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	11	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	12	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
March	13	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
March	14	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	15	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
March	16	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
March	17	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
March	18	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
March	19	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	20	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
March	21	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	22	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
March	23	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
March	24	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	25	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	26	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	27	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	28	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
March	29	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
March	30	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	31	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	1	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
April	2	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
April	3	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	4	48	1.01	0.45	3.03	1.35	4.54	2.03	0.00	9.02	70.89
April	5	48	1.01	0.45	3.03	1.35	4.54	2.03	0.00	9.02	70.89
April	6	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	7	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
April	8	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	9	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	10	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	11	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	12	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
April	14	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
April	15	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
April	16	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
April	17	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	18	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00

Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
April	19	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
April	20	67	1.41	0.63	4.23	1.89	6.34	2.83	0.00	53.62	213.41
April	21	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
April	22	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
April	23	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
April	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	25	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
April	26	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
April	27	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
April	28	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
April	29	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
April	30	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	1	46	0.97	0.43	2.90	1.30	4.35	1.95	0.00	6.26	60.25
May	2	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	3	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	5	44	0.93	0.41	2.78	1.24	4.17	1.86	0.00	3.88	50.44
May	6	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
May	7	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
May	8	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
May	9	43	0.90	0.40	2.71	1.21	4.07	1.82	0.00	2.82	45.85
May	10	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
May	11	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
May	12	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
May	13	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	14	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	15	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
May	16	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
May	17	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	18	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
May	19	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
May	20	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	21	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	22	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
May	23	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	24	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
May	25	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
May	26	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
May	27	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
May	28	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
May	29	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	30	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
May	31	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
June	1	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
June	2	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
June	3	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	6	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	7	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	8	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
June	9	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
June	10	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
June	11	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00

Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
June	12	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
June	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	14	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	15	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	16	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	17	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	18	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	19	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	20	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
June	21	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	22	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	23	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	24	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	26	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
June	27	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	28	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	29	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
June	30	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	1	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	2	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	3	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
July	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
July	5	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
July	6	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
July	7	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	8	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
July	9	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
July	10	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
July	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
July	12	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
July	13	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
July	14	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
July	15	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
July	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	17	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
July	18	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	19	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	20	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
July	21	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
July	22	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
July	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
July	24	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
July	25	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
July	26	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	27	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	28	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	29	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	30	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
July	31	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
August	1	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
August	2	45	0.95	0.42	2.84	1.27	4.26	1.90	0.00	5.02	55.24
August	3	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
August	4	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86

Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
August	5	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
August	6	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	7	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	8	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	9	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
August	10	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
August	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
August	12	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
August	13	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
August	14	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
August	15	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	17	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	18	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	19	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	20	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	22	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
August	23	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	24	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
August	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	26	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	27	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
August	28	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
August	29	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
August	30	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	31	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	1	40	0.84	0.38	2.52	1.13	3.79	1.69	0.00	0.21	33.31
September	2	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
September	3	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	4	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
September	5	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	6	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	7	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
September	8	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	9	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	10	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
September	11	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
September	12	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
September	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
September	14	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
September	15	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
September	16	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	17	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
September	18	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	19	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	20	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	21	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	22	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
September	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
September	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
September	25	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
September	27	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34

Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
September	28	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
September	29	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	30	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	1	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	2	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
October	3	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
October	4	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	6	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	7	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
October	8	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	9	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	10	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	11	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	12	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
October	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	14	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
October	15	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
October	16	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	17	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	18	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	19	8	0.17	0.08	0.50	0.23	0.76	0.34	0.00	0.00	0.00
October	20	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
October	21	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
October	22	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
October	23	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	24	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
October	25	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
October	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	27	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
October	28	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
October	29	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	30	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
October	31	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	1	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
November	2	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	3	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	4	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	5	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
November	6	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
November	7	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
November	8	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	9	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	10	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	12	38	0.80	0.36	2.40	1.07	3.60	1.61	0.00	0.00	25.99
November	13	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
November	14	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
November	15	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	16	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
November	17	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	18	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
November	19	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
November	20	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00

Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ $Pi, (g/m^2)$ 40% of Pile	48% of Pile	12% of Pile
November	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	22	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
November	23	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
November	24	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
November	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	26	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	27	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
November	28	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
November	29	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
November	30	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
December	1	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	2	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	3	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	4	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
December	5	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	6	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
December	7	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
December	8	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	9	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
December	10	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
December	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	12	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
December	14	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
December	15	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
December	16	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	17	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	18	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	19	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
December	20	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
December	21	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	22	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	23	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
December	24	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
December	25	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
December	26	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
December	27	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	28	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
December	29	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
December	30	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
December	31	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00

Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ $Pi, (g/m^2)$		

Threshold wind speed (u^*)[5]	1.12	m/s	AP-42 Table 13.2.5-2
Convert threshold to equiv fastest mile (mph)	45.59	mph	
Roughness length (z_0)[5]	0.003	m	AP-42 Table 13.2.5-2
Measurement anemometer height (z_a)	6.71	m	2004 LCD Louisville, KY
No. disturbances per day	1		Estimate
Percent of area disturbed between events	100	%	Conservative
Control efficiency	0	%	None

Limestone Pile Potential TSP/PM10/PM2.5 Emissions (based on 8,760 hours per year)

Surface area of pile[6] 4,929 m^2

	36% of Pile	50% of Pile	14% of Pile	Total	
Uncontrolled TSP Emissions	**0.00**	**0.25**	**0.87**	**1.11**	**(tons/year)**
Uncontrolled PM-10 Emissions	**0.00**	**0.12**	**0.43**	**0.56**	**(tons/year)**
Uncontrolled PM-2.5 Emissions	**0.00**	**0.02**	**0.06**	**0.08**	**(tons/year)**
Controlled TSP Emissions	**0.00**	**0.25**	**0.87**	**1.11**	**(tons/year)**
Controlled PM-10 Emissions	**0.00**	**0.12**	**0.43**	**0.56**	**(tons/year)**
Controlled PM-2.5 Emissions	**0.00**	**0.02**	**0.06**	**0.08**	**(tons/year)**

1. AP-42, Chapter 13.2.5 Industrial Wind Erosion, November 2006.
2. Maximum daily 5-second wind speed. 2003 Local Climatological Data for Louisville, Kentucky (SDF) (Station No.: 93821).
3. us/ur = 0.2 for 40%, us/ur = 0.6 for 48%, and us/ur = 0.9 for 12% of elevated pile surface area from AP-42, Chp. 13.2.5
4. Equation from AP-42, Chp. 13.2.5 = P = 58 * (u*-u*t)^2 + 25 * (u* - u*t)
5. Assumed uncrusted coal pile similar to limestone pile.
6. Assume storage capacity of 44280 tons.

