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
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

TO: Interested Parties / Applicant

DATE: December 2, 2010

RE: Synergy Management/ 181-26877-00050

FROM: Matthew Stuckey, Deputy 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 13-15-5-3, this permit 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 13-15-6-1(b) or IC 13-15-6-1(a) 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 of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Suite N 501E, Indianapolis, IN 46204.

For an **initial Title V Operating Permit**, a petition for administrative review must be submitted to the Office of Environmental Adjudication within **thirty (30)** days from the receipt of this notice provided under IC 13-15-5-3, pursuant to IC 13-15-6-1(b).

For a **Title V Operating Permit renewal**, a petition for administrative review must be submitted to the Office of Environmental Adjudication within **fifteen (15)** days from the receipt of this notice provided under IC 13-15-5-3, pursuant to IC 13-15-6-1(a).

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:

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(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.

Pursuant to 326 IAC 2-7-18(d), any person may petition the U.S. EPA to object to the issuance of an initial Title V operating permit, permit renewal, 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
FNTVOP.dot12/3/07

IDEM

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

Prevention of Significant Deterioration/ Part 70 Operating Permit

OFFICE OF AIR QUALITY

Synergy Management LLC
5600 N. US Highway 421
Monon, Indiana 47959

(herein known as the Permittee) is hereby authorized to construct and 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.: T181-26877-00050	
Issued by: Matthew Stuckey, Branch Chief Permits Branch Office of Air Quality	Issuance Date: December 2, 2010 Expiration Date: December 2, 2015

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Part 70 Quarterly Reports
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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 dolomitic lime manufacturing operation.

Source Address:	5600 N. US Highway 421, Monon, Indiana 47959
Mailing Address:	P.O. Box 11733, Merrillville, IN 46411-1733
General Source Phone Number:	708-204-4237
SIC Code: 3274	
County Location: White	
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Operating Permit Program Major Source, under PSD 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) Two (2) rotary lime kilns, permitted in 2010, each with a maximum capacity of 900 tons per day of lime produced, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using baghouse DC1 and baghouse DC2, respectively for PM control, and exhausting to Stack #1 and Stack #2, respectively.

(b) Two (2) preheaters, permitted in 2010, each with a maximum capacity of 1800 tons per day of limestone feed, identified as Preheater #1 and Preheater #2, using baghouses DC1 and DC2 for PM control, and exhausting to Stacks #1 and #2.

(c) Two (2) lime coolers, permitted in 2010, each with a maximum capacity of 900 tons per day, identified as Cooler #1 and Cooler #2, using baghouses DC3 and DC4 for PM control of lime offload transfers, exhausting to Stack #3 and Stack #4, respectively.

Loadout, storage silos and piles, drop points, and material transfer processes, identified as transfer points 1 through 153, including the following:

(d) Two (2) coal mills, permitted in 2010, each with a maximum capacity of 240 tons per day, identified as Coal Mill #1 and Coal Mill #2.

(e) Four (4) limestone screens, permitted in 2010, maximum capacities ranging from 500 tons per hour to 1000 tons per hour, identified as emission units S1 through S4.

(f) Two (2) lime screens, permitted in 2010, each with a maximum capacity of 50 tons per hour, identified as emission units S7 and S8, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(g) Two (2) lime screens, permitted in 2010, each with a maximum capacity of 50 tons per

hour, identified as emission units S9 and S10, with baghouse DC8 for PM control, exhausting to Stack #8.

(h) Sixty-two (62) conveyors, permitted in 2010, identified as C1 through C57 and CC1 through CC5.

(i) Four (4) elevators, permitted in 2010, identified as BE1 through BE4, with baghouses DC5, DC6, DC7, and DC9 for PM control, exhausting to Stacks #5, 6, 9 and 7.

(j) Four (4) lime silos, permitted in 2010, each with a storage capacity of 1000 tons, identified as SL1 through SL4, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(k) One (1) lime fines silo, permitted in 2010, with a storage capacity of 50 tons, identified as SL5, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(l) One (1) Briquetter silo, permitted in 2010, with a storage capacity of 50 tons, identified as SL6, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(m) One (1) off-spec silo, permitted in 2010, with a storage capacity of 100 tons, identified as SL7, with baghouse DC9 for PM control, exhausting to Stack #9.

(n) One (1) flue dust silo, permitted in 2010, with a storage capacity of 250 tons, identified as SL8, with baghouse DC7 for PM control, exhausting to Stack #7.

(o) One (1) coal feed hopper, permitted in 2010, with a capacity of 20 tons, identified as SL9.

(p) Two (2) fuel bins or silos, permitted in 2010, each with a storage capacity of 100 tons, identified as B1 and B2.

(q) Three (3) screw conveyors, permitted in 2010, identified as DS1 through DS3, with baghouses DC1, DC2, and DC7 for PM control, exhausting to Stacks #1, 2, and 7.

(r) One (1) briquetter/mill, permitted in 2010, with a maximum capacity of 50 tons per hour, identified as BQ1, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and #6.

(s) One (1) pneumatic conveyor, permitted in 2010, with a maximum capacity of 50 tons per hour, identified as PN1, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and #6.

(t) Ten (10) feeders, permitted in 2010, identified as F1 through F7, LF1 through LF9 with baghouses DC3 and DC4 for PM control and exhausting to Stacks #3 and 4, and LF10 with baghouse DC9 for PM control and exhausting to Stack #9.

(u) Three (3) crushers, permitted in 2010, identified as CR1 (maximum capacity of 1000 tons per hour), CR2 (maximum capacity of 600 tons per hour) and CR3 (maximum capacity of 200 tons per hour).

(v) Eleven (11) storage piles, permitted in 2010, identified as KFP1 through KFP4 (kiln feed piles), Bit Pile 1 through 4 (bitumen piles), Pile 3 or OVR (oversized limestone pile), Pile 2 or UNDR (undersized limestone pile) and FLPL (fuel pile).

(w) Several material handling systems, or drop transfers, permitted in 2010, for transporting, transferring, and storing limestone, product lime, solid fuel (coal and coke), and lime kiln dust.

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 activity which is specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) One diesel-powered emergency generator, permitted in 2010, with a nominal capacity of 250 kW.

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).

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 Revocation of Permits [326 IAC 2-2-8]

Pursuant to 326 IAC 2-2-8(a)(1), this permit to construct shall expire if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is discontinued for a period of eighteen (18) months or more.

B.3 Affidavit of Construction [326 IAC 2-5.1-3(h)] [326 IAC 2-5.1-4]

This document shall also become the approval to operate pursuant to 326 IAC 2-5.1-4 when prior to the start of operation, the following requirements are met:

(a) The attached Affidavit of Construction shall be submitted to the Office of Air Quality (OAQ), verifying that the emission units were constructed as proposed in the application or the permit. The emission units covered in this permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM if constructed as proposed.

(b) If actual construction of the emission units differs from the construction proposed in the application, the source may not begin operation until the permit has been revised pursuant to 326 IAC 2 and an Operation Permit Validation Letter is issued.

(c) The Permittee shall attach the Operation Permit Validation Letter received from the Office of Air Quality (OAQ) to this permit.

B.4 Permit Term [326 IAC 2-7-5(2)][326 IAC 2-1.1-9.5][326 IAC 2-7-4(a)(1)(D)][IC 13-15-3-6(a)]

(a) This permit, T181-26877-00050, 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.

(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.5 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.6 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.7 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.8 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.9 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.10 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 the "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 may cover multiple forms in one (1) submittal.

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

B.11 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;

(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); and

(5) Such other facts, as specified in Sections D of this permit, as IDEM, OAQ may require to determine the compliance status of the source.

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

B.12 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) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) within ninety (90) days after issuance of this permit, including the following information on each facility:

(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.

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the above time frame, the Permittee may extend the date 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

The PMP extension notification does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(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 60/63 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.13 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.14 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.15 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 T181-26877-00050 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 combined permit, all previous registrations and permits are superseded by this combined new source review and part 70 operating permit.

B.16 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.17 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.18 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 Operating 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.19 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 the deadline specified in writing by IDEM, OAQ any additional information identified as being needed to process the application.

B.20 Permit Amendment or Modification [326 IAC 2-7-11][326 IAC 2-7-12]

(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) 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).

(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.21 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.22 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 emissions increases and decreases at 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.

B.23 Source Modification Requirement [326 IAC 2-7-10.5]

(a) A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2 and 326 IAC 2-7-10.5.

(b) Any modification at an existing major source is governed by the requirements of 326 IAC 2-2.

B.24 Inspection and Entry [326 IAC 2-7-6][IC 13-14-2-2][IC 13-30-3-1][IC 13-17-3-2]

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.25 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.26 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.27 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.

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

Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive particulate matter emissions shall be controlled according to the plan submitted on August 15, 2008 or an approved equivalent plan. The plan is included as Attachment E. The provisions of 326 IAC 6-5 are not federally enforceable.

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 by using ambient air quality modeling pursuant to 326 IAC 1-7-4. 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]

(a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.

(b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:

(1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or

(2) If there is a change in the following:

(A) Asbestos removal or demolition start date;

(B) Removal or demolition contractor; or

(C) Waste disposal site.

(c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).

(d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue
MC 61-52 IGCN 1003
Indianapolis, Indiana 46204-2251

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(e) Procedures for Asbestos Emission Control
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-1, emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.

(f) Demolition and Renovation
The Permittee shall thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos pursuant to 40 CFR 61.145(a).

(g) Indiana Licensed Asbestos Inspector
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Licensed Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement to use an Indiana Licensed Asbestos inspector is not federally enforceable.

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

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

(a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. 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 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.13 Instrum ent 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.14 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 shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.

(b) These ERPs shall be submitted for approval 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) If the ERP is disapproved by IDEM, OAQ, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP.

(d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.

(e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction will be achieved.

(f) 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.15 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 of 40 CFR 68.

C.16 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) monitori ng results;

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

(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) monitori ng data;

(2) monitor performance data, if applicable; and

(3) corrective actions taken.

C.17 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.18 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) In accordance with the compliance schedule specified in 326 IAC 2-6-3(b)(1), starting in 2004 and every three (3) years thereafter, the Permittee shall submit by July 1 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 purpose 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.19 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.20 General Reporting Requirements [326 IAC 2-7-5(3)(C)] [326 IAC 2-1.1-11] [326 IAC 2-2]

(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 emissions 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).

(g) The report for project at an existing emissions 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

(h) 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.21 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.

SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

(a) Two (2) rotary lime kilns, permitted in 2010, each with a maximum capacity of 900 tons per day of lime produced, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using baghouse DC1 and baghouse DC2, respectively for PM control, and exhausting to Stack #1 and Stack #2, respectively.

(b) Two (2) preheaters, permitted in 2010, each with a maximum capacity of 1800 tons per day of limestone feed, identified as Preheater #1 and Preheater #2, using baghouses DC1 and DC2 for PM control, and exhausting to Stacks #1 and #2.

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

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

D.1.1 Sulfur Dioxide (SO2) [326 IAC 7-1.1-2]

Pursuant to 326 IAC 7-1.1 (SO2 Emissions Limitations):

The sulfur dioxide emissions from each of the two rotary kilns, identified as Kiln #1 and Kiln #2, when burning coal, shall not exceed six (6) pounds per MMBtu of coal combustion.

D.1.2 Opacity limitations [326 IAC 5-1-2]

Pursuant to 326 IAC 5-1-2(1), the following shall apply to Kiln #1 and Kiln #2:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period.

(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.

D.1.3 Particulate Matter and Beryllium Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following are applicable to Kiln #1 and Kiln #2:

(a) The emissions of PM, PM-10 (filterable), and beryllium shall be controlled by baghouses DC1 and DC2 at all times that the associated kiln or preheater is in operation.

(b) The emissions of PM and PM-10 (filterable) from the baghouses DC1 and DC2 shall not exceed 0.01 gr/dscf.

(c) The emissions of PM and PM-10 (filterable) from Kiln #1 and Kiln #2 shall not exceed 0.15 lb/ton, for a 3-hour averaging period. The emissions of PM-10 (filterable and condensible) shall not exceed 0.20 lb/ton of lime produced, for a 3-hour averaging period.

(d) The opacity at the stacks #1 and 2 shall not exceed 15%, with compliance determined by a continuous opacity monitoring system.

D.1.3.1 PM2.5 (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following are applicable to Kiln #1 and Kiln #2:

(a) The emissions of PM2.5 (filterable) shall be controlled by baghouses DC1 and DC2 at all times that the associated kiln or preheater is in operation.

(b) The emissions of PM and PM2.5/PM-10 (filterable) from the baghouses DC1 and DC2 shall not exceed 0.01 gr/dscf.

(c) The emissions of PM and PM2.5/PM-10 (filterable) from Kiln #1 and Kiln #2 shall not exceed 0.15 lb/ton, for a 3-hour averaging period. The emissions of PM2.5/PM-10 (filterable and condensible) shall not exceed 0.20 lb/ton of lime produced, for a 3-hour averaging period.

(d) The opacity at the stacks #1 and 2 shall not exceed 15%, with compliance determined by a continuous opacity monitoring system.

(e) The emissions of SO2 from the kilns shall not exceed 2.0 pounds per ton of lime produced, for a 3-hour averaging period.

(f) The NOx emissions from Kiln #1 and Kiln #2 shall not exceed 3.5 pounds per ton of lime produced, for a 3-hour averaging period.

D.1.4 Sulfur Dioxide (SO2) Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following are applicable to Kiln #1 and Kiln #2:

(a) The emissions of SO2 from the kilns shall not exceed 2.0 pounds per ton of lime produced, for a 3-hour averaging period.

(b) The emissions of SO2 from Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 75.0 pounds per hour from each of the stacks, for a 3-hour averaging period.

D.1.5 VOC Prevention of Significant Deterioration Minor Limitation [326 IAC 2-2] [326 IAC 8-1-6]

In order to render 326 IAC 2-2 and 326 IAC 8-1-6 not applicable, the emissions of VOC from Kiln #1 and Kiln #2 each, shall be less than 25 tons, and the combined kiln emissions of VOC shall be less than 39.3 tons per twelve (12) consecutive month period, with compliance determined at the end of each month. The monthly emissions of VOC from Kiln #1 and Kiln #2 shall be determined as follows:

Emissions (tons) = EF (lb/ton of lime produced) x tons of lime produced

Where EF = average VOC emission factor for the two kilns as determined in the most recent valid stack test. Until VOC stack testing of either Kiln #1 or Kiln #2 is performed, an average EF of 0.2 lb/ton of lime produced shall be used.

Compliance with this limit, in conjunction with the VOC emissions from all other emission units at this source, shall ensure that the emissions of VOC from this source remain below the significant level of 40 tons per twelve (12) consecutive month period, rendering 326 IAC 2-2 not applicable for VOC emissions.

D.1.6 Carbon Monoxide (CO) Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)] [326 IAC 9-1-2]

Pursuant to 326 IAC 2-2-3(a)(3), the following are applicable to Kiln #1 and Kiln #2:

(a) The Permittee shall adopt good combustion in order to minimize CO emissions.

(b) The emissions of CO from the Kiln #1 and Kiln #2 shall not exceed 2.5 lb/ton of lime produced, for a 3-hour averaging period.

(c) The emissions of CO from each of Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 94 lb/hr for each stack, for a 3-hr averaging period.

D.1.7 Nitrogen Oxide (NOx) Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following are applicable to Kiln #1 and Kiln #2:

(a) The Permittee shall adopt good combustion practices and use a preheater type rotary kiln in order to minimize NOx emissions.

(b) The NOx emissions from Kiln #1 and Kiln #2 shall not exceed 3.5 pounds per ton of lime produced, for a 3-hour averaging period.

(c) The NOx emissions from Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 131 pounds per hour from each of the stacks, for a 3-hr averaging period.

D.1.8 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and all control devices.

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

D.1.9 Operating Requirement

(a) In order to demonstrate compliance with Condition D.1.3, baghouses DC1 and DC2 for the control of particulate matter emissions from Kiln 1 and Kiln 2 shall be in operation at all times when the associated kiln is 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.

D.1.10 Continuous Emissions Monitoring [326 IAC 3-5]

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

D.1.11 Testing Requirements [326 IAC 2-1.1-11]

(a) Within sixty (60) days after achieving maximum capacity but no later than one hundred eighty (180) days after initial startup of Kiln #1 or Kiln #2, whichever occurs first, the Permittee shall conduct initial performance tests on Kiln #1 or Kiln #2, to determine compliance with the limits on NOx, CO, SO2 and VOC, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every two and one-half (2.5) years from the date of the most recent valid compliance demonstration. Testing shall be performed such that the same kiln is not tested twice in a five (5) year cycle.

(b) Within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of Kiln #1 and Kiln #2, whichever occurs first, in order to demonstrate compliance with Condition D.1.3(c), the Permittee shall perform PM testing on Kiln #1 or Kiln #2, utilizing methods as approved by the Commissioner.

(c) In order to demonstrate compliance with Condition D.1.3(c), the Permittee shall perform PM10 testing on Kiln #1 or Kiln #2 within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of Kiln #1 and Kiln #2, or within 180 days of publication of the new or revised condensable PM test method(s) referenced in the U. S. EPA's Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5), signed on May 8, 2008, whichever occurs later. This testing shall be conducted utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensible PM.

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

D.1.12 Baghouse Parametric Monitoring [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) The Permittee shall record the pressure drop across baghouses DC1 and DC2 at least once per day when the associated kiln is in operation. When for any reading, the pressure drop across the baghouse is outside the normal range of 1.25 to 10.5 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range 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.

(b) The instrument used for determining the pressure shall comply with the Section C – Instrument Specifications, and shall be calibrated in accordance with the manufacturer's specifications. The specifications shall be available on site with the Preventive Maintenance Plan.

D.1.13 Broken or Failed Bag Detection

(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 baghouses 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 emissions unit shall be shut down no later than the completion of the processing of the material. 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.

D.1.14 Opacity Readings [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

In order to demonstrate compliance with Condition D.1.3(d), appropriate response steps shall be taken in accordance with Section C - Response to Excursions or Exceedances whenever the opacity exceeds fifteen percent (15%) for three (3) consecutive six (6) minute averaging periods. In the event of opacity exceeding fifteen percent (15%), response steps will be taken such that the cause(s) of the excursion are identified and corrected and opacity levels are brought back

below fifteen percent (15%).

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

D.1.15 Record Keeping Requirement

(a) To document compliance with Condition D.1.5, the Permittee shall maintain a monthly record of the amount of lime produced at Kiln #1 and Kiln #2.

(b) To document compliance with Condition D.1.12, the Permittee shall maintain a daily record the pressure drop across baghouse DC1 and DC2 used in conjunction with Kiln #1 and Kiln #2. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (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.

D.1.16 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.1.5 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, 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).

SECTION D.2 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

Loadout, storage silos and piles, drop points, and material transfer processes, identified as transfer points 1 through 153, including the following:

(d) Two (2) coal mills, permitted in 2010, each with a maximum capacity of 240 tons per day, identified as Coal Mill #1 and Coal Mill #2.

(e) Four (4) limestone screens, permitted in 2010, maximum capacities ranging from 500 tons per hour to 1000 tons per hour, identified as emission units S1 through S4.

(f) Two (2) lime screens, permitted in 2010, each with a maximum capacity of 50 tons per hour, identified as emission units S7 and S8, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(g) Two (2) lime screens, permitted in 2010, each with a maximum capacity of 50 tons per hour, identified as emission units S9 and S10, with baghouse DC8 for PM control, exhausting to Stack #8.

(h) Sixty-two (62) conveyors, permitted in 2010, identified as C1 through C57 and CC1 through CC5.

(i) Four (4) elevators, permitted in 2010, identified as BE1 through BE4, with baghouses DC5, DC6, DC7, and DC9 for PM control, exhausting to Stacks #5, 6, 9 and 7.

(j) Four (4) lime silos, permitted in 2010, each with a storage capacity of 1000 tons, identified as SL1 through SL4, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(k) One (1) lime fines silo, permitted in 2010, with a storage capacity of 50 tons, identified as SL5, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(l) One (1) Briquetter silo, permitted in 2010, with a storage capacity of 50 tons, identified as SL6, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(m) One (1) off-spec silo, permitted in 2010, with a storage capacity of 100 tons, identified as SL7, with baghouse DC9 for PM control, exhausting to Stack #9.

(n) One (1) flue dust silo, permitted in 2010, with a storage capacity of 250 tons, identified as SL8, with baghouse DC7 for PM control, exhausting to Stack #7.

(o) One (1) coal feed hopper, permitted in 2010, with a capacity of 20 tons, identified as SL9.

(p) Two (2) fuel bins or silos, permitted in 2010, each with a storage capacity of 100 tons, identified as B1 and B2.

(q) Three (3) screw conveyors, permitted in 2010, identified as DS1 through DS3, with baghouses DC1, DC2, and DC7 for PM control, exhausting to Stacks #1, 2, and 7.

(r) One (1) briquetter/mill, permitted in 2010, with a maximum capacity of 50 tons per hour, identified as BQ1, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and #6.

(s) One (1) pneumatic conveyor, permitted in 2010, with a maximum capacity of 50 tons per hour, identified as PN1, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and #6.

(t) Ten (10) feeders, permitted in 2010, identified as F1 through F7, LF1 through LF9 with baghouses DC3 and DC4 for PM control and exhausting to Stacks #3 and 4, and LF10 with baghouse DC9 for PM control and exhausting to Stack #9.

(u) Three (3) crushers, permitted in 2010, identified as CR1 (maximum capacity of 1000 tons per hour), CR2 (maximum capacity of 600 tons per hour) and CR3 (maximum capacity of 200 tons per hour).

(v) Eleven (11) storage piles, permitted in 2010, identified as KFP1 through KFP4 (kiln feed piles), Bit Pile 1 through 4 (bitumen piles), Pile 3 or OVR (oversized limestone pile), Pile 2 or UNDR (undersized limestone pile) and FLPL (fuel pile).

(w) Several material handling systems, or drop transfers, permitted in 2010, for transporting, transferring, and storing limestone, product lime, solid fuel (coal and coke), and lime kiln dust.

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

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

D.2.1 Opacity limitations [326 IAC 5-1-2]

Pursuant to 326 IAC 5-1-2(1), the following shall apply:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period.

(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.

D.2.2 Particulate Matter and Beryllium Best Available Control Technology (BACT) Limitations - Storage Piles [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following requirement is applicable to limestone and fuel storage piles:

(a) Fugitive PM and PM2.5/PM-10 emissions from limestone and fuel storage piles shall be minimized through best operating practices in accordance with the Fugitive Dust Control plan submitted on August 15, 2008 (included as Attachment E of the permit) or an approved equivalent plan.

D.2.3 Particulate Matter and Beryllium Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following requirements are applicable:

(a) The emissions of PM, PM-10, PM2.5 and beryllium from lime handling and storage processes shall be controlled by baghouses DC1, DC2, DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 at all times that the associated process is in operation.

(b) The emissions of PM and PM2.5/PM-10 (filterable) from the baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9 and DC10 shall not exceed 0.005 gr/dscf, and the emissions of PM and PM2.5/PM-10 (filterable) from the baghouses DC1 and DC2 shall not exceed 0.01 gr/dscf.

(c) The following BACT requirements apply to material transfer processes, including material handling systems and drop points, at this facility:

Transfer No.	PM (filerable) Limit	Control
79, 81 through 140 (stone/lime/flue dust)	0.005 gr/dscf for baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9, DC10 0.01 gr/dscf for DC1, DC2	Baghouse
1, 141, 142 (fuel)	-	Inherent Moisture Control, Best Operating Practice
2 through 78, 80, 143 through 153	-	Moisture Control, Enclosure

(d) The Permittee shall use inherent moisture to control PM/PM10/PM2.5 emissions from transfer points 1 through 153. The Permittee shall measure moisture content as directed by the Commissioner using an analysis method or methods jointly agreed upon by the Permittee and IDEM, OAQ.

D.2.4 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and all control devices.

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

D.2.5 Operating Requirement

(a) In order to demonstrate compliance with Condition D.2.3, baghouses DC1, DC2, DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 for the control of particulate matter emissions shall be in operation at all times when the associated process is 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.

D.2.6 Particul ate Matter

The Permittee shall use inherent moisture to control emissions of PM and PM10 from the coal/coke and lime transfer and handling processes to ensure that the coke processed has a moisture content of at least fifteen (15) percent for coal and coke and at least seven (7) percent for lime. The Permittee shall perform a moisture content analysis to ensure that the moisture content is equal to or greater than fifteen (15) percent for coal and coke and seven (7) percent for lime. The method for the moisture content analysis shall be approved by IDEM, OAQ.

D.2.7 Testing Requirements [326 IAC 2-1.1-11]

(a) Within sixty (60) days after achieving maximum capacity but no later than one hundred

eighty (180) days after initial startup the associated process or emission unit, whichever occurs first, the Permittee shall perform PM testing on baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9 and DC10, in order to demonstrate compliance with Condition D.2.3, utilizing methods as approved by the Commissioner.

(b) In order to demonstrate compliance with Condition D.2.3, the Permittee shall perform PM10 testing on baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9 and DC10 within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of the associated process or emission units, or within 180 days of publication of the new or revised condensable PM test method(s) referenced in the U. S. EPA's Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5), signed on May 8, 2008, whichever occurs later. This testing shall be conducted utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensable PM.

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

D.2.8 Visible Emissions Notations

(a) Visible emission notations shall be performed once per day for baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 during normal daylight operations when exhausting to the atmosphere. Visible emission notations shall be performed once per day for all material transfer points. A trained employee shall record whether emissions are normal or abnormal.

(b) 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.

(c) 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.

(d) 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.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances.

Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.2.9 Baghouse Parametric Monitoring [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

(a) The Permittee shall record the pressure drop across baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 at least once per day when the associated kiln is in operation. When for any reading, the pressure drop across the baghouse is outside the normal range of 1.25 to 10.5 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range 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.

(b) The instrument used for determining the pressure shall comply with the Section C –

Instrument Specifications, and shall be calibrated in accordance with the manufacturer's specifications. The specifications shall be available on site with the Preventive Maintenance Plan.

D.2.9 Broken or Failed Bag Detection

(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 baghouses 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 emissions unit shall be shut down no later than the completion of the processing of the material. 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.2.10 Record Keeping Requirement

(a) To document compliance with Condition D.2.8, the Permittee shall maintain a daily record of the pressure drop across baghouse DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (e.g. the process did not operate that day).

(b) To document compliance with Condition D.2.7, the Permittee shall maintain a daily record of the visible emission notations of DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 stack 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).

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

SECTION D.3 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

(w) One (1) diesel-powered emergency generator, permitted in 2010, with a nominal capacity of 250 kW.

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

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

D.3.1 Nitrogen Oxide and Non-Methane Hydrocarbon (NOx + NMHC) Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3) the following are applicable to the emergency generator:

(a) The Permittee shall employ proper design and operation and use of ultra-low sulfur diesel for the emergency generator.

(b) The combined emissions of non-methane hydrocarbons (NMHC) and NOx shall not exceed 3.0 g/hp-hr.

D.3.2 Sulfur Dioxide Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3) the following are applicable to the emergency generator:

(a) The emissions of SO2 from the emergency generator shall not exceed 0.15 g/hp-hr.

(b) The emergency generator shall use only ultra low sulfur diesel with a maximum sulfur content of 0.0015%.

D.3.3 Carbon Monoxide (CO) Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3) the following are applicable to the emergency generator:

(a) The emissions of CO from the emergency generator shall not exceed 2.6 g/hp-hr.

D.3.4 Particulate Matter and Beryllium Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3) the following are applicable to the emergency generator:

(a) The Permittee shall employ proper design and operation of the emergency generator and use ultra-low sulfur diesel (ULSD).

(b) The emissions of PM/PM-10 from the emergency generator shall not exceed 0.15 g/hp-hr.

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

D.3.5 Testing Requirements [326 IAC 2-1.1-11]

(a) Within sixty (60) days after achieving maximum capacity but no later than one hundred eighty (180) days after initial startup the associated process or emission unit, whichever occurs first, the Permittee shall perform NOx and NMHC, SO2, CO, and PM testing on the emergency generator in order to demonstrate compliance with Conditions D.3.1, D.3.2, D.3.3 and D.3.4, utilizing methods as approved by the Commissioner.

Manufacturer certification of emission factors may be used in lieu of emission testing.

(b) In order to demonstrate compliance with Condition D.3.4, the Permittee shall perform PM10 testing on the emergency generator within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of the associated process or emission units, or within 180 days of publication of the new or revised condensable PM test method(s) referenced in the U. S. EPA's Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5), signed on May 8, 2008, whichever occurs later. This testing shall be conducted utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensable PM.

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

D.3.6 Record Keeping Requirement

If manufacturer certification is used to document compliance with Conditions D.3.1, D.3.2, D.3.3 and D.3.4, the Permittee shall keep onsite records of manufacturer certifications of emission factors for the emergency generator.

SECTION E.1 SOURCE OPERATION CONDITIONS

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

(a) Two (2) rotary lime kilns, permitted in 2010, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using Baghouse DC1 and Baghouse DC2, respectively, for PM control, and exhausting to Stack #1 and Stack #2, respectively. Under 40 CFR 60, Subpart HH, these units are rotary lime kilns used in the manufacture of lime. [40 CFR 60, Subpart HH]

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

E.1.1 General Provisions Relating to NSPS, Subpart HH [326 IAC 12-1] [40 CFR Part 60, Subpart A]

Pursuant to 40 CFR 60, Subpart HH, the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1-1.

E.1.2 New Source Performance Standards for Lime Manufacturing Plants [40 CFR Part 60, Subpart HH]

The Permittee which uses rotary lime kilns in the manufacture of lime shall comply with the following provisions of 40 CFR Part 60, Subpart HH (included as Attachment A of this permit), upon startup of Kiln #1 or Kiln #2:

(1) 40 CFR 60.342(a)(1)
(2) 40 CFR 60.343(a)
(3) 40 CFR 60.344(b)(2)

SECTION E.2 SOURCE OPERATION CONDITIONS

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

(a) Six (6) limestone screens, permitted in 2010, maximum capacities ranging from 500 tons per hour to 1000 tons per hour, identified as emission units S1 through S6.

(b) Forty two (42) conveyors, permitted in 2010, identified as C1 through C42.

(c) Three (3) crushers, permitted in 2010, identified as CR1 (maximum capacity of 1000 tons per hour), CR2 (maximum capacity of 600 tons per hour) and CR3 (maximum capacity of 200 tons per hour).

Under 40 CFR 60, Subpart OOO, these units are emission units used in a nonmetallic mineral processing plant. [40 CFR 60, Subpart OOO]

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

E.2.1 General Provisions Relating to NSPS Subpart OOO [326 IAC 12-1] [40 CFR Part 60, Subpart A]

Pursuant to 40 CFR 60, Subpart OOO, the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1-1.