Gypsum Transfer Annual Emissions - Trucking Option

Emission Factor (EF) Equation[1]

EF (lb/ton) = k * 0.0032 * ((U / 5) ^ 1.3 / (M/2) ^ 1.4)

k =	Particle size multiplier =	0.74	for TSP
		0.35	for PM-10
		0.053	for PM-2.5
U =	mean wind speed, mph =	8.3	2004 LCD Louisville, KY (POR: 52 years)
M =	material moisture content, % =	10	

Material Transfer Emission Factor =	**4.81E-04**	**lb TSP/ton Gypsum**
	2.27E-04	**lb PM-10/ton Gypsum**
	3.44E-05	**lb PM-2.5/ton Gypsum**

TSP/PM10/PM2.5 Emissions Calculation

Annual emissions based on maximum transfer rates 123 tons/hr 1,077,480 tons/yr

Emission Pt ID	Transfer Description		Max Gypsum Transferred *ton/yr*	Potential Uncontrolled TSP Emissions *ton/yr*	Potential Uncontrolled PM-10 Emissions *ton/yr*	Potential Uncontrolled PM-2.5 Emissions *ton/yr*	Control Method	Control Efficiency [2] *%*	Potential Controlled TSP Emission *ton/yr*	Potential Controlled PM-10 Emission *ton/yr*	Potential Controlled PM-2.5 Emission *ton/yr*
7 (GH)	Belt Filter A or B onto Gypsum Collecting Conveyor		1,077,480	0.26	0.12	0.02	Full Enclosure	99%	2.6E-03	1.2E-03	1.9E-04
7 (GH)	Gypsum Collecting Conveyor		1,077,480	0.26	0.12	0.02	3/4 Conveyor Cover	70%	0.08	0.04	5.6E-03
7 (GH)	Gypsum Collecting Conveyor onto Gypsum Transfer Conveyor		1,077,480	0.26	0.12	0.02	Full Enclosure	99%	2.6E-03	1.2E-03	1.9E-04
32 (GH)	Gypsum Transfer Conveyor		1,077,480	0.26	0.12	0.02	3/4 Conveyor Cover	70%	0.08	0.04	5.6E-03
32 (GH)	Gypsum Transfer Conveyor onto Gypsum Radial Stacker Conveyor		1,077,480	0.26	0.12	0.02	Full Enclosure	99%	2.6E-03	1.2E-03	1.9E-04
33 (GH)	Gypsum Radial Stacker Conveyor		1,077,480	0.26	0.12	0.02	3/4 Conveyor Cover	70%	0.08	0.04	5.6E-03
7 (GH)	Belt Filter A or B onto Emergency Gypsum Collecting Conveyor		10,000	2.4E-03	1.1E-03	1.7E-04	Full Enclosure	99%	2.4E-05	1.1E-05	1.7E-06
7 (GH)	Emergency Collecting Conveyor		10,000	2.4E-03	1.1E-03	1.7E-04	3/4 Conveyor Cover	70%	7.2E-04	3.4E-04	5.2E-05
31 (GH)	Emergency Collecting Conveyor onto Emergency Stock-out Conveyor		10,000	2.4E-03	1.1E-03	1.7E-04	Full Enclosure	99%	2.4E-05	1.1E-05	1.7E-06
Landfill	Emergency Stock-out Conveyor		10,000	2.4E-03	1.1E-03	1.7E-04	3/4 Conveyor Cover	70%	7.2E-04	3.4E-04	5.2E-05
	Total		**Uncontrolled Potential Emissions**	**1.56**	**0.74**	**0.11**	**Controlled Potential Emissions**		**0.24**	**0.11**	**0.02**

Notes:
1. AP-42, Chapter 13.2.4, November 2006.
2. Control Efficiencies based on Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998
   Enclosures - Document states that partial to full enclosures can result in particulate emission reductions ranging from 70% to 99%, study conservatively assume 70% for partial enclosures

Gypsum Pile Transfer Annual Emissions

Emission Factor (EF) Equation[1]

EF (lb/ton) = k * 0.0032 * ((U / 5) ^ 1.3 / (M/2) ^ 1.4)

k =	Particle size multiplier =	0.74	for TSP
		0.35	for PM-10
		0.053	for PM-2.5
U =	mean wind speed, mph =	8.3	2004 LCD Louisville, KY (POR: 52 years)
M =	material moisture content, % =	10	

Material Transfer Emission Factor =	**4.81E-04**	**lb TSP/ton Gypsum**
	2.27E-04	**lb PM-10/ton Gypsum**
	3.44E-05	**lb PM-2.5/ton Gypsum**

TSP/PM10/PM2.5 Emissions Calculation

Annual emissions based on maximum transfer rates 123 tons/hr 1,077,480 tons/yr

Emission Point ID	Transfer Description	Max Gypsum Transferred	Potential Uncontrolled TSP Emissions	Potential Uncontrolled PM-10 Emissions	Potential Uncontrolled PM-2.5 Emissions	Control Measures	Control Efficiency	Controlled Emissions TSP	Controlled Emissions PM10	Controlled Emissions PM2.5
								TPY	*TPY*	*TPY*
34 (GH)	Gypsum Radial Stacker Conveyor onto Stockpile	1,077,480	0.26	0.12	0.02	None	0%	0.26	0.12	1.9E-02
34 (GH)	Stockpile into Front-End loader	1,077,480	0.26	0.12	0.02	None	0%	0.26	0.12	1.9E-02
34 (GH)	Front-End Loader onto Truck	1,077,480	0.26	0.12	0.02	None	0%	0.26	0.12	1.9E-02
34 (GH)	Emergency Stock-out Conveyor onto Emergency Stock-out Pile	10,000	2.4E-03	1.1E-03	1.7E-04	None	0%	2.4E-03	1.1E-03	1.7E-04
34 (GH)	Stockpile into Front-End loader	10,000	2.4E-03	1.1E-03	1.7E-04	None	0%	2.4E-03	1.1E-03	1.7E-04
34 (GH)	Front-End Loader onto Truck	10,000	2.4E-03	1.1E-03	1.7E-04	None	0%	2.4E-03	1.1E-03	1.7E-04
	Total	**Uncontrolled Potential Emissions**	**0.78**	**0.37**	**0.06**	**Controlled Potential Emissions**		**0.78**	**0.37**	**5.6E-02**

1. AP-42, Chapter 13.2.4, November 2006.
Landfill

Gypsum Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 36% of Pile	50% of Pile	14% of Pile
January	1	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	2	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	3	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	4	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	6	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	7	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	8	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
January	9	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
January	10	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
January	12	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	14	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
January	15	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	17	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	18	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
January	19	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
January	20	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
Landfill	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	22	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	24	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	25	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
January	27	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	28	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	29	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	30	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
January	31	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	1	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
February	2	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	3	41	0.86	0.39	2.59	1.16	3.88	1.73	0.00	0.99	37.28
February	4	37	0.78	0.35	2.34	1.04	3.50	1.57	0.00	0.00	22.64
February	5	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
February	6	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
February	7	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	8	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	9	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	10	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
February	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
February	12	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
February	13	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
February	14	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	15	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
February	16	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
February	17	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	18	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	19	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	20	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	21	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
February	22	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
February	23	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00

Gypsum Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 36% of Pile	50% of Pile	14% of Pile
February	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	25	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
February	26	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	27	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
February	28	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
March	1	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
March	2	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	3	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
March	4	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	5	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	6	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	7	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
March	8	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
March	9	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	10	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	11	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	12	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
March	13	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
March	14	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	15	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
March	16	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
March	17	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
March	18	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
March	19	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	20	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
March	21	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	22	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
March	23	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
March	24	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	25	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	26	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	27	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	28	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
March	29	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
March	30	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	31	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	1	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
April	2	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
April	3	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	4	48	1.01	0.45	3.03	1.35	4.54	2.03	0.00	9.02	70.89
April	5	48	1.01	0.45	3.03	1.35	4.54	2.03	0.00	9.02	70.89
April	6	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	7	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
April	8	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	9	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	10	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	11	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	12	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
April	14	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
April	15	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
April	16	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
April	17	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	18	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00

Gypsum Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 36% of Pile	50% of Pile	14% of Pile
April	19	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
April	20	67	1.41	0.63	4.23	1.89	6.34	2.83	0.00	53.62	213.41
April	21	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
April	22	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
April	23	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
April	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	25	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
April	26	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
April	27	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
April	28	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
April	29	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
April	30	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	1	46	0.97	0.43	2.90	1.30	4.35	1.95	0.00	6.26	60.25
May	2	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	3	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	5	44	0.93	0.41	2.78	1.24	4.17	1.86	0.00	3.88	50.44
May	6	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
May	7	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
May	8	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
May	9	43	0.90	0.40	2.71	1.21	4.07	1.82	0.00	2.82	45.85
May	10	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
May	11	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
May	12	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
May	13	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	14	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	15	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
May	16	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
May	17	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	18	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
May	19	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
May	20	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	21	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	22	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
May	23	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	24	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
May	25	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
May	26	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
May	27	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
May	28	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
May	29	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	30	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
May	31	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
June	1	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
June	2	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
June	3	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	6	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	7	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	8	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
June	9	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
June	10	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
June	11	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00

Gypsum Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 36% of Pile	50% of Pile	14% of Pile
June	12	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
June	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	14	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	15	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	16	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	17	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	18	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	19	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	20	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
June	21	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	22	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	23	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	24	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	26	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
June	27	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	28	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	29	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
June	30	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	1	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	2	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	3	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
July	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
July	5	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
July	6	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
July	7	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	8	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
July	9	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
July	10	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
July	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
July	12	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
July	13	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
July	14	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
July	15	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
July	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	17	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
July	18	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	19	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	20	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
July	21	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
July	22	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
July	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
July	24	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
July	25	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
July	26	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	27	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	28	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	29	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	30	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
July	31	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
August	1	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
August	2	45	0.95	0.42	2.84	1.27	4.26	1.90	0.00	5.02	55.24
August	3	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
August	4	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86

Gypsum Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 36% of Pile	50% of Pile	14% of Pile
August	5	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
August	6	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	7	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	8	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	9	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
August	10	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
August	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
August	12	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
August	13	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
August	14	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
August	15	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	17	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	18	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	19	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	20	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	22	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
August	23	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	24	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
August	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	26	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	27	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
August	28	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
August	29	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
August	30	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	31	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	1	40	0.84	0.38	2.52	1.13	3.79	1.69	0.00	0.21	33.31
September	2	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
September	3	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	4	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
September	5	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	6	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	7	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
September	8	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	9	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	10	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
September	11	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
September	12	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
September	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
September	14	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
September	15	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
September	16	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	17	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
September	18	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	19	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	20	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	21	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	22	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
September	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
September	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
September	25	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
September	27	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34

Gypsum Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	36% of Pile	50% of Pile	14% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2)		
September	28	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
September	29	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	30	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	1	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	2	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
October	3	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
October	4	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	6	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	7	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
October	8	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	9	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	10	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	11	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	12	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
October	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	14	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
October	15	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
October	16	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	17	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	18	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	19	8	0.17	0.08	0.50	0.23	0.76	0.34	0.00	0.00	0.00
October	20	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
October	21	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
October	22	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
October	23	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	24	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
October	25	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
October	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	27	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
October	28	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
October	29	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	30	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
October	31	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	1	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
November	2	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	3	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	4	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	5	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
November	6	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
November	7	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
November	8	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	9	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	10	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	12	38	0.80	0.36	2.40	1.07	3.60	1.61	0.00	0.00	25.99
November	13	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
November	14	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
November	15	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	16	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
November	17	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	18	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
November	19	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
November	20	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00

Gypsum Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 36% of Pile	50% of Pile	14% of Pile
November	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	22	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
November	23	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
November	24	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
November	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	26	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	27	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
November	28	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
November	29	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
November	30	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
December	1	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	2	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	3	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	4	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
December	5	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	6	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
December	7	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
December	8	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	9	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
December	10	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
December	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	12	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
December	14	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
December	15	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
December	16	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	17	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	18	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	19	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
December	20	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
December	21	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	22	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	23	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
December	24	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
December	25	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
December	26	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
December	27	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	28	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
December	29	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
December	30	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
December	31	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00

Threshold wind speed (u^*)[5]	1.12	m/s	AP-42 Table 13.2.5-2
Convert threshold to equiv fastest mile (mph)	45.59	mph	
Roughness length (z_0)[5]	0.003	m	AP-42 Table 13.2.5-2
Measurement anemometer height (z_a)	6.71	m	2004 LCD Louisville, KY
No. disturbances per day	1		Estimate
Percent of area disturbed between events	100	%	Conservative
Control efficiency	0	%	None

Gypsum Pile Potential TSP/PM10/PM2.5 Emissions (based on 8,760 hours per year)

Gypsum Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	36% of Pile	50% of Pile	14% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ $Pi, (g/m^2)$		

Surface area of 2,805 m^2

	36% of Pile	50% of Pile	14% of Pile	Total	
Uncontrolled TSP Emissions	**0.00**	**0.14**	**0.49**	**0.63**	**(tons/year)**
Uncontrolled PM-10 Emissions	**0.00**	**0.07**	**0.25**	**0.32**	**(tons/year)**
Uncontrolled PM-2.5 Emissions	**0.00**	**0.01**	**0.04**	**0.05**	**(tons/year)**
Controlled TSP Emissions	**0.00**	**0.14**	**0.49**	**0.63**	**(tons/year)**
Controlled PM-10 Emissions	**0.00**	**0.07**	**0.25**	**0.32**	**(tons/year)**
Controlled PM-2.5 Emissions	**0.00**	**0.01**	**0.04**	**0.05**	**(tons/year)**

1. AP-42, Chapter 13.2.5 Industrial Wind Erosion, November 2006.
2. Maximum daily 5-second wind speed. 2003 Local Climatological Data for Louisville, Kentucky (SDF) (Station No.: 93821).
3. us/ur = 0.2 for 36%, us/ur = 0.6 for 50%, and us/ur = 0.9 for 14% of elevated pile surface area from AP-42, Chp. 13.2.5
4. Equation from AP-42, Chp. 13.2.5 = P = 58 * (u*-u*t)^2 + 25 * (u* - u*t)
5. Assumed uncrusted coal pile similar to limestone pile.