E.2.2 New Source Performance Standards for Nonmetallic Mineral Processing Plants [40 CFR Part 60, Subpart OOO]

The Permittee, which uses conveyors C1 through C42, screens S1 through S6, and crushers CR1 through CR3, is subject to the following requirements under the New Source Performance Standards for nonmetallic mineral processing plants, 40 CFR 60, Subpart OOO (included as Attachment B of this permit), which is incorporated by reference as 326 IAC 12:

(1) 40 CFR 60.670
(2) 40 CFR 60.671
(3) 40 CFR 60.672
(4) 40 CFR 60.675(c)(1)
(5) 40 CFR 60.676(h)

SECTION E.3 SOURCE OPERATION CONDITIONS

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

(a) Two (2) rotary lime kilns, permitted in 2010, each with a maximum capacity of 900 tons per day of lime produced, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using baghouse DC1 and baghouse DC2, respectively for PM control, and exhausting to Stack #1 and Stack #2, respectively.

(b) Two (2) lime coolers, permitted in 2010, each with a maximum capacity of 900 tons per day, identified as Cooler #1 and Cooler #2, using baghouses DC3 and DC4 for PM control of lime offload transfers, exhausting to Stack #3 and Stack #4, respectively.

(c) Six (6) lime screens, permitted in 2010, maximum capacities ranging from 500 tons per hour to 1000 tons per hour, identified as emission units S1 through S6.

Under 40 CFR 63, Subpart AAAAA, these units are part of a lime manufacturing plant. [40 CFR 63, Subpart AAAAA]

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

E.3.1 General Provisions Relating to NESHAP Subpart AAAAA [326 IAC 20-1] [40 CFR Part 63, Subpart A]

Pursuant to 40 CFR 63.7140, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1-1, in accordance with schedule in 40 CFR 63 Subpart AAAAA.

E.3.2 Lime Manufacturing Plant NESHAP [40 CFR Part 63, Subpart AAAAA]

The Permittee, which uses lime kilns, coolers, and lime screens S1 through S6, shall comply with the following provisions of 40 CFR Part 63, Subpart AAAAA (included as Attachment C of this permit), upon startup:

(1) 40 CFR 63.7080
(2) 40 CFR 63.7081
(3) 40 CFR 63.7082
(4) 40 CFR 63.7083(a)
(5) 40 CFR 63.7090(a), (b), Table 1, Table 2(Item 1)
(6) 40 CFR 63.7100(d)
(7) 40 CFR 63.7120
(8) 40 CFR 63.7121
(9) 40 CFR 63.7114
(10) 40 CFR 63.7110
(11) 40 CFR 63.7111
(12) 40 CFR 63.7112
(13) 40 CFR 63.7113
(14) 40 CFR 63.7132
(15) 40 CFR 63.7130
(16) 40 CFR 63.7131
(17) 40 CFR 63.7143

SECTION E.4 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

(a) One (1) diesel-powered emergency generator, permitted in 2010, with a nominal capacity of 250 kW.

Under 40 CFR 60, Subpart IIII, the emergency generator is a stationary compression ignition (CI) internal combustion engines (ICE)

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

E.4.1 General Provisions Relating to NSPS Subpart IIII [326 IAC 12-1] [40 CFR Part 60, Subpart A]

Pursuant to 40 CFR 60.4200, the Permittee shall comply with the provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1-1, in accordance with schedule in 40 CFR 60 Subpart IIII.

E.4.2 New Source Performance Standards for Stationary Internal Combustion Engines [40 CFR Part 60, Subpart IIII]

The Permittee which uses an emergency internal combustion engine shall comply with the following provisions of 40 CFR Part 60, Subpart IIII (included as Attachment D of this permit), upon startup:

(1) 40 CFR 60.4200
(2) 40 CFR 60.4201
(3) 40 CFR 60.4202
(4) 40 CFR 60.4205
(5) 40 CFR 60.4206
(6) 40 CFR 60.4207
(7) 40 CFR 60.4209
(8) 40 CFR 60.4210
(9) 40 CFR 60.4211
(10) 40 CFR 60.4212
(11) 40 CFR 60.4213
(12) 40 CFR 60.4214
(13) 40 CFR 60.4218
(14) 40 CFR 60.4219

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
PART 70 OPERATING PERMIT
CERTIFICATION

Source Name: Synergy Management LLC
Source Address: 5600 N. US Highway 421, Monon, Indiana 47959
Mailing Address: 6450 Industrial Highway, Gary, IN 46406
Part 70 Permit No.: T181-26877-00050

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 DATA SECTION

Part 70 Quarterly Report

Source Name: Synergy Management LLC
Source Address: 5600 N. US Highway 421, Monon, Indiana 47959
Mailing Address: 6450 Industrial Highway, Gary, IN 46406
Part 70 Permit No.: T181-26877-00050
Facility: Kiln 1
Parameter: VOC emissions
Limit: <25.0 tons per twelve (12) consecutive month period.

YEAR: QUARTER:

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- o No deviation occurred in this quarter.
- o Deviation/s occurred in this quarter.

Deviation has been reported on:

Submitted by: Title/Position:
Signature:
Date:
Phone:

Attach a signed certification to complete this report.

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

Part 70 Quarterly Report

Source Name: Synergy Management LLC
Source Address: 5600 N. US Highway 421, Monon, Indiana 47959
Mailing Address: 6450 Industrial Highway, Gary, IN 46406
Part 70 Permit No.: T181-26877-00050
Facility: Kiln 2
Parameter: VOC emissions
Limit: <25.0 tons per twelve (12) consecutive month period.

YEAR: QUARTER:

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

- o No deviation occurred in this quarter.
- o Deviation/s occurred in this quarter.

Deviation has been reported on:

Submitted by: Title/Position:
Signature:
Date:
Phone:

Attach a signed certification to complete this report.

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

Part 70 Quarterly Report

Source Name: Synergy Management LLC
Source Address: 5600 N. US Highway 421, Monon, Indiana 47959
Mailing Address: 6450 Industrial Highway, Gary, IN 46406
Part 70 Permit No.: T181-26877-00050
Facility: Kilns 1 and 2
Parameter: VOC emissions
Limit: 39.3 tons total, per twelve (12) consecutive month period.

YEAR: QUARTER:

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

o No deviation occurred in this quarter.

o Deviation/s occurred in this quarter.

Deviation has been reported on:

Submitted by: Title/Position:
Signature:
Date:
Phone:

Attach a signed certification to complete this report.

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: Synergy Management LLC
Source Address: 5600 N. US Highway 421, Monon, Indiana 47959
Mailing Address: 6450 Industrial Highway, Gary, IN 46406
Part 70 Permit No.: T181-26877-00050

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
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: _____

A certification is not required for 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: Synergy Management LLC
Source Address: 5600 N. US Highway 421, Monon, Indiana 47959
Mailing Address: 6450 Industrial Highway, Gary, IN 46406
Part 70 Permit No.: T181-26877-00050

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:	

Page 2 of 2

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.

Mail to: Permit Administration & Development Section
Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Synergy Management LLC
5600 N. US Highway 421
Monon, Indiana 47959

Affidavit of Construction

I, _____, being duly sworn upon my oath, depose and say:
(Name of the Authorized Representative)

1. I live in _____ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.

2. I hold the position of _____ for _____.
(Title) (Company Name)

3. By virtue of my position with _____, I have personal
(Company Name)

knowledge of the representations contained in this affidavit and am authorized to make

these representations on behalf of _____.
(Company Name)

4. I hereby certify that Synergy Management LLC 5600 N. US Highway 421, Monon, Indiana 47959, completed construction of the dolomitic lime manufacturing operation on _____in conformity with the requirements and intent of the construction permit application received by the Office of Air Quality on August 15, 2008, and as permitted pursuant to PSD and Part 70 Operating Permit No. T181-26877-00050, Plant ID No. 181-00050 issued on _____.

5. **Permittee, please cross out the following statement if it does not apply:** Additional (operations/facilities) were constructed/substituted as described in the attachment to this document and were not made in accordance with the construction permit.

Further Affiant said not.

I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

Signature_____

Date_____

STATE OF INDIANA)
)SS

COUNTY OF _____)

Subscribed and sworn to me, a notary public in and for _____ County and State of Indiana on this _____ day of _____, 20 _____. My Commission expires: _____.

Signature_____

Name_____ (typed or printed)

Attachment A

Indiana Department of Environmental Management
Office of Air Quality

Source Name:	**Synergy Management, LLC**
Source Location:	**5600 N. US Highway 421, Monon, IN 47959**
County:	**White**
SIC Code:	**3274**
Operation Permit No.:	**T181-26877-00050**

Title 40: Protection of Environment
PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Subpart HH—Standards of Performance for Lime Manufacturing Plants

Source: 49 FR 18080, Apr. 26, 1984, unless otherwise noted.

§ 60.340 Applicability and designation of affected facility.

(a) The provisions of this subpart are applicable to each rotary lime kiln used in the manufacture of lime.

(b) The provisions of this subpart are not applicable to facilities used in the manufacture of lime at kraft pulp mills.

(c) Any facility under paragraph (a) of this section that commences construction or modification after May 3, 1977, is subject to the requirements of this subpart.

§ 60.341 Definitions.

As used in this subpart, all terms not defined herein shall have the same meaning given them in the Act and in the General Provisions.

(a) *Lime manufacturing plant* means any plant which uses a rotary lime kiln to produce lime product from limestone by calcination.

(b) *Lime product* means the product of the calcination process including, but not limited to, calcitic lime, dolomitic lime, and dead-burned dolomite.

(c) *Positive-pressure fabric filter* means a fabric filter with the fans on the upstream side of the filter bags.

(d) *Rotary lime kiln* means a unit with an inclined rotating drum that is used to produce a lime product from limestone by calcination.

(e) *Stone feed* means limestone feedstock and millscale or other iron oxide additives that become part of the product.

§ 60.342 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 rotary lime kiln any gases which:

(1) Contain particulate matter in excess of 0.30 kilogram per megagram (0.60 lb/ton) of stone feed.

(2) Exhibit greater than 15 percent opacity when exiting from a dry emission control device.

§ 60.343 Monitoring of emissions and operations.

(a) The owner or operator of a facility that is subject to the provisions of this subpart shall install, calibrate, maintain, and operate a continuous monitoring system, except as provided in paragraphs (b) and (c) of this section, to monitor and record the opacity of a representative portion of the gases discharged into the atmosphere from any rotary lime kiln. The span of this system shall be set at 40 percent opacity.

(b) The owner or operator of any rotary lime kiln having a control device with a multiple stack exhaust or a roof monitor may, in lieu of the continuous opacity monitoring requirement of §60.343(a), monitor visible emissions at least once per day of operation by using a certified visible emissions observer who, for each site where visible emissions are observed, will perform three Method 9 tests and record the results. Visible emission observations shall occur during normal operation of the rotary lime kiln at least once per day. For at least three 6-minute periods, the opacity shall be recorded for any point(s) where visible emissions are observed, and the corresponding feed rate of the kiln shall also be recorded. Records shall be maintained of any 6-minute average that is in excess of the emissions specified in §60.342(a) of this subpart.

(c) The owner or operator of any rotary lime kiln using a wet scrubbing emission control device subject to the provisions of this subpart shall not be required to monitor the opacity of the gases discharged as required in paragraph (a) of this section, but shall install, calibrate, maintain, operate, and record the resultant information from the following continuous monitoring devices:

(1) A monitoring device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device must be accurate within ±250 pascals (one inch of water).

(2) A monitoring device for continuous measurement of the scrubbing liquid supply pressure to the control device. The monitoring device must be accurate within ±5 percent of the design scrubbing liquid supply pressure.

(d) For the purpose of conducting a performance test under §60.8, the owner or operator of any lime manufacturing plant subject to the provisions of this subpart shall install, calibrate, maintain, and operate a device for measuring the mass rate of stone feed to any affected rotary lime kiln. The measuring device used must be accurate to within ±5 percent of the mass rate over its operating range.

(e) For the purpose of reports required under §60.7(c), periods of excess emissions that shall be reported are defined as all 6-minute periods during which the average opacity of the visible emissions from any lime kiln subject to paragraph (a) of this subpart is greater than 15 percent or, in the case of wet scrubbers, any period in which the scrubber pressure drop or scrubbing liquid supply pressure is greater than 30 percent below that established during the performance test. If

visible emission observations are made according to paragraph (b) of this section, reports of excess emissions shall be submitted semiannually.

[49 FR 18080, Apr. 26, 1984, as amended at 52 FR 4773, Feb. 17, 1987; 54 FR 6675, Feb. 14, 1989; 65 FR 61760, Oct. 17, 2000]

§ 60.344 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).

(b) The owner or operator shall determine compliance with the particulate matter standards in §60.342(a) as follows:

(1) The emission rate (E) of particulate matter shall be computed for each run using the following equation:

$E=(c_sQ_{sd})/PK)$

where:

E=emission rate of particulate matter, kg/Mg (1b/ton) of stone feed.

c_s=concentration of particulate matter, g/dscm (gr/dscf).

Q_{sd}=volumetric flow rate of effluent gas, dscm/hr (dscf/hr).

P=stone feed rate, Mg/hr (ton/hr).

K=conversion factor, 1000 g/kg (7000 gr/lb).

(2) Method 5 shall be used at negative-pressure fabric filters and other types of control devices and Method 5D shall be used at positive-pressure fabric filters to determine the particulate matter concentration (c_s) and the volumetric flow rate (Q_{sd}) of the effluent gas. The sampling time and sample volume for each run shall be at least 60 minutes and 0.90 dscm (31.8 dscf).

(3) The monitoring device of §60.343(d) shall be used to determine the stone feed rate (P) for each run.

(4) Method 9 and the procedures in §60.11 shall be used to determine opacity.

(c) During the particulate matter run, the owner or operator shall use the monitoring devices in §60.343(c)(1) and (2) to determine the average pressure loss of the gas stream through the scrubber and the average scrubbing liquid supply pressure.

[54 FR 6675, Feb. 14, 1989, as amended at 65 FR 61760, Oct. 17, 2000]

Attachment B

Indiana Department of Environmental Management
Office of Air Quality

Source Name:	**Synergy Management, LLC**
Source Location:	**5600 N. US Highway 421, Monon, IN 47959**
County:	**White**
SIC Code:	**3274**
Operation Permit No.:	**T181-26877-00050**

Title 40: Protection of Environment
PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Subpart OOO—Standards of Performance for Nonmetallic Mineral Processing Plants

Source: 74 FR 19309, Apr. 28, 2009, unless otherwise noted.

§ 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.

(2) The provisions of this subpart do not apply to the following operations: All facilities located in underground mines; plants without crushers or grinding mills above ground; and wet material processing operations (as defined in §60.671).

(b) An affected facility that is subject to the provisions of subparts F or I of this part or that follows in the plant process any facility subject to the provisions of subparts F or I of this part is not subject to the provisions of this subpart.

(c) Facilities at the following plants are not subject to the provisions of this subpart:

(1) Fixed sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 23 megagrams per hour (25 tons per hour) or less;

(2) Portable sand and gravel plants and crushed stone plants with capacities, as defined in §60.671, of 136 megagrams per hour (150 tons per hour) or less; and

(3) Common clay plants and pumice plants with capacities, as defined in §60.671, of 9 megagrams per hour (10 tons per hour) or less.

(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, and there is no increase in the amount of emissions, 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, modification, or reconstruction 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 do not apply to owners and operators of affected facilities subject to this subpart or that apply with certain exceptions.

§ 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 affected facilities 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 affected facilities 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.

Crush or *Crushing* means to reduce the size of nonmetallic mineral material by means of physical impaction of the crusher or grinding mill upon the material.

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:

(1) Crushed and Broken Stone, including Limestone, Dolomite, Granite, Traprock, Sandstone, Quartz, Quartzite, Marl, Marble, Slate, Shale, Oil Shale, and Shell.