Gypsum Emergency Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
January	1	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	2	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	3	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	4	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	6	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	7	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	8	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
January	9	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
January	10	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
January	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
January	12	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	14	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
January	15	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	17	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
January	18	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
January	19	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
January	20	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
Landfill	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	22	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
January	24	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
January	25	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
January	27	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
January	28	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
January	29	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
January	30	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
January	31	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	1	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
February	2	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	3	41	0.86	0.39	2.59	1.16	3.88	1.73	0.00	0.99	37.28
February	4	37	0.78	0.35	2.34	1.04	3.50	1.57	0.00	0.00	22.64
February	5	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
February	6	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
February	7	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	8	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	9	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	10	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
February	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
February	12	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
February	13	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
February	14	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	15	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
February	16	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
February	17	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	18	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
February	19	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	20	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
February	21	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
February	22	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
February	23	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00

Gypsum Emergency Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
February	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
February	25	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
February	26	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
February	27	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
February	28	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
March	1	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
March	2	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	3	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
March	4	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	5	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	6	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	7	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
March	8	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
March	9	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	10	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	11	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	12	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
March	13	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
March	14	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	15	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
March	16	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
March	17	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
March	18	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
March	19	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	20	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
March	21	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
March	22	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
March	23	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
March	24	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	25	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
March	26	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
March	27	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
March	28	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
March	29	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
March	30	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
March	31	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	1	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
April	2	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
April	3	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	4	48	1.01	0.45	3.03	1.35	4.54	2.03	0.00	9.02	70.89
April	5	48	1.01	0.45	3.03	1.35	4.54	2.03	0.00	9.02	70.89
April	6	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	7	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
April	8	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	9	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	10	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
April	11	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	12	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
April	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
April	14	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
April	15	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
April	16	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
April	17	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	18	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00

Gypsum Emergency Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2)		
April	19	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
April	20	67	1.41	0.63	4.23	1.89	6.34	2.83	0.00	53.62	213.41
April	21	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
April	22	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
April	23	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
April	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
April	25	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
April	26	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
April	27	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
April	28	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
April	29	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
April	30	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	1	46	0.97	0.43	2.90	1.30	4.35	1.95	0.00	6.26	60.25
May	2	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	3	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	5	44	0.93	0.41	2.78	1.24	4.17	1.86	0.00	3.88	50.44
May	6	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
May	7	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
May	8	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
May	9	43	0.90	0.40	2.71	1.21	4.07	1.82	0.00	2.82	45.85
May	10	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
May	11	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
May	12	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
May	13	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	14	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	15	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
May	16	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
May	17	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	18	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
May	19	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
May	20	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	21	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	22	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
May	23	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
May	24	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
May	25	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
May	26	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
May	27	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
May	28	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
May	29	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
May	30	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
May	31	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86
June	1	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
June	2	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
June	3	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	6	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	7	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	8	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
June	9	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
June	10	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
June	11	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00

Gypsum Emergency Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
June	12	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
June	13	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	14	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	15	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	16	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
June	17	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	18	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	19	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
June	20	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
June	21	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
June	22	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	23	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	24	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
June	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	26	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
June	27	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
June	28	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
June	29	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
June	30	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	1	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	2	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	3	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
July	4	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
July	5	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
July	6	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
July	7	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	8	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
July	9	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
July	10	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
July	11	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
July	12	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
July	13	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
July	14	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
July	15	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
July	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	17	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
July	18	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	19	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	20	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
July	21	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
July	22	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
July	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
July	24	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
July	25	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
July	26	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
July	27	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	28	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
July	29	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
July	30	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
July	31	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
August	1	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
August	2	45	0.95	0.42	2.84	1.27	4.26	1.90	0.00	5.02	55.24
August	3	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
August	4	28	0.59	0.26	1.77	0.79	2.65	1.18	0.00	0.00	1.86

Gypsum Emergency Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2) 40% of Pile	48% of Pile	12% of Pile
August	5	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
August	6	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	7	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	8	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	9	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
August	10	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
August	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
August	12	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
August	13	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
August	14	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
August	15	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	16	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	17	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	18	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
August	19	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	20	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	22	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
August	23	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	24	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
August	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	26	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
August	27	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
August	28	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
August	29	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
August	30	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
August	31	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	1	40	0.84	0.38	2.52	1.13	3.79	1.69	0.00	0.21	33.31
September	2	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
September	3	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	4	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
September	5	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	6	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	7	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
September	8	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	9	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	10	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
September	11	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
September	12	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
September	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
September	14	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
September	15	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
September	16	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	17	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
September	18	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	19	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	20	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
September	21	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
September	22	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
September	23	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
September	24	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
September	25	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
September	27	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34

Gypsum Emergency Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ Pi, (g/m^2)		
September	28	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
September	29	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
September	30	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	1	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	2	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
October	3	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
October	4	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	5	21	0.44	0.20	1.33	0.59	1.99	0.89	0.00	0.00	0.00
October	6	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	7	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
October	8	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	9	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	10	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	11	10	0.21	0.09	0.63	0.28	0.95	0.42	0.00	0.00	0.00
October	12	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
October	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	14	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
October	15	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
October	16	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	17	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	18	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	19	8	0.17	0.08	0.50	0.23	0.76	0.34	0.00	0.00	0.00
October	20	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
October	21	26	0.55	0.24	1.64	0.73	2.46	1.10	0.00	0.00	0.00
October	22	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
October	23	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
October	24	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
October	25	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
October	26	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	27	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
October	28	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
October	29	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
October	30	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
October	31	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	1	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
November	2	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	3	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	4	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	5	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
November	6	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
November	7	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
November	8	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	9	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	10	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
November	12	38	0.80	0.36	2.40	1.07	3.60	1.61	0.00	0.00	25.99
November	13	36	0.76	0.34	2.27	1.02	3.41	1.52	0.00	0.00	19.50
November	14	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
November	15	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	16	14	0.29	0.13	0.88	0.39	1.33	0.59	0.00	0.00	0.00
November	17	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
November	18	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
November	19	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
November	20	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00

Gypsum Emergency Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ *Pi, (g/m²)*		
November	21	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
November	22	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
November	23	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
November	24	30	0.63	0.28	1.89	0.85	2.84	1.27	0.00	0.00	5.02
November	25	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	26	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
November	27	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
November	28	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
November	29	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
November	30	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
December	1	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	2	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	3	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	4	15	0.32	0.14	0.95	0.42	1.42	0.63	0.00	0.00	0.00
December	5	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	6	23	0.48	0.22	1.45	0.65	2.18	0.97	0.00	0.00	0.00
December	7	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
December	8	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	9	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00
December	10	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
December	11	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	12	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	13	16	0.34	0.15	1.01	0.45	1.51	0.68	0.00	0.00	0.00
December	14	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
December	15	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
December	16	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	17	25	0.53	0.24	1.58	0.71	2.37	1.06	0.00	0.00	0.00
December	18	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	19	29	0.61	0.27	1.83	0.82	2.75	1.23	0.00	0.00	3.34
December	20	13	0.27	0.12	0.82	0.37	1.23	0.55	0.00	0.00	0.00
December	21	24	0.50	0.23	1.51	0.68	2.27	1.02	0.00	0.00	0.00
December	22	22	0.46	0.21	1.39	0.62	2.08	0.93	0.00	0.00	0.00
December	23	32	0.67	0.30	2.02	0.90	3.03	1.35	0.00	0.00	9.02
December	24	18	0.38	0.17	1.14	0.51	1.70	0.76	0.00	0.00	0.00
December	25	17	0.36	0.16	1.07	0.48	1.61	0.72	0.00	0.00	0.00
December	26	9	0.19	0.08	0.57	0.25	0.85	0.38	0.00	0.00	0.00
December	27	12	0.25	0.11	0.76	0.34	1.14	0.51	0.00	0.00	0.00
December	28	31	0.65	0.29	1.96	0.87	2.93	1.31	0.00	0.00	6.92
December	29	33	0.69	0.31	2.08	0.93	3.12	1.40	0.00	0.00	11.33
December	30	35	0.74	0.33	2.21	0.99	3.31	1.48	0.00	0.00	16.57
December	31	20	0.42	0.19	1.26	0.56	1.89	0.85	0.00	0.00	0.00

Threshold wind speed (u^*)[5]	1.12	m/s	AP-42 Table 13.2.5-2
Convert threshold to equiv fastest mile (mph)	45.59	mph	
Roughness length (z_0)[5]	0.003	m	AP-42 Table 13.2.5-2
Measurement anemometer height (z_a)	6.71	m	2004 LCD Louisville, KY
No. disturbances per day	1		Estimate
Percent of area disturbed between events	100	%	Conservative
Control efficiency	0	%	None

Limestone Pile Potential TSP/PM10/PM2.5 Emissions (based on 8,760 hours per year)

Gypsum Emergency Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Fastest Mile (U^+)[2] (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (mph)	Daily[3] $u^* = 0.02xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.06xU^+_{10}$ (mph)	Daily[3] $u^* = 0.06xU^+_{10}$ (m/s)	Daily[3] $u^* = 0.09xU^+_{10}$ (mph)	Daily[3] $u^* = 0.09xU^+_{10}$ (m/s)	40% of Pile	48% of Pile	12% of Pile
									Erosion Potential[4] $P = 58 * (u^*-u^*_t)^2 + 25 * (u^* - u^*_t)$ $Pi, (g/m^2)$		

Height of Pile	22.06	m
Diameter of Pile	21.77	m
Surface area of pile [6]	841	m^2

	40% of Pile	48% of Pile	12% of Pile	Total	
Uncontrolled TSP Emissions	**0.00**	**0.04**	**0.13**	**0.17**	**(tons/year)**
Uncontrolled PM-10 Emissions	**0.00**	**0.02**	**0.06**	**0.08**	**(tons/year)**
Uncontrolled PM-2.5 Emissions	**0.00**	**3.0E-03**	**0.01**	**0.01**	**(tons/year)**
Controlled TSP Emissions	**0.00**	**0.04**	**0.13**	**0.17**	**(tons/year)**
Controlled PM-10 Emissions	**0.00**	**0.02**	**0.06**	**0.08**	**(tons/year)**
Controlled PM-2.5 Emissions	**0.00**	**3.0E-03**	**0.01**	**0.01**	**(tons/year)**

1. AP-42, Chapter 13.2.5 Industrial Wind Erosion, November 2006.
2. Maximum daily 5-second wind speed. 2003 Local Climatological Data for Louisville, Kentucky (SDF) (Station No.: 93821).
3. us/ur = 0.2 for 40%, us/ur = 0.6 for 48%, and us/ur = 0.9 for 12% of elevated pile surface area from AP-42, Chp. 13.2.5
4. Equation from AP-42, Chp. 13.2.5 = P = 58 * (u*-u*t)^2 + 25 * (u* - u*t)
5. Assumed uncrusted coal pile similar to limestone pile.
6. Assume storage capacity of 2900 tons.

Paved Road Emissions - Trucking Option

Emission Factor (EF) Equation[1]

EF (lb/ton) = [k * (sL / 2) ^ 0.65 * (W / 3) ^ 1.5 - C] * (1-P/4N)

k =	Particle size multiplier =	0.082	for TSP	
		0.016	for PM-10	
		0.0024	for PM-2.5	
sL =	Silt loading (g/m^2) =	0.282	Field Sampling 9/28/2007	
W =	Vehicle weight (tons) =	see Table below		
P =	number of days during the averaging period with at least 0.01 in of precipitation =	126		2004 LCD Louisville, KY
N =	number of days in the averaging period =	365		(POR: 30 years)
C =	factor for exhaust, brake wear, and tire wear =	0.00047	for TSP/PM-10 (lb/VMT)	
		0.00036	for PM-2.5 (lb/VMT)	

Control Efficiency (CE) Equation[2] **Watering Roadway**

CE = 100 - (0.8pdt)/i

p =	Potential average hourly daytime evaporation rate (mm/hr)	0.0049*r	0.220500
r =	reading from table	45	
d =	average hr daytime traffic rate (h-1)	9.94	
t =	time between applications (hr)	1	
i =	application intensity, (L/m^2)	0.1715	

CE = 89.78%

Gypsum Transported (tons)	1,077,480
Truck Capacity (tons)	45.4
Empty Truck Weight (tons)	43.32
Average Vehicle Weight	66.02
Round Trips Per Year	23,733
Round Trip Distance	3.25

TSP/PM10/PM2.5 Emissions Calculation

Vehicle Traffic	Average Vehicle Weight	TSP Emission Factor	PM-10 Emission Factor	PM-2.5 Emission Factor	Number of Trips	Total Trip Distance	Vehicle Mile Traveled	Uncontrolled TSP Emissions	Uncontrolled PM-10 Emissions	Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency (2)	Controlled TSP Emissions	Controlled PM-10 Emissions	Controlled PM-2.5 Emissions
	tons	*lbs/VMT*	*lbs/VMT*	*lbs/VMT*	*trips/yr*	*miles*	*mile/yr*	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
Round Trip from Gypsum Pile to Entrance of Landfill	66.0	2.16	0.42	0.06	23,733	3.25	77,020	83.34	16.25	2.43	Watering	89.78%	8.52	1.66	0.25
Landfill					**Uncontrolled Emissions (tons/yr)**			83.34	16.25	2.43	**Controlled Emissions (tons/yr)**		8.52	1.66	0.25

Notes:
1. AP-42, Chapter 13.2.1 Paved Roads, November 2006.
2. Air Pollution Control Manual, 1992, Air & Waste Management Assoc. p. 141, as referenced in Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998.
3. Control efficiency is conservatively calculated using 2600 operating hours per year and maximum truck runs of 25840 for gypsum hauling.