(2) Sand and Gravel.

(3) Clay including Kaolin, Fireclay, Bentonite, Fuller's Earth, Ball Clay, and Common Clay.

(4) Rock Salt.

(5) Gypsum (natural or synthetic).

(6) Sodium Compounds, including Sodium Carbonate, Sodium Chloride, and Sodium Sulfate.

(7) Pumice.

(8) Gilsonite.

(9) Talc and Pyrophyllite.

(10) Boron, including Borax, Kernite, and Colemanite.

(11) Barite.

(12) Fluorospar.

(13) Feldspar.

(14) Diatomite.

(15) Perlite.

(16) Vermiculite.

(17) Mica.

(18) 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.

Saturated material means, for purposes of this subpart, mineral material with sufficient surface moisture such that particulate matter emissions are not generated from processing of the material through screening operations, bucket elevators and belt conveyors. Material that is wetted solely by wet suppression systems is not considered to be “saturated” for purposes of this definition.

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). Grizzly feeders associated with truck dumping and static (non-moving) grizzlies used anywhere in the nonmetallic mineral processing plant are not considered to be screening operations.

Seasonal shut down means shut down of an affected facility for a period of at least 45 consecutive days due to weather or seasonal market conditions.

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) of 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 material processing operation(s) means any of the following:

(1) Wet screening operations (as defined in this section) and subsequent screening operations, bucket elevators and belt conveyors in the production line that process saturated materials (as defined in this section) up to the first crusher, grinding mill or storage bin in the production line; or

(2) Screening operations, bucket elevators and belt conveyors in the production line downstream of wet mining operations (as defined in this section) that process saturated materials (as defined in this section) up to the first crusher, grinding mill or storage bin in the production line.

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 (PM).

(a) Affected facilities must meet the stack emission limits and compliance requirements in Table 2 of this subpart within 60 days 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 §60.8. The requirements in Table 2 of this subpart apply for affected facilities with capture systems used to capture and transport particulate matter to a control device.

(b) Affected facilities must meet the fugitive emission limits and compliance requirements in Table 3 of this subpart within 60 days 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. The requirements in Table 3 of this subpart apply for fugitive emissions from affected facilities without capture systems and for fugitive emissions escaping capture systems.

(c) [Reserved]

(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) and (b) of this section, or the building enclosing the affected facility or facilities must comply with the following emission limits:

(1) Fugitive emissions from the building openings (except for vents as defined in §60.671) must not exceed 7 percent opacity; and

(2) Vents (as defined in §60.671) in the building must meet the applicable stack emission limits and compliance requirements in Table 2 of this subpart.

(f) Any baghouse that controls emissions from only an individual, enclosed storage bin is exempt from the applicable stack PM concentration limit (and associated performance testing) in Table 2 of this subpart but must meet the applicable stack opacity limit and compliance requirements in Table 2 of this subpart. This exemption from the stack PM concentration limit does not apply for multiple storage bins with combined stack emissions.

§ 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.

§ 60.674 Monitoring of operations.

(a) The owner or operator of any affected facility subject to the provisions of this subpart which uses a wet scrubber to control emissions shall install, calibrate, maintain and operate the following monitoring devices:

(1) A device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device must be certified by the manufacturer to be accurate within ±250 pascals ±1 inch water gauge pressure and must be calibrated on an annual basis in accordance with manufacturer's instructions.

(2) A device for the continuous measurement of the scrubbing liquid flow rate to the wet scrubber. The monitoring device must be certified by the manufacturer to be accurate within ±5 percent of design scrubbing liquid flow rate and must be calibrated on an annual basis in accordance with manufacturer's instructions.

(b) The owner or operator of any affected facility for which construction, modification, or reconstruction commenced on or after April 22, 2008, that uses wet suppression to control emissions from the affected facility must perform monthly periodic inspections to check that water is flowing to discharge spray nozzles in the wet suppression system. The owner or operator must initiate corrective action within 24 hours and complete corrective action as expediently as practical if the owner or operator finds that water is not flowing properly during an inspection of the water spray nozzles. The owner or operator must record each inspection of the water spray nozzles, including the date of each inspection and any corrective actions taken, in the logbook required under §60.676(b).

(1) If an affected facility relies on water carryover from upstream water sprays to control fugitive emissions, then that affected facility is exempt from the 5-year repeat testing requirement specified in Table 3 of this subpart provided that the affected facility meets the criteria in paragraphs (b)(1)(i) and (ii) of this section:

(i) The owner or operator of the affected facility conducts periodic inspections of the upstream water spray(s) that are responsible for controlling fugitive emissions from the affected facility. These inspections are conducted according to paragraph (b) of this section and §60.676(b), and

(ii) The owner or operator of the affected facility designates which upstream water spray(s) will be periodically inspected at the time of the initial performance test required under §60.11 of this part and §60.675 of this subpart.

(2) If an affected facility that routinely uses wet suppression water sprays ceases operation of the water sprays or is using a control mechanism to reduce fugitive emissions other than water sprays during the monthly inspection (for example, water from recent rainfall), the logbook entry required under §60.676(b) must specify the control mechanism being used instead of the water sprays.

(c) Except as specified in paragraph (d) or (e) of this section, the owner or operator of any affected facility for which construction, modification, or reconstruction commenced on or after April 22, 2008, that uses a baghouse to control emissions must conduct quarterly 30-minute visible emissions inspections using EPA Method 22 (40 CFR part 60, Appendix A–7). The Method 22 (40 CFR part 60, Appendix A–7) test shall be conducted while the baghouse is operating. The test is successful if no visible emissions are observed. If any visible emissions are observed, the owner or operator of the affected facility must initiate corrective action within 24 hours to return the baghouse to normal operation. The owner or operator must record each Method 22 (40 CFR part 60, Appendix A–7) test, including the date and any corrective actions taken, in the logbook required under §60.676(b). The owner or operator of the affected facility may establish a different baghouse-specific success level for the visible emissions test (other than no visible emissions) by conducting a PM performance test according to §60.675(b) simultaneously with a Method 22 (40 CFR part 60, Appendix A–7) to determine what constitutes normal visible emissions from that affected facility's baghouse when it is in compliance with the applicable PM concentration limit in Table 2 of this subpart. The revised visible emissions success level must be incorporated into the permit for the affected facility.

(d) As an alternative to the periodic Method 22 (40 CFR part 60, Appendix A–7) visible emissions inspections specified in paragraph (c) of this section, the owner or operator of any affected facility for which construction, modification, or reconstruction commenced on or after April 22, 2008, that uses a baghouse to control emissions may use a bag leak detection system. The owner or operator must install, operate, and maintain the bag leak detection system according to paragraphs (d)(1) through (3) of this section.

(1) Each bag leak detection system must meet the specifications and requirements in paragraphs (d)(1)(i) through (viii) of this section.

(i) The bag leak detection system must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 1 milligram per dry standard cubic meter (0.00044 grains per actual cubic foot) or less.

(ii) The bag leak detection system sensor must provide output of relative PM loadings. The owner or operator shall continuously record the output from the bag leak detection system using electronic or other means (*e.g.* , using a strip chart recorder or a data logger).

(iii) The bag leak detection system must be equipped with an alarm system that will sound when the system detects an increase in relative particulate loading over the alarm set point established according to paragraph (d)(1)(iv) of this section, and the alarm must be located such that it can be heard by the appropriate plant personnel.

(iv) In the initial adjustment of the bag leak detection system, the owner or operator must establish, at a minimum, the baseline output by adjusting the sensitivity (range) and the averaging period of the device, the alarm set points, and the alarm delay time.

(v) Following initial adjustment, the owner or operator shall not adjust the averaging period, alarm set point, or alarm delay time without approval from the Administrator or delegated authority except as provided in paragraph (d)(1)(vi) of this section.

(vi) Once per quarter, the owner or operator may adjust the sensitivity of the bag leak detection system to account for seasonal effects, including temperature and humidity, according to the procedures identified in the site-specific monitoring plan required by paragraph (d)(2) of this section.

(vii) The owner or operator must install the bag leak detection sensor downstream of the fabric filter.

(viii) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

(2) The owner or operator of the affected facility must develop and submit to the Administrator or delegated authority for approval of a site-specific monitoring plan for each bag leak detection system. The owner or operator must operate and maintain the bag leak detection system according to the site-specific monitoring plan at all times. Each monitoring plan must describe the items in paragraphs (d)(2)(i) through (vi) of this section.

(i) Installation of the bag leak detection system;

(ii) Initial and periodic adjustment of the bag leak detection system, including how the alarm set-point will be established;

(iii) Operation of the bag leak detection system, including quality assurance procedures;

(iv) How the bag leak detection system will be maintained, including a routine maintenance schedule and spare parts inventory list;

(v) How the bag leak detection system output will be recorded and stored; and

(vi) Corrective action procedures as specified in paragraph (d)(3) of this section. In approving the site-specific monitoring plan, the Administrator or delegated authority may allow owners and operators more than 3 hours to alleviate a specific condition that causes an alarm if the owner or operator identifies in the monitoring plan this specific condition as one that could lead to an alarm, adequately explains why it is not feasible to alleviate this condition within 3 hours of the time the alarm occurs, and demonstrates that the requested time will ensure alleviation of this condition as expeditiously as practicable.

(3) For each bag leak detection system, the owner or operator must initiate procedures to determine the cause of every alarm within 1 hour of the alarm. Except as provided in paragraph (d)(2)(vi) of this section, the owner or operator must alleviate the cause of the alarm within 3 hours of the alarm by taking whatever corrective action(s) are necessary. Corrective actions may include, but are not limited to the following:

(i) Inspecting the fabric filter for air leaks, torn or broken bags or filter media, or any other condition that may cause an increase in PM emissions;

(ii) Sealing off defective bags or filter media;

(iii) Replacing defective bags or filter media or otherwise repairing the control device;

(iv) Sealing off a defective fabric filter compartment;

(v) Cleaning the bag leak detection system probe or otherwise repairing the bag leak detection system; or

(vi) Shutting down the process producing the PM emissions.

(e) As an alternative to the periodic Method 22 (40 CFR part 60, Appendix A–7) visible emissions inspections specified in paragraph (c) of this section, the owner or operator of any affected facility that is subject to the requirements for processed stone handling operations in the Lime Manufacturing NESHAP (40 CFR part 63, subpart AAAAA) may follow the continuous compliance requirements in row 1 items (i) through (iii) of Table 6 to Subpart AAAAA of 40 CFR part 63.

§ 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 appendices A–1 through A–7 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 PM standards in §60.672(a) as follows:

(1) Except as specified in paragraphs (e)(3) and (4) of this section, Method 5 of Appendix A–3 of this part or Method 17 of Appendix A–6 of this part shall be used to determine the particulate matter concentration. The sample volume shall be at least 1.70 dscm (60 dscf). For Method 5 (40 CFR part 60, Appendix A–3), 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 of Appendix A–4 of this part 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) or §60.672(e)(1), the owner or operator shall use Method 9 of Appendix A–4 of this part 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 of Appendix A–4 of this part, 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)(i) 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 (40 CFR part 60, Appendix A–4), the duration of the Method 9 (40 CFR part 60, Appendix A–4) observations shall be 1 hour (ten 6-minute averages).

(ii) The duration of the Method 9 (40 CFR part 60, Appendix A–4) observations may be reduced to the duration the affected facility operates (but not less than 30 minutes) for baghouses that control storage bins or enclosed truck or railcar loading stations that operate for less than 1 hour at a time.

(3) When determining compliance with the fugitive emissions standard for any affected facility described under §60.672(b) or §60.672(e)(1) of this subpart, the duration of the Method 9 (40 CFR part 60, Appendix A–4) observations must be 30 minutes (five 6-minute averages). Compliance with the applicable fugitive emission limits in Table 3 of this subpart must be based on the average of the five 6-minute averages.

(d) To demonstrate compliance with the fugitive emission limits for buildings specified in §60.672(e)(1), the owner or operator must complete the testing specified in paragraph (d)(1) and (2) of this section. Performance tests must be conducted while all affected facilities inside the building are operating.

(1) If the building encloses any affected facility that commences construction, modification, or reconstruction on or after April 22, 2008, the owner or operator of the affected facility must conduct an initial Method 9 (40 CFR part 60, Appendix A–4) performance test according to this section and §60.11.

(2) If the building encloses only affected facilities that commenced construction, modification, or reconstruction before April 22, 2008, and the owner or operator has previously conducted an initial Method 22 (40 CFR part 60, Appendix A–7) performance test showing zero visible emissions, then the owner or operator has demonstrated compliance with the opacity limit in §60.672(e)(1). If the owner or operator has not conducted an initial performance test for the building before April 22, 2008, then the owner or operator must conduct an initial Method 9 (40 CFR part 60, Appendix A–4) performance test according to this section and §60.11 to show compliance with the opacity limit in §60.672(e)(1).

(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.

(2) A single visible emission observer may conduct visible emission observations for up to three fugitive, stack, or vent emission points within a 15-second interval if the following conditions are met:

(i) No more than three emission points may be read concurrently.

(ii) All three emission points must be within a 70 degree viewing sector or angle in front of the observer such that the proper sun position can be maintained for all three points.

(iii) If an opacity reading for any one of the three emission points equals or exceeds the applicable standard, then the observer must stop taking readings for the other two points and continue reading just that single point.

(3) Method 5I of Appendix A–3 of this part may be used to determine the PM concentration as an alternative to the methods specified in paragraph (b)(1) of this section. Method 5I (40 CFR part 60, Appendix A–3) may be useful for affected facilities that operate for less than 1 hour at a time such as (but not limited to) storage bins or enclosed truck or railcar loading stations.

(4) In some cases, velocities of exhaust gases from building vents may be too low to measure accurately with the type S pitot tube specified in EPA Method 2 of Appendix A–1 of this part [*i.e.,* velocity head <1.3 mm H_2O (0.05 in. H_2O)] and referred to in EPA Method 5 of Appendix A–3 of this part. For these conditions, the owner or operator may determine the average gas flow rate produced by the power fans (*e.g.,* from vendor-supplied fan curves) to the building vent. The owner or operator may calculate the average gas velocity at the building vent measurement site using Equation 1 of this section and use this average velocity in determining and maintaining isokinetic sampling rates.

$$v_e = \frac{Q_f}{A_e} \qquad \text{(Eq. 1)}$$

Where:

V_e= average building vent velocity (feet per minute);

Q_f= average fan flow rate (cubic feet per minute); and

A_e= area of building vent and measurement location (square feet).

(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)(1) and (2) during each particulate matter run and shall determine the averages.

(g) For performance tests involving only Method 9 (40 CFR part 60 Appendix A–4) testing, the owner or operator may reduce the 30-day advance notification of performance test in §60.7(a)(6) and 60.8(d) to a 7-day advance notification.

(h) [Reserved]

(i) If the initial performance test date for an affected facility falls during a seasonal shut down (as defined in §60.671 of this subpart) of the affected facility, then with approval from the permitting authority, the owner or operator may postpone the initial performance test until no later than 60 calendar days after resuming operation of the affected facility.

§ 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.

(2) For a screening operation:

(i) The total surface area of the top screen of the existing screening operation being replaced and

(ii) The total surface area of the top screen of the replacement screening operation.

(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.

(b)(1) Owners or operators of affected facilities (as defined in §§60.670 and 60.671) for which construction, modification, or reconstruction commenced on or after April 22, 2008, must record each periodic inspection required under §60.674(b) or (c), including dates and any corrective actions taken, in a logbook (in written or electronic format). The owner or operator must keep the logbook onsite and make hard or electronic copies (whichever is requested) of the logbook available to the Administrator upon request.