Landfill Unpaved Road Emission

Emission Factor (EF) Equation[1]

EF =	k * (s/12)^a * (W/3)^b * ((365-p)/365)		
k =	Particle size multiplier =	4.9	for TSP
		1.5	for PM10
		0.15	for PM-2.5
a =	constant =	0.7	for TSP
		0.9	for PM-10/PM-2.5
s =	surface material silt content, % =	7.4	Field Sampling 9/29/2007
b =	constant =	0.45	for TSP/PM-10/PM-2.5
W =	average vehicle weight, tons =	see Table below	
p =	number of days per year with at least 0.01 in of precipitation	126	2004 LCD Louisville, KY (POR: 30 years)

Control Efficiency (CE) Equation[2]

CE =	100 - (0.8pdt)/i		
p =	Potential average hourly daytime evaporation rate (mm/hr)	0.0049*r	0.220500
r =	reading from table	45	
d =	average hr daytime traffic rate (h-1)	9.94	
t =	time between applications (hr)	3	
i =	application intensity, (L/m^2)	0.1715	
CE =	69.33%		

Gypsum Disposal per Year (tons)	1,077,480	tpy gypsum and tpy purge stream solid disposal
Truck Load (tons)	45.4	
Trips per year	23,733	
Round Trip Distance (ft)	840	
Round Trip Distance (miles)	0.16	

TSP/PM10/PM2.5 Emissions Calculation

Vehicle Traffic	Average Vehicle Weight	TSP Emission Factor	PM-10 Emission Factor	PM-2.5 Emission Factor	Number of Trips	Total Trip Distance	Vehicle Mile Traveled	Uncontrolled TSP Emissions	Uncontrolled PM-10 Emissions	Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency [2]	Controlled TSP Emissions	Controlled PM-10 Emissions	Controlled PM-2.5 Emissions
	tons	*lbs/VMT*	*lbs/VMT*	*lbs/VMT*	*trips/yr*	*miles*	*mile/yr*	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
RT on Unpaved Roads	66.0	9.15	2.54	0.25	23,733	0.16	3,776	17.27	4.79	0.48	Watering	69.33%	5.30	1.47	0.15
					Uncontrolled Emissions (tons/yr)			17.27	4.79	0.48	**Controlled Emissions (tons/yr)**		5.30	1.47	0.15
					Max. Hourly Emission Rate (lb/hr) [(3)]			9.5	2.6	0.3	**Max. Hourly ER (lb/hr) [(3)]**		2.9	0.8	0.1

Notes:
Landfill
2. Air Pollution Control Manual, 1992, Air & Waste Management Assoc. p. 141, as referenced in Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998.
3. Assumed operating hours per year 3650
4. Control efficiency is conservatively calculated using 2600 operating hours per year and maximum truck runs of 25840 for gypsum hauling.

Landfill Transfer to Working Face

Emission Factor (EF) Equation[1]

EF (lb/ton) = k * 0.0032 * ((U / 5) ^ 1.3 / (M/2) ^ 1.4)

k =	Particle size multiplier =	0.74	for TSP
		0.35	for PM-10
		0.053	for PM-2.5
U =	mean wind speed, mph =	8.3	2003 Louisville, Ky NCDC 2003
M =	material moisture content, % =	10	

Material Transfer Emission Factor =	**4.81E-04**	**lb TSP/ton Gypsum**
	2.27E-04	**lb PM-10/ton Gypsum**
	3.44E-05	**lb PM-2.5/ton Gypsum**

TSP/PM10/PM2.5 Emissions Calculation

Annual emissions based on maximum transfer rates. 1,077,480 tpy gypsum and tpy purge stream solid disposal

Transfer Description	Max Gypsum Transferred	Potential Uncontrolled TSP Emissions	Potential Uncontrolled PM-10 Emissions	Potential Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency	Controlled TSP Emission	Controlled PM-10 Emission	Controlled PM-2.5 Emission
	ton/yr	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
Transfer to Working Face	1,077,480	0.26	0.12	0.02	None	0	0.26	0.12	0.02
Uncontrolled Emissions (tons/yr)		0.26	0.12	0.02	**Controlled Emissions (tons/yr)**		0.26	0.12	0.02
Max. Hourly Emission Rate (lb/hr) [2]		0.8	0.4	0.1	**Max. Hourly ER (lb/hr)** [3]		0.8	0.4	0.1

Notes:
1. AP-42, Chapter 13.2.4, November 2006.
2. 18400 trips per year, 2 min. per unload 613 operating hrs
Landfill

Landfill Wind Erosion

Wind Erosion **From AP-42 S**

Emission Factor Calculation1

Month (yr)	Fastest Mile2 (mph)	Monthly3 u* (mph)	Monthly4 u* (m/s)	Erosion Potential5 Pi, (g/m2)	
Jan	38	2.12	0.95	-2.59	
Feb	44	2.45	1.10	-0.56	
Mar	43	2.40	1.07	-1.07	
Apr	56	3.12	1.40	11.29	
May	40	2.23	1.00	0.00	less than friction velocity
Jun	54	3.01	1.35	0.00	less than friction velocity
Jul	46	2.56	1.15	0.70	
Aug	47	2.62	1.17	1.43	
Sep	39	2.17	0.97	0.00	less than friction velocity
Oct	40	2.23	1.00	0.00	less than friction velocity
Nov	44	2.45	1.10	-0.56	
Dec	40	2.23	1.00	-2.20	

Threshold friction velocity (ut)6	1.12	m/s	AP-42 Table 13.2.5-2
Convert threshold to equivalent fastest mile (mph)	44.94	mph	
Roughness height (zo)6	0.003	m	AP-42 Table 13.2.5-2
Measurement anemometer height (za)2	6.71	m	LCD 2004 Louisville KY

Active Face Potential Emissions:

Surface Area of Pile	8094	m^2	2	acres	4046.86 m^2 per acre
Landfill No. disturbances per month	22		Estimate	working days per month	
Percentage of area disturbed between events	100	%	Estimate		

	Potential Emissions		Controlled Emissions		Control Efficiency	
	g/yr	*tpy*	*tpy*	*lb/hr*	*%*	*method*
PM	574,697.45	0.63	0.16	0.03612595	75%	Watering
PM10	1,149,394.90	1.27	0.32	0.07225191	75%	Watering
PM2.5	86,204.62	0.09	0.02	0.00541889	75%	Watering

Open Cell Potential Emissions:

Surface Area of Pile	72843	m^2	18	acres	4046.86 m^2 per acre
No. disturbances per month	0.25		Estimate		
Percentage of area disturbed between events	100	%	Estimate		

	Potential Emissions		Controlled Emissions		Control Efficiency	
	g/yr	*tpy*	*tpy*	*lb/hr*	*%*	*method*
PM	58,775.88	0.06	0.02	0.0036947	75%	Watering
PM10	117,551.75	0.13	0.03	0.0073894	75%	Watering
PM2.5	8,816.38	0.01	0.0024	0.0005542	75%	Watering

Total Wind Erosion Emissions:

Uncontrolled PM Emissions	1.40 tons/year	Controlled PM Emissions	0.35 tons/year
Uncontrolled PM10 Emissions	0.70 tons/year	Controlled PM10 Emissions	0.17 tons/year
Uncontrolled PM2.5 Emissions	0.10 tons/year	Controlled PM2.5 Emissions	0.03 tons/year
Uncontrolled PM Emissions	0.32 lb/hr	Controlled PM Emissions	0.08 lb/hr
Uncontrolled PM10 Emissions	0.16 lb/hr	Controlled PM10 Emissions	0.04 lb/hr
Uncontrolled PM2.5 Emissions	0.02 lb/hr	Controlled PM2.5 Emissions	0.01 lb/hr

Notes:
1. AP-42, Chapter 13.2.5 Industrial Wind Erosion, November 2006
2. Data from Pittsburgh 1990 LCD, anemometer height
3. Equation from AP-42, Chapter 13.2.5 - u10+ = u(za)*((ln(10/zo))/ln(za/zo) eq. 5 correct fastest mile to height of 10m
4. Equation from AP-42, Chapter 13.2.5 - u* = 0.053*u10+ eq. 4 friction velocity
5. Equation from AP-42, Chapter 13.2.5 - P = 58*(u*-ut*)^2 + 25*(u*-ut*)
6. Assumed uncrusted coal pile similar to gypsum and wastewater piles.

Working area - Material is moist and watering as necessary, precautionary measures, 75% from Title V application
Open area - Material is compacted and flat, precautionary measures, 75% from Title V Application
Assume operating hours for wind erosion are 8760

Landfill Working on Face

Emission Factor (EF) Equation[1]

EF =	k * (s/12)^a * (W/3)^b * ((365-p)/365)			
k =	Particle size multiplier =	4.9	for TSP	
		1.5	for PM10	
		0.15	for PM-2.5	
a =	constant =	0.7	for TSP	
		0.9	for PM-10/PM-2.5	
s =	surface material silt content, % =	11.8	Field Sampling 9/29/2007	
b =	constant =	0.45	for TSP/PM-10/PM-2.5	
W =	average vehicle weight, tons =	see Table below		
p =	number of days per year with at least 0.01 in of precipitation			126

Control Efficiency (CE) Equation[2]

CE =	100 - (0.8pdt)/i		
p =	Potential average hourly daytime evaporation rate (mm/hr)	0.0049*r	0.220500
r =	reading from table	45	
d =	average hr daytime traffic rate (h-1)	2.00	
t =	time between applications (hr)	3	
i =	application intensity, (L/m^2)	0.1715	

CE = 93.83%

2004 LCD Louisville, KY (POR: 30 years)

Bulldozer daily use (hrs)	10	
Days per year	260	5 days per week, 52 weeks per year
Ave speed (mph)	2	
Annual VMT	5,200	

TSP/PM10/PM2.5 Emissions Calculation

Vehicle Traffic	Average Vehicle Weight	TSP Emission Factor	PM-10 Emission Factor	PM-2.5 Emission Factor	Vehicle Mile Traveled	Uncontrolled TSP Emissions	Uncontrolled PM-10 Emissions	Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency [2]	Controlled TSP Emissions	Controlled PM-10 Emissions	Controlled PM-2.5 Emissions
	tons	*lbs/VMT*	*lbs/VMT*	*lbs/VMT*	*mile/yr*	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
Bulldozer on Working Face	107.0	15.84	4.83	0.48	5,200	41.18	12.56	1.26	Watering	93.83%	2.54	0.78	0.08
			Uncontrolled Emissions (tons/yr)			41.18	12.56	1.26	**Controlled Emissions (tons/yr)**		2.54	0.78	0.08
Landfill			**Max. Hourly Emission Rate (lb/hr) (3)**			31.7	9.7	1.0	**Max. Hourly ER (lb/hr) (3)**		2.0	0.6	0.1

Notes:
1. AP-42, Chapter 13.2.2 Unpaved Roads, November 2006.
2. Air Pollution Control Manual, 1992, Air & Waste Management Assoc. p. 141, as referenced in Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998.
3. Assumed operating hours per year 2600
Ave. vehicle wt from MT "tractor" weight

Paved Road Emissions - Trucking Chemicals On-Site

Emission Factor (EF) Equation[1]

EF (lb/ton) = [k * (sL / 2) ^ 0.65 * (W / 3) ^ 1.5 - C] * (1-P/4N)

k =	Particle size multiplier =	0.082	for TSP
		0.016	for PM10
		0.0024	for PM-2.5
sL =	Silt loading (g/m^2) =	0.282	Field Sampling 9/29/2007
W =	Vehicle weight (tons) =	see Table below	
P =	number of days during the averaging period with at least 0.01 in of precipitation =	126	2004 LCD Louisville, KY (POR: 30 years)
N =	number of days in the averaging period =	365	
C =	factor for exhaust, brake wear, and tire wear =	0.00047	for TSP/PM-10 (lb/VMT)
		0.00036	for PM-2.5 (lb/VMT)

Control Efficiency (CE) Equation[2]

CE = 100 - (0.8pdt)/i

p =	Potential average hourly daytime evaporation rate (mm/hr)	0.0049*r	0.220500
r =	reading from table	45	
d =	average hr daytime traffic rate (h-1)	9.94	
t =	time between applications (hr)	1	
i =	application intensity, (L/m^2)	0.1715	
CE =	89.78%		

Chemicals Delivery

Transported (tons)	6,800
Truck Capacity (tons)	25
Round Trips Per Year	272
Empty Vehicle Weight (tons)	15
Full Vehicle Weight (tons)	40
One-way Distance (mi)	0.87

TSP/PM10/PM2.5 Emissions Calculation[2]

Figure 6-3 ID	Vehicle Traffic	Average Vehicle Weight	TSP Emission Factor	PM-10 Emission Factor	PM-2.5 Emission Factor	Number of Trips[2]	Total Trip Distance	Vehicle Mile Traveled	Uncontrolled TSP Emissions	Uncontrolled PM-10 Emissions	Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency (3)	Controlled TSP Emissions	Controlled PM-10 Emissions	Controlled PM-2.5 Emissions
		tons	*lbs/VMT*	*lbs/VMT*	*lbs/VMT*	*trips/yr*	*miles*	*mile/yr*	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
	Chemicals	27.5	0.58	0.11	0.02	272	1.74	474	0.14	0.03	4.0E-03	Watering	89.78%	0.01	2.7E-03	4.0E-04
					Total	**Uncontrolled Emissions (tons/yr)**			0.14	0.03	4.0E-03	**Controlled Emissions (tons/yr)**		0.01	2.7E-03	4.0E-04

1. AP-42, Chapter 13.2.1 Paved Roads, November 2006.
2. Based on 100% capacity factor and maximum hourly reagent injection rate.
3. Air Pollution Control Manual, 1992, Air & Waste Management Assoc. p. 141, as referenced in Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998.
4. Control efficiency is conservatively calculated using 2600 operating hours per year and maximum truck runs of 25840 for gypsum hauling.