(2) For each bag leak detection system installed and operated according to §60.674(d), the owner or operator must keep the records specified in paragraphs (b)(2)(i) through (iii) of this section.

(i) Records of the bag leak detection system output;

(ii) Records of bag leak detection system adjustments, including the date and time of the adjustment, the initial bag leak detection system settings, and the final bag leak detection system settings; and

(iii) The date and time of all bag leak detection system alarms, the time that procedures to determine the cause of the alarm were initiated, the cause of the alarm, an explanation of the actions taken, the date and time the cause of the alarm was alleviated, and whether the cause of the alarm was alleviated within 3 hours of the alarm.

(3) The owner or operator of each affected facility demonstrating compliance according to §60.674(e) by following the requirements for processed stone handling operations in the Lime Manufacturing NESHAP (40 CFR part 63, subpart AAAAA) must maintain records of visible emissions observations required by §63.7132(a)(3) and (b) of 40 CFR part 63, subpart AAAAA.

(c) During the initial performance test of a wet scrubber, and daily thereafter, the owner or operator shall record the measurements of both the change in pressure of the gas stream across the scrubber and the scrubbing liquid flow rate.

(d) After the initial performance test of a wet scrubber, the owner or operator shall submit semiannual reports to the Administrator of occurrences when the measurements of the scrubber pressure loss and liquid flow rate decrease by more than 30 percent from the average determined during the most recent performance test.

(e) The reports required under paragraph (d) of this section shall be postmarked within 30 days following end of the second and fourth calendar quarters.

(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 (40 CFR part 60, Appendix A–4) to demonstrate compliance with §60.672(b), (e) and (f).

(g) The owner or operator of any wet material processing operation that processes saturated and subsequently processes unsaturated materials, shall submit a report of this change within 30 days following such change. At the time of such change, this screening operation, bucket elevator, or belt conveyor becomes subject to the applicable opacity limit in §60.672(b) and the emission test requirements of §60.11.

(h) The subpart A requirement under §60.7(a)(1) for notification of the date construction or reconstruction commenced is waived for affected facilities 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.

(2) For portable aggregate processing plants, the notification of the actual date of initial startup shall include both the home office and the current address or location of the portable plant.

(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.

(k) Notifications and reports required under this subpart and under subpart A of this part to demonstrate compliance with this subpart need only to be sent to the EPA Region or the State which has been delegated authority according to §60.4(b).

Table 1 to Subpart OOO—Exceptions to Applicability of Subpart A to Subpart OOO

Subpart A reference	Applies to subpart OOO	Explanation
60.4, Address	Yes	Except in §60.4(a) and (b) submittals need not be submitted to both the EPA Region and delegated State authority (§60.676(k)).
60.7, Notification and recordkeeping	Yes	Except in (a)(1) notification of the date construction or reconstruction commenced (§60.676(h)).
		Also, except in (a)(6) performance tests involving only Method 9 (40 CFR part 60, Appendix A–4) require a 7-day advance notification instead of 30 days (§60.675(g)).
60.8, Performance tests	Yes	Except in (d) performance tests involving only Method 9 (40 CFR part 60, Appendix A–4) require a 7-day advance notification instead of 30 days (§60.675(g)).
60.11, Compliance with standards and maintenance requirements	Yes	Except in (b) under certain conditions (§§60.675(c)), Method 9 (40 CFR part 60, Appendix A–4) observation is reduced from 3 hours to 30 minutes for fugitive emissions.
60.18, General control device	No	Flares will not be used to comply with the emission limits.

Table 2 to Subpart OOO—Stack Emission Limits for Affected Facilities With Capture Systems

For * * *	The owner or operator must meet a PM limit of * * *	And the owner or operator must meet an opacity limit of * * *	The owner or operator must demonstrate compliance with these limits by conducting * * *
Affected facilities (as defined in §§60.670 and 60.671) that commenced construction, modification, or reconstruction after August 31, 1983 but before April 22, 2008	0.05 g/dscm (0.022 gr/dscf)[a]	7 percent for dry control devices[b]	An initial performance test according to §60.8 of this part and §60.675 of this subpart; and Monitoring of wet scrubber parameters according to §60.674(a) and §60.676(c), (d), and (e).
Affected facilities (as defined in §§60.670 and 60.671) that commence construction, modification, or reconstruction on or after April 22, 2008	0.032 g/dscm (0.014 gr/dscf)[a]	Not applicable (except for individual enclosed storage bins) 7 percent for dry control devices on	An initial performance test according to §60.8 of this part and §60.675 of this subpart; and Monitoring of wet scrubber parameters according to §60.674(a)

		individual enclosed storage bins	and §60.676(c), (d), and (e); and
			Monitoring of baghouses according to §60.674(c), (d), or (e) and §60.676(b).

[a]Exceptions to the PM limit apply for individual enclosed storage bins and other equipment. See §60.672(d) through (f).

[b]The stack opacity limit and associated opacity testing requirements do not apply for affected facilities using wet scrubbers.

Table 3 to Subpart OOO—Fugitive Emission Limits

For * * *	The owner or operator must meet the following fugitive emissions limit for grinding mills, screening operations, bucket elevators, transfer points on belt conveyors, bagging operations, storage bins, enclosed truck or railcar loading stations or from any other affected facility (as defined in §§60.670 and 60.671) * * *	The owner or operator must meet the following fugitive emissions limit for crushers at which a capture system is not used * * *	The owner or operator must demonstrate compliance with these limits by conducting * * *
Affected facilities (as defined in §§60.670 and 60.671) that commenced construction, modification, or reconstruction after August 31, 1983 but before April 22, 2008	10 percent opacity	15 percent opacity	An initial performance test according to §60.11 of this part and §60.675 of this subpart.
Affected facilities (as defined in §§60.670 and 60.671) that commence construction, modification, or reconstruction on or after April 22, 2008	7 percent opacity	12 percent opacity	An initial performance test according to §60.11 of this part and §60.675 of this subpart; and Periodic inspections of water sprays according to §60.674(b) and §60.676(b); and

			A repeat performance test according to §60.11 of this part and §60.675 of this subpart within 5 years from the previous performance test for fugitive emissions from affected facilities without water sprays. Affected facilities controlled by water carryover from upstream water sprays that are inspected according to the requirements in §60.674(b) and §60.676(b) are exempt from this 5-year repeat testing requirement.

Attachment C

Indiana Department of Environmental Management
Office of Air Quality

Source Name:	**Synergy Management, LLC**
Source Location:	**5600 N. US Highway 421, Monon, IN 47959**
County:	**White**
SIC Code:	**3274**
Operation Permit No.:	**T181-26877-00050**

Title 40: Protection of Environment
PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

Subpart AAAAA—National Emission Standards for Hazardous Air Pollutants for Lime Manufacturing Plants

Source: 69 FR 416, Jan. 5, 2004, unless otherwise noted.

What This Subpart Covers

§ 63.7080 What is the purpose of this subpart?

This subpart establishes national emission standards for hazardous air pollutants (NESHAP) for lime manufacturing plants. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations.

§ 63.7081 Am I subject to this subpart?

(a) You are subject to this subpart if you own or operate a lime manufacturing plant (LMP) that is a major source, or that is located at, or is part of, a major source of hazardous air pollutant (HAP) emissions, unless the LMP is located at a kraft pulp mill, soda pulp mill, sulfite pulp mill, beet sugar manufacturing plant, or only processes sludge containing calcium carbonate from water softening processes.

(1) An LMP is an establishment engaged in the manufacture of lime product (calcium oxide, calcium oxide with magnesium oxide, or dead burned dolomite) by calcination of limestone, dolomite, shells or other calcareous substances.

(2) A major source of HAP is a plant site that emits or has the potential to emit any single HAP at a rate of 9.07 megagrams (10 tons) or more per year or any combination of HAP at a rate of 22.68 megagrams (25 tons) or more per year from all emission sources at the plant site.

(b) [Reserved]

§ 63.7082 What parts of my plant does this subpart cover?

(a) This subpart applies to each existing or new lime kiln(s) and their associated cooler(s), and processed stone handling (PSH) operations system(s) located at an LMP that is a major source.

(b) A new lime kiln is a lime kiln, and (if applicable) its associated lime cooler, for which construction or reconstruction began after December 20, 2002, if you met the applicability criteria in §63.7081 at the time you began construction or reconstruction.

(c) A new PSH operations system is the equipment in paragraph (g) of this section, for which construction or reconstruction began after December 20, 2002, if you met the applicability criteria in §63.7081 at the time you began construction or reconstruction.

(d) A lime kiln or PSH operations system is reconstructed if it meets the criteria for reconstruction defined in §63.2.

(e) An existing lime kiln is any lime kiln, and (if applicable) its associated lime cooler, that does not meet the definition of a new kiln of paragraph (b) of this section.

(f) An existing PSH operations system is any PHS operations system that does not meet the definition of a new PSH operations system in paragraph (c) of this section.

(g) A PSH operations system includes all equipment associated with PSH operations beginning at the processed stone storage bin(s) or open storage pile(s) and ending where the processed stone is fed into the kiln. It includes man-made processed stone storage bins (but not open processed stone storage piles), conveying system transfer points, bulk loading or unloading systems, screening operations, surge bins, bucket elevators, and belt conveyors. No other materials processing operations are subject to this subpart.

(h) Nuisance dust collectors on lime coolers are part of the lime materials processing operations and are not covered by this subpart.

(i) Lime hydrators are not subject to this subpart.

(j) Open material storage piles are not subject to this subpart.

§ 63.7083 When do I have to comply with this subpart?

(a) If you have a new affected source, you must comply with this subpart according to paragraphs (a)(1) and (2) of this section.

(1) If you start up your affected source before January 5, 2004, you must comply with the emission limitations no later than January 5, 2004, and you must have completed all applicable performance tests no later than July 5, 2004.

(2) If you start up your affected source after January 5, 2004, then you must comply with the emission limitations for new affected sources upon startup of your affected source and you must have completed all applicable performance tests no later than 180 days after startup.

(b) If you have an existing affected source, you must comply with the applicable emission limitations for the existing affected source, and you must have completed all applicable performance tests no later than January 5, 2007.

(c) If you have an LMP that is an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP, the deadlines specified in paragraphs (c)(1) and (2) of this section apply.

(1) New affected sources at your LMP you must be in compliance with this subpart upon startup.

(2) Existing affected sources at your LMP must be in compliance with this subpart within 3 years after your source becomes a major source of HAP.

(d) You must meet the notification requirements in §63.7130 according to the schedule in §63.7130 and in subpart A of this part. Some of the notifications must be submitted before you are required to comply with the emission limitations in this subpart.

Emission Limitations

§ 63.7090 What emission limitations must I meet?

(a) You must meet each emission limit in Table 1 to this subpart that applies to you.

(b) You must meet each operating limit in Table 2 to this subpart that applies to you.

General Compliance Requirements

§ 63.7100 What are my general requirements for complying with this subpart?

(a) After your initial compliance date, you must be in compliance with the emission limitations (including operating limits) in this subpart at all times, except during periods of startup, shutdown, and malfunction.

(b) You must be in compliance with the opacity and visible emission (VE) limits in this subpart during the times specified in §63.6(h)(1).

(c) You must always operate and maintain your affected source, including air pollution control and monitoring equipment, according to the provisions in §63.6(e)(1)(i).

(d) You must prepare and implement for each LMP, a written operations, maintenance, and monitoring (OM&M) plan. You must submit the plan to the applicable permitting authority for review and approval as part of the application for a 40 CFR part 70 or 40 CFR part 71 permit. Any subsequent changes to the plan must be submitted to the applicable permitting authority for review and approval. Pending approval by the applicable permitting authority of an initial or amended plan, you must comply with the provisions of the submitted plan. Each plan must contain the following information:

(1) Process and control device parameters to be monitored to determine compliance, along with established operating limits or ranges, as applicable, for each emission unit.

(2) A monitoring schedule for each emission unit.

(3) Procedures for the proper operation and maintenance of each emission unit and each air pollution control device used to meet the applicable emission limitations and operating limits in Tables 1 and 2 to this subpart, respectively.

(4) Procedures for the proper installation, operation, and maintenance of monitoring devices or systems used to determine compliance, including:

(i) Calibration and certification of accuracy of each monitoring device;

(ii) Performance and equipment specifications for the sample interface, parametric signal analyzer, and the data collection and reduction systems;

(iii) Ongoing operation and maintenance procedures in accordance with the general requirements of §63.8(c)(1), (3), and (4)(ii); and

(iv) Ongoing data quality assurance procedures in accordance with the general requirements of §63.8(d).

(5) Procedures for monitoring process and control device parameters.

(6) Corrective actions to be taken when process or operating parameters or add-on control device parameters deviate from the operating limits specified in Table 2 to this subpart, including:

(i) Procedures to determine and record the cause of a deviation or excursion, and the time the deviation or excursion began and ended; and

(ii) Procedures for recording the corrective action taken, the time corrective action was initiated, and the time and date the corrective action was completed.

(7) A maintenance schedule for each emission unit and control device that is consistent with the manufacturer's instructions and recommendations for routine and long-term maintenance.

(e) You must develop a written startup, shutdown, and malfunction plan (SSMP) according to the provisions in §63.6(e)(3).

[69 FR 416, Jan. 5, 2004, as amended at 71 FR 20467, Apr. 20, 2006]

Testing and Initial Compliance Requirements

§ 63.7110 By what date must I conduct performance tests and other initial compliance demonstrations?

(a) If you have an existing affected source, you must complete all applicable performance tests within January 5, 2007, according to the provisions in §§63.7(a)(2) and 63.7114.

(b) If you have a new affected source, and commenced construction or reconstruction between December 20, 2002, and January 5, 2004, you must demonstrate initial compliance with either the proposed emission limitation or the promulgated emission limitation no later than 180 calendar days after January 5, 2004 or within 180 calendar days after startup of the source, whichever is later, according to §§63.7(a)(2)(ix) and 63.7114.

(c) If you commenced construction or reconstruction between December 20, 2002, and January 5, 2004, and you chose to comply with the proposed emission limitation when demonstrating initial compliance, you must conduct a demonstration of compliance with the promulgated emission limitation within January 5, 2007 or after startup of the source, whichever is later, according to §§63.7(a)(2)(ix) and 63.7114.

(d) For each initial compliance requirement in Table 3 to this subpart that applies to you where the monitoring averaging period is 3 hours, the 3-hour period for demonstrating continuous compliance for emission units within existing affected sources at LMP begins at 12:01 a.m. on the

compliance date for existing affected sources, that is, the day following completion of the initial compliance demonstration, and ends at 3:01 a.m. on the same day.

(e) For each initial compliance requirement in Table 3 to this subpart that applies to you where the monitoring averaging period is 3 hours, the 3-hour period for demonstrating continuous compliance for emission units within new or reconstructed affected sources at LMP begins at 12:01 a.m. on the day following completion of the initial compliance demonstration, as required in paragraphs (b) and (c) of this section, and ends at 3:01 a.m. on the same day.

§ 63.7111 When must I conduct subsequent performance tests?

You must conduct a performance test within 5 years following the initial performance test and within 5 years following each subsequent performance test thereafter.

§ 63.7112 What performance tests, design evaluations, and other procedures must I use?

(a) You must conduct each performance test in Table 4 to this subpart that applies to you.

(b) Each performance test must be conducted according to the requirements in §63.7(e)(1) and under the specific conditions specified in Table 4 to this subpart.

(c) You may not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in §63.7(e)(1).

(d) Except for opacity and VE observations, you must conduct three separate test runs for each performance test required in this section, as specified in §63.7(e)(3). Each test run must last at least 1 hour.