WWTP Sludge Transfer Annual Emissions - Trucking Option

Emission Factor (EF) Equation[1]

EF (lb/ton) = k * 0.0032 * ((U / 5) ^ 1.3 / (M/2) ^ 1.4)

k =	Particle size multiplier =	0.74	for TSP
		0.35	for PM-10
		0.053	for PM-2.5
U =	mean wind speed, mph =	8.3	2004 LCD Louisville, KY (POR: 52 years)
M =	material moisture content, % =	60	

Material Transfer Emission Factor =	**3.91E-05**	**lb TSP/ton Sludge**
	1.85E-05	**lb PM-10/ton Sludge**
	2.80E-06	**lb PM-2.5/ton Sludge**

TSP/PM10/PM2.5 Emissions Calculation

Annual emissions based on maximum transfer rates 227 tons/day 83,000 tons/yr

Fig 4-3 ID	Transfer Description		Max Sludge Transferred	Potential Uncontrolled TSP Emissions	Potential Uncontrolled PM-10 Emissions	Potential Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency	Potential Controlled TSP Emission	Potential Controlled PM-10 Emission	Potential Controlled PM-2.5 Emission
			ton/yr	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
1	Stockpile to Front-End Loaders		83,000	0.0016	0.0008	0.0001	None	0%	0.0016	0.0008	0.0001
2	Load-In to Dump Truck at Facility		83,000	0.0016	0.0008	0.0001	None	0%	0.0016	0.0008	0.0001
	Trucking Option Transfers		**Uncontrolled Potential Emissions**	**0.0032**	**0.0015**	**0.0002**	**Controlled Potential Emissions**		**0.0032**	**0.0015**	**0.0002**

Notes:
1. AP-42, Chapter 13.2.4, November 2006.
Landfill

Paved Road Emissions - Sludge

Emission Factor (EF) Equation[1]

EF (lb/ton) = [k * (sL / 2) ^ 0.65 * (W / 3) ^ 1.5 - C] * (1-P/4N)

k =	Particle size multiplier =	0.082	for TSP	
		0.016	for PM-10	
		0.0024	for PM-2.5	
sL =	Silt loading (g/m^2) =	0.282	Field Sampling 9/29/2007	
W =	Vehicle weight (tons) =	see Table below		
P =	number of days during the averaging period with at least 0.01 in of precipitation =	126		2004 LCD Louisville, KY (POR: 30 years)
N =	number of days in the averaging period =	365		
C =	factor for exhaust, brake wear, and tire wear =	0.00047	for TSP/PM-10 (lb/VMT)	
		0.00036	for PM-2.5 (lb/VMT)	

Control Efficiency (CE) Equation[2]

CE = 100 - (0.8pdt)/i

p =	Potential average hourly daytime evaporation rate (mm/hr)	0.0049*r	0.220500
r =	reading from table	45	
d =	average hr daytime traffic rate (h-1)	9.94	
t =	time between applications (hr)	1	
i =	application intensity, (L/m^2)	0.1715	
CE =	89.78%		

Sludge Transported (tons)	83,000
Truck Capacity (tons)	45.40
Empty Truck Weight (tons)	43.32
Average Vehicle Weight	66.02
Round Trips Per Year	1,828
Round Trip Distance	3.28

TSP/PM10/PM2.5 Emissions Calculation

Vehicle Traffic	Average Vehicle Weight	TSP Emission Factor	PM-10 Emission Factor	PM-2.5 Emission Factor	Number of Trips	Total Trip Distance	Vehicle Mile Traveled	Uncontrolled TSP Emissions	Uncontrolled PM-10 Emissions	Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency (2)	Controlled TSP Emissions	Controlled PM-10 Emissions	Controlled PM-2.5 Emissions
	tons	*lbs/VMT*	*lbs/VMT*	*lbs/VMT*	*trips/yr*	*miles*	*mile/yr*	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
Round Trip from WWTP Sludge Pile to Entrance of Landfill	66.0	2.16	0.42	0.06	1,828	3.28	6,002	6.50	1.27	0.19	Watering	89.78%	0.66	0.13	0.02
Landfill				**Total**	**Uncontrolled Emissions (tons/yr)**			6.50	1.27	0.19	**Controlled Emissions (tons/yr)**		0.66	0.13	0.02

Notes:
1. AP-42, Chapter 13.2.1 Paved Roads, November 2006.
2. Air Pollution Control Manual, 1992, Air & Waste Management Assoc. p. 141, as referenced in Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998.
3. Control efficiency is conservatively calculated using 2600 operating hours per year and maximum truck runs of 25840 for gypsum hauling.

Sludge Trucking Unpaved Roads Landfill

Emission Factor (EF) Equation[1]

EF = k * (s/12)^a * (W/3)^b * ((365-p)/365)

k =	Particle size multiplier =	4.9	for TSP
		1.5	for PM10
		0.15	for PM-2.5
a =	constant =	0.7	for TSP
		0.9	for PM-10/PM-2.5
s =	surface material silt content, % =	7.4	Field Sampling 9/29/2007
b =	constant =	0.45	for TSP/PM-10/PM-2.5
W =	average vehicle weight, tons =	see Table below	
p =	#days/yr w/at least 0.01 in of precipitation	126	2004 LCD Louisville, KY (POR: 30 years)

Control Efficiency (CE) Equation[2]

CE = 100 - (0.8pdt)/i

p =	Potential average hourly daytime evaporation rate (mm/hr)	0.0049*r	0.220500
r =	reading from table	45	
d =	average hr daytime traffic rate (h-1)	9.94	
t =	time between applications (hr)	3	
i =	application intensity, (L/m^2)	0.1715	

CE = 69.33%

Gypsum Disposal/Yr (tons	83,300	tpy gypsum and tpy purge stream solid disposal
Truck Load (tons)	45.4	
Trips per year	1,835	
Round Trip Distance (ft)	840	
Round Trip Distance (mi)	0.16	

TSP/PM10/PM2.5 Emissions Calculation

Vehicle Traffic	Average Vehicle Weight	TSP Emission Factor	PM-10 Emission Factor	PM-2.5 Emission Factor	Number of Trips	Total Trip Distance	Vehicle Mile Traveled	Uncontrolled TSP Emissions	Uncontrolled PM-10 Emissions	Uncontrolled PM-2.5 Emissions	Control Method	Control Efficiency [2]	Controlled TSP Emissions	Controlled PM-10 Emissions	Controlled PM-2.5 Emissions
	tons	*lbs/VMT*	*lbs/VMT*	*lbs/VMT*	*trips/yr*	*miles*	*mile/yr*	*ton/yr*	*ton/yr*	*ton/yr*		*%*	*ton/yr*	*ton/yr*	*ton/yr*
RT on Unpaved	66.0	9.15	2.54	0.25	1,835	0.16	292	1.34	0.37	0.04	Watering	69.33%	0.41	0.11	0.01
				Uncontrolled Emissions (tons/yr)				1.34	0.37	0.04	**Controlled Emissions (tons/yr)**		0.41	0.11	0.01
				Max. Hourly Emission Rate (lb/hr) (3)				0.7	0.2	2.0E-02	**Max. Hourly ER (lb/hr) (3)**		0.2	0.1	6.2E-03

Notes:
Landfill
2. Air Pollution Control Manual, 1992, Air & Waste Management Assoc. p. 141, as referenced in Technical Background Document on Control of Fugitive Dust at Cement Manufacturing Facilities, March 1998.
3. Assumed operating hours per year 3650
4. Control efficiency is conservatively calculated using 2600 operating hours per year and maximum truck runs of 25840 for gypsum hauling.