(e) The emission rate of particulate matter (PM) from each lime kiln (and each lime cooler if there is a separate exhaust to the atmosphere from the lime cooler) must be computed for each run using Equation 1 of this section:

$$E = \left(C_k Q_k + C_c Q_c\right) / PK \qquad (Eq.\ 1)$$

Where:

E = Emission rate of PM, pounds per ton (lb/ton) of stone feed.

C_k= Concentration of PM in the kiln effluent, grain/dry standard cubic feet (gr/dscf).

Q_k= Volumetric flow rate of kiln effluent gas, dry standard cubic feet per hour (dscf/hr).

C_c= Concentration of PM in the cooler effluent, grain/dscf. This value is zero if there is not a separate cooler exhaust to the atmosphere.

Q_c= Volumetric flow rate of cooler effluent gas, dscf/hr. This value is zero if there is not a separate cooler exhaust to the atmosphere.

P = Stone feed rate, tons per hour (ton/hr).

K = Conversion factor, 7000 grains per pound (grains/lb).

(f)(1) If you choose to meet a weighted average emission limit as specified in item 4 of Table 1 to this subpart, you must calculate a combined particulate emission rate from all kilns and coolers within your LMP using Equation 2 of this section:

$$E_T = \sum_{i=1}^{n} E_i P_i / \sum_{i=1}^{n} P_i \qquad (Eq.\ 2)$$

Where:

E_T= Emission rate of PM from all kilns and coolers, lb/ton of stone feed.

E_i= Emission rate of PM from kiln i, or from kiln/cooler combination i, lb/ton of stone feed.

P_i= Stone feed rate to kiln i, ton/hr.

n = Number of kilns you wish to include in averaging.

(2) You do not have to include every kiln in this calculation, only include kilns you wish to average. Kilns that have a PM emission limit of 0.60 lb/tsf are ineligible for any averaging.

(g) The weighted average PM emission limit from all kilns and coolers for which you are averaging must be calculated using Equation 3 of this section:

$$E_{TN} = \sum_{j=1}^{m} E_j P_j / \sum_{j=1}^{m} P_j \qquad (Eq.\ 3)$$

Where:

E_{TN}= Weighted average PM emission limit for all kilns and coolers being included in averaging at the LMP, lb/ton of stone feed.

E_j= PM emission limit (0.10 or 0.12) for kiln j, or for kiln/cooler combination j, lb/ton of stone feed.

P_j= Stone feed rate to kiln j, ton/hr.

m = Number of kilns and kiln/cooler combinations you are averaging at your LMP. You must include the same kilns in the calculation of $E_T$and E_{TN}. Kilns that have a PM emission limit of 0.60 lb/tsf are ineligible for any averaging.

(h) Performance test results must be documented in complete test reports that contain the information required by paragraphs (h)(1) through (10) of this section, as well as all other relevant information. The plan to be followed during testing must be made available to the Administrator at least 60 days prior to testing.

(1) A brief description of the process and the air pollution control system;

(2) Sampling location description(s);

(3) A description of sampling and analytical procedures and any modifications to standard procedures;

(4) Test results, including opacity;

(5) Quality assurance procedures and results;

(6) Records of operating conditions during the test, preparation of standards, and calibration procedures;

(7) Raw data sheets for field sampling and field and laboratory analyses;

(8) Documentation of calculations;

(9) All data recorded and used to establish operating limits; and

(10) Any other information required by the test method.

(i) [Reserved]

(j) You must establish any applicable 3-hour block average operating limit indicated in Table 2 to this subpart according to the applicable requirements in Table 3 to this subpart and paragraphs (j)(1) through (4) of this section.

(1) Continuously record the parameter during the PM performance test and include the parameter record(s) in the performance test report.

(2) Determine the average parameter value for each 15-minute period of each test run.

(3) Calculate the test run average for the parameter by taking the average of all the 15-minute parameter values for the run.

(4) Calculate the 3-hour operating limit by taking the average of the three test run averages.

(k) For each building enclosing any PSH operations that is subject to a VE limit, you must conduct a VE check according to item 18 in Table 4 to this subpart, and in accordance with paragraphs (k)(1) through (3) of this section.

(1) Conduct visual inspections that consist of a visual survey of the building over the test period to identify if there are VE, other than condensed water vapor.

(2) Select a position at least 15 but not more 1,320 feet from each side of the building with the sun or other light source generally at your back.

(3) The observer conducting the VE checks need not be certified to conduct EPA Method 9 in appendix A to part 60 of this chapter, but must meet the training requirements as described in EPA Method 22 in appendix A to part 60 of this chapter.

(l) When determining compliance with the opacity standards for fugitive emissions from PSH operations in item 7 of Table 1 to this subpart, you must conduct EPA Method 9 in appendix A to part 60 of this chapter according to item 17 in Table 4 to this subpart, and in accordance with paragraphs (l)(1) through (3) of this section.

(1) The minimum distance between the observer and the emission source shall be 4.57 meters (15 feet).

(2) 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 must be followed.

(3) If you use wet dust suppression to control PM from PSH operations, 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 VE. When a water mist of this nature is present, you must observe emissions at a point in the plume where the mist is no longer visible.

§ 63.7113 What are my monitoring installation, operation, and maintenance requirements?

(a) You must install, operate, and maintain each continuous parameter monitoring system (CPMS) according to your OM&M plan required by §63.7100(d) and paragraphs (a)(1) through (5) of this section, and you must install, operate, and maintain each continuous opacity monitoring system (COMS) as required by paragraph (g) of this section

(1) The CPMS must complete a minimum of one cycle of operation for each successive 15-minute period.

(2) To calculate a valid hourly value, you must have at least four equally spaced data values (or at least two, if that condition is included to allow for periodic calibration checks) for that hour from a CPMS that is not out of control according your OM&M plan, and use all valid data.

(3) To calculate the average for each 3-hour block averaging period, you must use all valid data, and you must have at least 66 percent of the hourly averages for that period using only hourly average values that are based on valid data (*i.e.,* not from out-of-control periods).

(4) You must conduct a performance evaluation of each CPMS in accordance with your OM&M plan.

(5) You must continuously operate and maintain the CPMS according to the OM&M plan, including, but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.

(b) For each flow measurement device, you must meet the requirements in paragraphs (a)(1) through (5) and (b)(1) through (4) of this section.

(1) Use a flow sensor with a minimum tolerance of 2 percent of the flow rate.

(2) Reduce swirling flow or abnormal velocity distributions due to upstream and downstream disturbances.

(3) Conduct a flow sensor calibration check at least semiannually.

(4) At least monthly, inspect all components for integrity, all electrical connections for continuity, and all mechanical connections for leakage.

(c) For each pressure measurement device, you must meet the requirements in paragraphs (a)(1) through (5) and (c)(1) through (7) of this section.

(1) Locate the pressure sensor(s) in or as close to as possible a position that provides a representative measurement of the pressure.

(2) Minimize or eliminate pulsating pressure, vibration, and internal and external corrosion.

(3) Use a gauge with a minimum tolerance of 0.5 inch of water or a transducer with a minimum tolerance of 1 percent of the pressure range.

(4) Check pressure tap pluggage daily.

(5) Using a manometer, check gauge calibration quarterly and transducer calibration monthly.

(6) Conduct calibration checks any time the sensor exceeds the manufacturer's specified maximum operating pressure range or install a new pressure sensor.

(7) At least monthly, inspect all components for integrity, all electrical connections for continuity, and all mechanical connections for leakage.

(d) For each bag leak detection system (BLDS), you must meet any applicable requirements in paragraphs (a)(1) through (5) and (d)(1) through (8) of this section.

(1) The BLDS must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

(2) The sensor on the BLDS must provide output of relative PM emissions.

(3) The BLDS must have an alarm that will sound automatically when it detects an increase in relative PM emissions greater than a preset level.

(4) The alarm must be located in an area where appropriate plant personnel will be able to hear it.

(5) For a positive-pressure fabric filter (FF), each compartment or cell must have a bag leak detector (BLD). For a negative-pressure or induced-air FF, the BLD must be installed downstream of the FF. If multiple BLD are required (for either type of FF), the detectors may share the system instrumentation and alarm.

(6) Bag leak detection systems must be installed, operated, adjusted, and maintained according to the manufacturer's written specifications and recommendations. Standard operating procedures must be incorporated into the OM&M plan.

(7) At a minimum, initial adjustment of the system must consist of establishing the baseline output in both of the following ways:

(i) Adjust the range and the averaging period of the device.

(ii) Establish the alarm set points and the alarm delay time.

(8) After initial adjustment, the range, averaging period, alarm set points, or alarm delay time may not be adjusted except as specified in the OM&M plan required by §63.7100(d). In no event may the range be increased by more than 100 percent or decreased by more than 50 percent over a 365-day period unless a responsible official, as defined in §63.2, certifies in writing to the Administrator that the FF has been inspected and found to be in good operating condition.

(e) For each PM detector, you must meet any applicable requirements in paragraphs (a)(1) through (5) and (e)(1) through (8) of this section.

(1) The PM detector must be certified by the manufacturer to be capable of detecting PM emissions at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

(2) The sensor on the PM detector must provide output of relative PM emissions.

(3) The PM detector must have an alarm that will sound automatically when it detects an increase in relative PM emissions greater than a preset level.

(4) The alarm must be located in an area where appropriate plant personnel will be able to hear it.

(5) For a positive-pressure electrostatic precipitator (ESP), each compartment must have a PM detector. For a negative-pressure or induced-air ESP, the PM detector must be installed downstream of the ESP. If multiple PM detectors are required (for either type of ESP), the detectors may share the system instrumentation and alarm.

(6) Particulate matter detectors must be installed, operated, adjusted, and maintained according to the manufacturer's written specifications and recommendations. Standard operating procedures must be incorporated into the OM&M plan.

(7) At a minimum, initial adjustment of the system must consist of establishing the baseline output in both of the following ways:

(i) Adjust the range and the averaging period of the device.

(ii) Establish the alarm set points and the alarm delay time.

(8) After initial adjustment, the range, averaging period, alarm set points, or alarm delay time may not be adjusted except as specified in the OM&M plan required by §63.7100(d). In no event may the range be increased by more than 100 percent or decreased by more than 50 percent over a 365-day period unless a responsible official as defined in §63.2 certifies in writing to the Administrator that the ESP has been inspected and found to be in good operating condition.

(f) For each emission unit equipped with an add-on air pollution control device, you must inspect each capture/collection and closed vent system at least once each calendar year to ensure that each system is operating in accordance with the operating requirements in item 6 of Table 2 to this subpart and record the results of each inspection.

(g) For each COMS used to monitor an add-on air pollution control device, you must meet the requirements in paragraphs (g)(1) and (2) of this section.

(1) Install the COMS at the outlet of the control device.

(2) Install, maintain, calibrate, and operate the COMS as required by 40 CFR part 63, subpart A, General Provisions and according to Performance Specification (PS)–1 of appendix B to part 60 of this chapter. Facilities that operate COMS installed on or before February 6, 2001, may continue to meet the requirements in effect at the time of COMS installation unless specifically required to re-certify the COMS by their permitting authority.

§ 63.7114 How do I demonstrate initial compliance with the emission limitations standard?

(a) You must demonstrate initial compliance with each emission limit in Table 1 to this subpart that applies to you, according to Table 3 to this subpart. For existing lime kilns and their associated coolers, you may perform VE measurements in accordance with EPA Method 9 of appendix A to part 60 in lieu of installing a COMS or PM detector if any of the conditions in paragraphs (a)(1) through (3) of this section exist:

(1) You use a FF for PM control, and the FF is under positive pressure and has multiple stacks; or

(2) The control device exhausts through a monovent; or

(3) The installation of a COMS in accordance with PS–1 of appendix B to part 60 is infeasible.

(b) You must establish each site-specific operating limit in Table 2 to this subpart that applies to you according to the requirements in §63.7112(j) and Table 4 to this subpart. Alternative parameters may be monitored if approval is obtained according to the procedures in §63.8(f)

(c) You must submit the Notification of Compliance Status containing the results of the initial compliance demonstration according to the requirements in §63.7130(e).

Continuous Compliance Requirements

§ 63.7120 How do I monitor and collect data to demonstrate continuous compliance?

(a) You must monitor and collect data according to this section.

(b) Except for monitor malfunctions, associated repairs, required quality assurance or control activities (including, as applicable, calibration checks and required zero adjustments), and except for PSH operations subject to monthly VE testing, you must monitor continuously (or collect data at all required intervals) at all times that the emission unit is operating.

(c) Data recorded during the conditions described in paragraphs (c)(1) through (3) of this section may not be used either in data averages or calculations of emission or operating limits; or in fulfilling a minimum data availability requirement. You must use all the data collected during all other periods in assessing the operation of the control device and associated control system.

(1) Monitoring system breakdowns, repairs, preventive maintenance, calibration checks, and zero (low-level) and high-level adjustments;

(2) Periods of non-operation of the process unit (or portion thereof), resulting in cessation of the emissions to which the monitoring applies; and

(3) Start-ups, shutdowns, and malfunctions.

§ 63.7121 How do I demonstrate continuous compliance with the emission limitations standard?

(a) You must demonstrate continuous compliance with each emission limitation in Tables 1 and 2 to this subpart that applies to you according to the methods specified in Tables 5 and 6 to this subpart.

(b) You must report each instance in which you did not meet each operating limit, opacity limit, and VE limit in Tables 2 and 6 to this subpart that applies to you. This includes periods of startup, shutdown, and malfunction. These instances are deviations from the emission limitations in this subpart. These deviations must be reported according to the requirements in §63.7131.

(c) [Reserved]

(d) Consistent with §§63.6(e) and 63.7(e)(1), deviations that occur during a period of startup, shutdown, or malfunction are not violations if you demonstrate to the Administrator's satisfaction that you were operating in accordance with §63.6(e)(1). The Administrator will determine whether deviations that occur during a period of startup, shutdown, or malfunction are violations, according to the provisions in §63.6(e).

(e) For each PSH operation subject to an opacity limit as specified in Table 1 to this subpart, and any vents from buildings subject to an opacity limit, you must conduct a VE check according to item 1 in Table 6 to this subpart, and as follows:

(1) Conduct visual inspections that consist of a visual survey of each stack or process emission point over the test period to identify if there are VE, other than condensed water vapor.

(2) Select a position at least 15 but not more 1,320 feet from the affected emission point with the sun or other light source generally at your back.

(3) The observer conducting the VE checks need not be certified to conduct EPA Method 9 in appendix A to part 60 of this chapter, but must meet the training requirements as described in EPA Method 22 of appendix A to part 60 of this chapter.

(f) For existing lime kilns and their associated coolers, you may perform VE measurements in accordance with EPA Method 9 of appendix A to part 60 in lieu of installing a COMS or PM detector if any of the conditions in paragraphs (f)(1) or (3) of this section exist:

(1) You use a FF for PM control, and the FF is under positive pressure and has multiple stacks; or

(2) The control device exhausts through a monovent; or

(3) The installation of a COMS in accordance with PS–1 of appendix B to part 60 is infeasible.

[69 FR 416, Jan. 5, 2004, as amended at 71 FR 20467, Apr. 20, 2006]

Notification, Reports, and Records

§ 63.7130 What notifications must I submit and when?

(a) You must submit all of the notifications in §§63.6(h)(4) and (5); 63.7(b) and (c); 63.8(e); (f)(4) and (6); and 63.9 (a) through (j) that apply to you, by the dates specified.

(b) As specified in §63.9(b)(2), if you start up your affected source before January 5, 2004, you must submit an initial notification not later than 120 calendar days after January 5, 2004.

(c) If you startup your new or reconstructed affected source on or after January 5, 2004, you must submit an initial notification not later than 120 calendar days after you start up your affected source.

(d) If you are required to conduct a performance test, you must submit a notification of intent to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin, as required in §63.7(b)(1).

(e) If you are required to conduct a performance test, design evaluation, opacity observation, VE observation, or other initial compliance demonstration as specified in Table 3 or 4 to this subpart, you must submit a Notification of Compliance Status according to §63.9(h)(2)(ii).

(1) For each initial compliance demonstration required in Table 3 to this subpart that does not include a performance test, you must submit the Notification of Compliance Status before the close of business on the 30th calendar day following the completion of the initial compliance demonstration.

(2) For each compliance demonstration required in Table 5 to this subpart that includes a performance test conducted according to the requirements in Table 4 to this subpart, you must submit the Notification of Compliance Status, including the performance test results, before the close of business on the 60th calendar day following the completion of the performance test according to §63.10(d)(2).

§ 63.7131 What reports must I submit and when?

(a) You must submit each report listed in Table 7 to this subpart that applies to you.

(b) Unless the Administrator has approved a different schedule for submission of reports under §63.10(a), you must submit each report by the date specified in Table 7 to this subpart and according to the requirements in paragraphs (b)(1) through (5) of this section:

(1) The first compliance report must cover the period beginning on the compliance date that is specified for your affected source in §63.7083 and ending on June 30 or December 31, whichever date is the first date following the end of the first half calendar year after the compliance date that is specified for your source in §63.7083.

(2) The first compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date follows the end of the first half calendar year after the compliance date that is specified for your affected source in §63.7083.

(3) Each subsequent compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(4) Each subsequent compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.

(5) For each affected source that is subject to permitting regulations pursuant to part 70 or part 71 of this chapter, if the permitting authority has established dates for submitting semiannual reports pursuant to §§70.6(a)(3)(iii)(A) or 71.6(a)(3)(iii)(A) of this chapter, you may submit the first and

subsequent compliance reports according to the dates the permitting authority has established instead of according to the dates specified in paragraphs (b)(1) through (4) of this section.

(c) The compliance report must contain the information specified in paragraphs (c)(1) through (6) of this section.

(1) Company name and address.

(2) Statement by a responsible official with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(3) Date of report and beginning and ending dates of the reporting period.

(4) If you had a startup, shutdown or malfunction during the reporting period and you took actions consistent with your SSMP, the compliance report must include the information in §63.10(d)(5)(i).

(5) If there were no deviations from any emission limitations (emission limit, operating limit, opacity limit, and VE limit) that apply to you, the compliance report must include a statement that there were no deviations from the emission limitations during the reporting period.

(6) If there were no periods during which the continuous monitoring systems (CMS) were out-of-control as specified in §63.8(c)(7), a statement that there were no periods during which the CMS were out-of-control during the reporting period.

(d) For each deviation from an emission limitation (emission limit, operating limit, opacity limit, and VE limit) that occurs at an affected source where you are not using a CMS to comply with the emission limitations in this subpart, the compliance report must contain the information specified in paragraphs (c)(1) through (4) and (d)(1) and (2) of this section. The deviations must be reported in accordance with the requirements in §63.10(d).

(1) The total operating time of each emission unit during the reporting period.

(2) Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable, and the corrective action taken.

(e) For each deviation from an emission limitation (emission limit, operating limit, opacity limit, and VE limit) occurring at an affected source where you are using a CMS to comply with the emission limitation in this subpart, you must include the information specified in paragraphs (c)(1) through (4) and (e)(1) through (11) of this section. This includes periods of startup, shutdown, and malfunction.

(1) The date and time that each malfunction started and stopped.

(2) The date and time that each CMS was inoperative, except for zero (low-level) and high-level checks.

(3) The date, time and duration that each CMS was out-of-control, including the information in §63.8(c)(8).

(4) The date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period.

(5) A summary of the total duration of the deviations during the reporting period and the total duration as a percent of the total affected source operating time during that reporting period.

(6) A breakdown of the total duration of the deviations during the reporting period into those that are due to startup, shutdown, control equipment problems, process problems, other known causes, and other unknown causes.

(7) A summary of the total duration of CMS downtime during the reporting period and the total duration of CMS downtime as a percent of the total emission unit operating time during that reporting period.

(8) A brief description of the process units.

(9) A brief description of the CMS.

(10) The date of the latest CMS certification or audit.

(11) A description of any changes in CMS, processes, or controls since the last reporting period.

(f) Each facility that has obtained a title V operating permit pursuant to part 70 or part 71 of this chapter must report all deviations as defined in this subpart in the semiannual monitoring report required by §§70.6(a)(3)(iii)(A) or 71.6(a)(3)(iii)(A) of this chapter. If you submit a compliance report specified in Table 7 to this subpart along with, or as part of, the semiannual monitoring report required by §§70.6(a)(3)(iii)(A) or 71.6(a)(3)(iii)(A) of this chapter, and the compliance report includes all required information concerning deviations from any emission limitation (including any operating limit), submission of the compliance report shall be deemed to satisfy any obligation to report the same deviations in the semiannual monitoring report. However, submission of a compliance report shall not otherwise affect any obligation you may have to report deviations from permit requirements to the permit authority.

§ 63.7132 What records must I keep?

(a) You must keep the records specified in paragraphs (a)(1) through (3) of this section.

(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted, according to the requirements in §63.10(b)(2)(xiv).

(2) The records in §63.6(e)(3)(iii) through (v) related to startup, shutdown, and malfunction.

(3) Records of performance tests, performance evaluations, and opacity and VE observations as required in §63.10(b)(2)(viii).

(b) You must keep the records in §63.6(h)(6) for VE observations.

(c) You must keep the records required by Tables 5 and 6 to this subpart to show continuous compliance with each emission limitation that applies to you.

(d) You must keep the records which document the basis for the initial applicability determination as required under §63.7081.

§ 63.7133 In what form and for how long must I keep my records?

(a) Your records must be in a form suitable and readily available for expeditious review, according to §63.10(b)(1).

(b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(c) You must keep each record onsite for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §63.10(b)(1). You may keep the records offsite for the remaining 3 years.

Other Requirements and Information

§ 63.7140 What parts of the General Provisions apply to me?

Table 8 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you. When there is overlap between subpart A and subpart AAAAA, as indicated in the "Explanations" column in Table 8, subpart AAAAA takes precedence.

§ 63.7141 Who implements and enforces this subpart?

(a) This subpart can be implemented and enforced by us, the U.S. EPA, or by a delegated authority such as your State, local, or tribal agency. If the U.S. EPA Administrator has delegated authority to your State, local, or tribal agency, then that agency (as well as the U.S. EPA) has the authority to implement and enforce this subpart. You should contact your U.S. EPA Regional Office to find out if this subpart is delegated to your State, local, or tribal agency.

(b) In delegating implementation and enforcement authority of this subpart to a State, local, or tribal agency under subpart E of this part, the authorities contained in paragraph (c) of this section are retained by the Administrator of the U.S. EPA and are not transferred to the State, local, or tribal agency.

(c) The authorities that will not be delegated to State, local, or tribal agencies are as specified in paragraphs (c)(1) through (6) of this section.

(1) Approval of alternatives to the non-opacity emission limitations in §63.7090(a).

(2) Approval of alternative opacity emission limitations in §63.7090(a).

(3) Approval of alternatives to the operating limits in §63.7090(b).

(4) Approval of major alternatives to test methods under §63.7(e)(2)(ii) and (f) and as defined in §63.90.

(5) Approval of major alternatives to monitoring under §63.8(f) and as defined in §63.90.

(6) Approval of major alternatives to recordkeeping and reporting under §63.10(f) and as defined in §63.90.

§ 63.7142 What are the requirements for claiming area source status?

(a) If you wish to claim that your LMP is an area source, you must measure the emissions of hydrogen chloride from all lime kilns, except as provided in paragraph (c) of this section, at your plant using either:

(1) EPA Method 320 of appendix A to this part,

(2) EPA Method 321 of appendix A to this part, or

(3) ASTM Method D6735–01, Standard Test Method for Measurement of Gaseous Chlorides and Fluorides from Mineral Calcining Exhaust Sources—Impinger Method, provided that the provisions in paragraphs (a)(3)(i) through (vi) of this section are followed.

(i) A test must include three or more runs in which a pair of samples is obtained simultaneously for each run according to section 11.2.6 of ASTM Method D6735–01.

(ii) You must calculate the test run standard deviation of each set of paired samples to quantify data precision, according to Equation 1 of this section:

$$RSD_a = (100)\ Absolute\ Value \left[\frac{C1_a - C2_a}{C1_a + C2_a}\right] \qquad (Eq.\ 1)$$

Where:

RSD_a= The test run relative standard deviation of sample pair a, percent.

$C1_a$and $C2_a$= The HCl concentrations, milligram/dry standard cubic meter(mg/dscm), from the paired samples.

(iii) You must calculate the test average relative standard deviation according to Equation 2 of this section:

$$RSD_{TA} = \frac{\sum_{a=1}^{p} RSD_a}{p} \qquad (Eq.\ 2)$$

Where:

RSD_{TA}= The test average relative standard deviation, percent.

RSD_a= The test run relative standard deviation for sample pair a.

p = The number of test runs, ≥3.

(iv) If RSD^{TA} is greater than 20 percent, the data are invalid and the test must be repeated.

(v) The post-test analyte spike procedure of section 11.2.7 of ASTM Method D6735–01 is conducted, and the percent recovery is calculated according to section 12.6 of ASTM Method D6735–01.

(vi) If the percent recovery is between 70 percent and 130 percent, inclusive, the test is valid. If the percent recovery is outside of this range, the data are considered invalid, and the test must be repeated.

(b) If you conduct tests to determine the rates of emission of specific organic HAP from lime kilns at LMP for use in applicability determinations under §63.7081, you may use either:

(1) Method 320 of appendix A to this part, or

(2) Method 18 of appendix A to part 60 of this chapter, or

(3) ASTM D6420–99, Standard Test Method for Determination of Gaseous Organic Compounds by Direct Interface Gas Chromatography-Mass Spectrometry (GC/MS), provided that the provisions of paragraphs (b)(3)(i) through (iv) of this section are followed:

(i) The target compound(s) are those listed in section 1.1 of ASTM D6420–99;

(ii) The target concentration is between 150 parts per billion by volume and 100 parts per million by volume;

(iii) For target compound(s) not listed in Table 1.1 of ASTM D6420–99, but potentially detected by mass spectrometry, the additional system continuing calibration check after each run, as detailed in section 10.5.3 of ASTM D6420–99, is conducted, met, documented, and submitted with the data report, even if there is no moisture condenser used or the compound is not considered water soluble; and

(iv) For target compound(s) not listed in Table 1.1 of ASTM D6420–99, and not amenable to detection by mass spectrometry, ASTM D6420–99 may not be used.

(c) It is left to the discretion of the permitting authority whether or not idled kilns must be tested for (HCl) to claim area source status. If the facility has kilns that use common feed materials and fuel, are essentially identical in design, and use essentially identical emission controls, the permitting authority may also determine if one kiln can be tested, and the HCl emissions for the other essentially identical kilns be estimated from that test.

§ 63.7143 What definitions apply to this subpart?

Terms used in this subpart are defined in the Clean Air Act, in §63.2, and in this section as follows:

Bag leak detector system (BLDS) is a type of PM detector used on FF to identify an increase in PM emissions resulting from a broken filter bag or other malfunction and sound an alarm.

Belt conveyor means a conveying device that transports *processed stone* 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 *processed stone* conveying device 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.

Capture system means the equipment (including enclosures, hoods, ducts, fans, dampers, etc.) used to capture and transport PM to a control device.

Control device means the air pollution control equipment used to reduce PM emissions released to the atmosphere from one or more process operations at an LMP.

Conveying system means a device for transporting *processed stone* from one piece of equipment or location to another location within a plant. Conveying systems include but are not limited to feeders, belt conveyors, bucket elevators and pneumatic systems.

Deviation means any instance in which an affected source, subject to this subpart, or an owner or operator of such a source:

(1) Fails to meet any requirement or obligation established by this subpart, including but not limited to any emission limitation (including any operating limit);

(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or

(3) Fails to meet any emission limitation (including any operating limit) in this subpart during startup, shutdown, or malfunction, regardless of whether or not such failure is allowed by this subpart.

Emission limitation means any emission limit, opacity limit, operating limit, or VE limit.

Emission unit means a lime kiln, lime cooler, storage bin, conveying system transfer point, bulk loading or unloading operation, bucket elevator or belt conveyor at an LMP.

Fugitive emission means PM that is not collected by a capture system.

Hydrator means the device used to produce hydrated lime or calcium hydroxide via the chemical reaction of the lime product with water.

Lime cooler means the device external to the lime kiln (or part of the lime kiln itself) used to reduce the temperature of the lime produced by the kiln.

Lime kiln means the device, including any associated preheater, used to produce a lime product from stone feed by calcination. Kiln types include, but are not limited to, rotary kiln, vertical kiln, rotary hearth kiln, double-shaft vertical kiln, and fluidized bed kiln.

Lime manufacturing plant (LMP) means any plant which uses a lime kiln to produce lime product from limestone or other calcareous material by calcination.

Lime product means the product of the lime kiln calcination process including, calcitic lime, dolomitic lime, and dead-burned dolomite.

Limestone means the material comprised primarily of calcium carbonate (referred to sometimes as calcitic or high calcium limestone), magnesium carbonate, and/or the double carbonate of both calcium and magnesium (referred to sometimes as dolomitic limestone or dolomite).

Monovent means an exhaust configuration of a building or emission control device (*e.g.,* positive pressure FF) that extends the length of the structure and has a width very small in relation to its length (*i.e.,* length-to-width ratio is typically greater than 5:1). The exhaust may be an open vent with or without a roof, louvered vents, or a combination of such features.

Particulate matter (PM) detector means a system that is continuously capable of monitoring PM loading in the exhaust of FF or ESP in order to detect bag leaks, upset conditions, or control device malfunctions and sounds an alarm at a preset level. A PM detector system includes, but is not limited to, an instrument that operates on triboelectric, light scattering, light transmittance, or other effects to continuously monitor relative particulate loadings. A BLDS is a type of PM detector.

Positive pressure FF or ESP means a FF or ESP with the fan(s) on the upstream side of the control device.

Process stone handling operations means the equipment and transfer points between the equipment used to transport *processed stone,* and includes, storage bins, conveying system transfer points, bulk loading or unloading systems, screening operations, bucket elevators, and belt conveyors.

Processed stone means limestone or other calcareous material that has been processed to a size suitable for feeding into a lime kiln.

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).

Stack emissions means the PM that is released to the atmosphere from a capture system or control device.

Storage bin means a manmade enclosure for storage (including surge bins) of *processed stone* prior to the lime kiln.

Transfer point means a point in a conveying operation where the material is transferred to or from a belt conveyor.

Vent means an opening through which there is mechanically induced air flow for the purpose of exhausting from a building air carrying PM emissions from one or more emission units.

Table 1 to Subpart AAAAA of Part 63—Emission Limits

As required in §63.7090(a), you must meet each emission limit in the following table that applies to you.

For . . .	You must meet the following emission limit
1. Existing lime kilns and their associated lime coolers that did not have a wet scrubber installed and operating prior to January 5, 2004	PM emissions must not exceed 0.12 pounds per ton of stone feed (lb/tsf).
2. Existing lime kilns and their associated lime coolers that have a wet scrubber, where the scrubber itself was installed and operating prior to January 5, 2004	PM emissions must not exceed 0.60 lb/tsf. If at any time after January 5, 2004 the kiln changes to a dry control system, then the PM emission limit in item 1 of this Table 1 applies, and the kiln is hereafter ineligible for the PM emission limit in item 2 of this Table 1 regardless of the method of PM control.
3. New lime kilns and their associated lime coolers	PM emissions must not exceed 0.10 lb/tsf.
4. All existing and new lime kilns and their associated coolers at your LMP, and you choose to average PM emissions, except that any kiln that is allowed to meet the 0.60 lb/tsf PM emission limit is ineligible for averaging	Weighted average PM emissions calculated according to Eq. 2 in §63.7112 must not exceed 0.12 lb/tsf (if you are averaging only existing kilns) or 0.10 lb/tsf (if you are averaging only new kilns). If you are averaging existing and new kilns, your weighted average PM emissions must not exceed the weighted average emission limit calculated according to Eq. 3 in §63.7112, except that no new kiln and its associated cooler considered alone may exceed an average PM emissions limit of 0.10 lb/tsf.
5. Stack emissions from all PSH operations at a new or existing affected source	PM emissions must not exceed 0.05 grams per dry standard cubic meter (g/dscm).
6. Stack emissions from all PSH operations at a new or existing affected source, unless the stack emissions are discharged through a wet scrubber control device	Emissions must not exceed 7 percent opacity.
7. Fugitive emissions from all PSH operations at a new or existing affected source, except as provided by item 8 of this Table 1	Emissions must not exceed 10 percent opacity.
8. All PSH operations at a new or existing affected source enclosed in a building	All of the individually affected PSH operations must comply with the applicable PM and opacity emission limitations in items 5 through 7 of this Table 1, or the building must comply with the following: There must be no VE from the building, except from a vent; and vent emissions must not exceed the stack emissions limitations in items 5 and 6 of this Table 1.

9. Each FF that controls emissions from only an individual, enclosed storage bin	Emissions must not exceed 7 percent opacity.
10. Each set of multiple storage bins at a new or existing affected source, with combined stack emissions	You must comply with the emission limits in items 5 and 6 of this Table 1.

Table 2 to Subpart AAAAA of Part 63—Operating Limits

As required in §63.7090(b), you must meet each operating limit in the following table that applies to you.

For . . .	You must . . .
1. Each lime kiln and each lime cooler (if there is a separate exhaust to the atmosphere from the associated lime cooler) equipped with an FF	Maintain and operate the FF such that the BLDS or PM detector alarm condition does not exist for more than 5 percent of the total operating time in a 6-month period; and comply with the requirements in §63.7113(d) through (f) and Table 5 to this subpart. In lieu of a BLDS or PM detector maintain the FF such that the 6-minute average opacity for any 6-minute block period does not exceed 15 percent; and comply with the requirements in §63.7113(f) and (g) and Table 5 to this subpart.
2. Each lime kiln equipped with a wet scrubber	Maintain the 3-hour block exhaust gas stream pressure drop across the wet scrubber greater than or equal to the pressure drop operating limit established during the most recent PM performance test; and maintain the 3-hour block scrubbing liquid flow rate greater than the flow rate operating limit established during the most recent performance test.
3. Each lime kiln equipped with an electrostatic precipitator	Install a PM detector and maintain and operate the ESP such that the PM detector alarm is not activated and alarm condition does not exist for more than 5 percent of the total operating time in a 6-month period, and comply with §63.7113(e); or, maintain the ESP such that the 6-minute average opacity for any 6-minute block period does not exceed 15 percent, and comply with the requirements in §63.7113(g); and comply with the requirements in §63.7113(f) and Table 5 to this subpart.
4. Each PSH operation subject to a PM limit which uses a wet scrubber	Maintain the 3-hour block average exhaust gas stream pressure drop across the wet scrubber greater than or equal to the pressure drop operating limit established during the PM performance test; and maintain the 3-hour block average scrubbing liquid flow rate greater than or equal to the flow rate operating limit established during the performance test.
5. All affected sources	Prepare a written OM&M plan; the plan must include the items listed in §63.7100(d) and the corrective actions to be taken when required in Table 5 to this subpart.

6. Each emission unit equipped with an add-on air pollution control device	a. Vent captured emissions through a closed system, except that dilution air may be added to emission streams for the purpose of controlling temperature at the inlet to an FF; and b. Operate each capture/collection system according to the procedures and requirements in the OM&M plan.

Table 3 to Subpart AAAAA of Part 63—Initial Compliance With Emission Limits

As required in §63.7114, you must demonstrate initial compliance with each emission limitation that applies to you, according to the following table.

For . . .	For the following emission limit . . .	You have demonstrated initial compliance, if after following the requirements in §63.7112 . . .
1. All new or existing lime kilns and their associated lime coolers (kilns/coolers)	PM emissions must not exceed 0.12 lb/tsf for all existing kilns/coolers with dry controls, 0.60 lb/tsf for existing kilns/coolers with wet scrubbers, 0.10 lb/tsf for all new kilns/coolers, or a weighted average calculated according to Eq. 3 in §63.7112	The kiln outlet PM emissions (and if applicable, summed with the separate cooler PM emissions), based on the PM emissions measured using Method 5 in appendix A to part 60 of this chapter and the stone feed rate measurement over the period of initial performance test, do not exceed the emission limit; if the lime kiln is controlled by an FF or ESP and you are opting to monitor PM emissions with a BLDS or PM detector, you have installed and are operating the monitoring device according to the requirements in §63.7113(d) or (e), respectively; and if the lime kiln is controlled by an FF or ESP and you are opting to monitor PM emissions using a COMS, you have installed and are operating the COMS according to the requirements in §63.7113(g).
2. Stack emissions from all PHS operations at a new or existing affected source	PM emissions must not exceed 0.05 g/dscm	The outlet PM emissions, based on Method 5 or Method 17 in appendix A to part 60 of this chapter, over the period of the initial performance test do not exceed 0.05 g/dscm; and if the emission unit is controlled with a wet scrubber, you have a record of the scrubber's pressure drop and liquid flow rate operating parameters over the 3-hour performance test during which emissions did not exceed the emissions limitation.

3. Stack emissions from all PSH operations at a new or existing affected source, unless the stack emissions are discharged through a wet scrubber control device	Emissions must not exceed 7 percent opacity	Each of the thirty 6-minute opacity averages during the initial compliance period, using Method 9 in appendix A to part 60 of this chapter, does not exceed the 7 percent opacity limit. At least thirty 6-minute averages must be obtained.
4. Fugitive emissions from all PSH operations at a new or existing affected source	Emissions must not exceed 10 percent opacity	Each of the 6-minute opacity averages during the initial compliance period, using Method 9 in appendix A to part 60 of this chapter, does not exceed the 10 percent opacity limit.
5. All PSH operations at a new or existing affected source, enclosed in building	All of the individually affected PSH operations must comply with the applicable PM and opacity emission limitations for items 2 through 4 of this Table 3, or the building must comply with the following: There must be no VE from the building, except from a vent, and vent emissions must not exceed the emission limitations in items 2 and 3 of this Table 3	All the PSH operations enclosed in the building have demonstrated initial compliance according to the applicable requirements for items 2 through 4 of this Table 3; or if you are complying with the building emission limitations, there are no VE from the building according to item 18 of Table 4 to this subpart and §63.7112(k), and you demonstrate initial compliance with applicable building vent emissions limitations according to the requirements in items 2 and 3 of this Table 3.
6. Each FF that controls emissions from only an individual storage bin	Emissions must not exceed 7 percent opacity	Each of the ten 6-minute averages during the 1-hour initial compliance period, using Method 9 in appendix A to part 60 of this chapter, does not exceed the 7 percent opacity limit.
7. Each set of multiple storage bins with combined stack emissions	You must comply with emission limitations in items 2 and 3 of this Table 3	You demonstrate initial compliance according to the requirements in items 2 and 3 of this Table 3.

Table 4 to Subpart AAAAA of Part 63—Requirements for Performance Tests

As required in §63.7112, you must conduct each performance test in the following table that applies to you.

For . . .	You must . . .	Using . . .	According to the following requirements . . .
1. Each lime kiln and each associated lime cooler, if there is a separate exhaust to the atmosphere from the associated lime cooler	Select the location of the sampling port and the number of traverse ports	Method 1 or 1A of appendix A to part 60 of this chapter; and §63.6(d)(1)(i)	Sampling sites must be located at the outlet of the control device(s) and prior to any releases to the atmosphere.
2. Each lime kiln and each associated lime cooler, if there is a separate exhaust to the atmosphere from the associated lime cooler	Determine velocity and volumetric flow rate	Method 2, 2A, 2C, 2D, 2F, or 2G in appendix A to part 60 of this chapter	Not applicable.
3. Each lime kiln and each associated lime cooler, if there is a separate exhaust to the atmosphere from the associated lime cooler	Conduct gas molecular weight analysis	Method 3, 3A, or 3B in appendix A to part 60 of this chapter	Not applicable.
4. Each lime kiln and each associated lime cooler, if there is a separate exhaust to the atmosphere from the associated lime cooler	Measure moisture content of the stack gas	Method 4 in appendix A to part 60 of this chapter	Not applicable.

5. Each lime kiln and each associated lime cooler, if there is a separate exhaust to the atmosphere from the associated lime cooler, and which uses a negative pressure PM control device	Measure PM emissions	Method 5 in appendix A to part 60 of this chapter	Conduct the test(s) when the source is operating at representative operating conditions in accordance with §63.7(e); the minimum sampling volume must be 0.85 dry standard cubic meter (dscm) (30 dry standard cubic foot (dscf)); if there is a separate lime cooler exhaust to the atmosphere, you must conduct the Method 5 test of the cooler exhaust concurrently with the kiln exhaust test.
6. Each lime kiln and each associated lime cooler, if there is a separate exhaust to the atmosphere from the associated lime cooler, and which uses a positive pressure FF or ESP	Measure PM emissions	Method 5D in appendix A to part 60 of this chapter	Conduct the test(s) when the source is operating at representative operating conditions in accordance with §63.7(e); if there is a separate lime cooler exhaust to the atmosphere, you must conduct the Method 5 test of the separate cooler exhaust concurrently with the kiln exhaust test.
7. Each lime kiln	Determine the mass rate of stone feed to the kiln during the kiln PM emissions test	Any suitable device	Calibrate and maintain the device according to manufacturer's instructions; the measuring device used must be accurate to within ±5 percent of the mass rate of stone feed over its operating range.
8. Each lime kiln equipped with a wet scrubber	Establish the operating limit for the average gas stream pressure drop across the wet scrubber	Data for the gas stream pressure drop measurement device during the kiln PM performance test	The continuous pressure drop measurement device must be accurate within plus or minus 1 percent; you must collect the pressure drop data during the period of the performance test and determine the operating limit according to §63.7112(j).
9. Each lime kiln equipped with a wet scrubber	Establish the operating limit for the average liquid flow rate to the scrubber	Data from the liquid flow rate measurement device during the kiln PM performance test	The continuous scrubbing liquid flow rate measuring device must be accurate within plus or minus 1 percent; you must collect the flow rate data during the period of the performance test and determine the operating limit according to §63.7112(j).

10. Each lime kiln equipped with a FF or ESP that is monitored with a PM detector	Have installed and have operating the BLDS or PM detector prior to the performance test	Standard operating procedures incorporated into the OM&M plan	According to the requirements in §63.7113(d) or (e), respectively.
11. Each lime kiln equipped with a FF or ESP that is monitored with a COMS	Have installed and have operating the COMS prior to the performance test	Standard operating procedures incorporated into the OM&M plan and as required by 40 CFR part 63, subpart A, General Provisions and according to PS–1 of appendix B to part 60 of this chapter, except as specified in §63.7113(g)(2)	According to the requirements in §63.7113(g).
12. Each stack emission from a PSH operation, vent from a building enclosing a PSH operation, or set of multiple storage bins with combined stack emissions, which is subject to a PM emission limit	Measure PM emissions	Method 5 or Method 17 in appendix A to part 60 of this chapter	The sample volume must 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; and 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 (Method 17 may be used only with exhaust gas temperatures of not more than 250 °F).
13. Each stack emission from a PSH operation, vent from a building enclosing a PSH operation, or set of multiple storage bins with combined stack emissions, which is subject to an opacity limit	Conduct opacity observations	Method 9 in appendix A to part 60 of this chapter	The test duration must be for at least 3 hours and you must obtain at least thirty, 6-minute averages.

14. Each stack emissions source from a PSH operation subject to a PM or opacity limit, which uses a wet scrubber	Establish the average gas stream pressure drop across the wet scrubber	Data for the gas stream pressure drop measurement device during the PSH operation stack PM performance test	The pressure drop measurement device must be accurate within plus or minus 1 percent; you must collect the pressure drop data during the period of the performance test and determine the operating limit according to §63.7112(j).
15. Each stack emissions source from a PSH operation subject to a PM or opacity limit, which uses a wet scrubber	Establish the operating limit for the average liquid flow rate to the scrubber	Data from the liquid flow rate measurement device during the PSH operation stack PM performance test	The continuous scrubbing liquid flow rate measuring device must be accurate within plus or minus 1 percent; you must collect the flow rate data during the period of the performance test and determine the operating limit according to §63.7112(j).
16. Each FF that controls emissions from only an individual, enclosed, new or existing storage bin	Conduct opacity observations	Method 9 in appendix A to part 60 of this chapter	The test duration must be for at least 1 hour and you must obtain ten 6-minute averages.
17. Fugitive emissions from any PSH operation subject to an opacity limit	Conduct opacity observations	Method 9 in appendix A to part 60 of this chapter	The test duration must be for at least 3 hours, but the 3-hour test may be reduced to 1 hour if, during the first 1-hour period, there are no individual readings greater than 10 percent opacity and there are no more than three readings of 10 percent during the first 1-hour period.
18. Each building enclosing any PSH operation, that is subject to a VE limit	Conduct VE check	The specifications in §63.7112(k)	The performance test must be conducted while all affected PSH operations within the building are operating; the performance test for each affected building must be at least 75 minutes, with each side of the building and roof being observed for at least 15 minutes.

Table 5 to Subpart AAAAA of Part 63—Continuous Compliance with Operating Limits

As required in §63.7121, you must demonstrate continuous compliance with each operating limit that applies to you, according to the following table:

For . . .	For the following operating limit . . .	You must demonstrate continuous compliance by . . .
1. Each lime kiln controlled by a wet scrubber	Maintain the 3-hour block average exhaust gas stream pressure drop across the wet scrubber greater than or equal to the pressure drop operating limit established during the PM performance test; and maintain the 3-hour block average scrubbing liquid flow rate greater than or equal to the flow rate operating limit established during the performance test	Collecting the wet scrubber operating data according to all applicable requirements in §63.7113 and reducing the data according to §63.7113(a); maintaining the 3-hour block average exhaust gas stream pressure drop across the wet scrubber greater than or equal to the pressure drop operating limit established during the PM performance test; and maintaining the 3-hour block average scrubbing liquid flow rate greater than or equal to the flow rate operating limit established during the performance test (the continuous scrubbing liquid flow rate measuring device must be accurate within ±1% and the continuous pressure drop measurement device must be accurate within ±1%).
2. Each lime kiln or lime cooler equipped with a FF and using a BLDS, and each lime kiln equipped with an ESP or FF using a PM detector	a. Maintain and operate the FF or ESP such that the bag leak or PM detector alarm, is not activated and alarm condition does not exist for more than 5 percent of the total operating time in each 6-month period	(i) Operating the FF or ESP so that the alarm on the bag leak or PM detection system is not activated and an alarm condition does not exist for more than 5 percent of the total operating time in each 6-month reporting period; and continuously recording the output from the BLD or PM detection system; and
		(ii) Each time the alarm sounds and the owner or operator initiates corrective actions within 1 hour of the alarm, 1 hour of alarm time will be counted (if the owner or operator takes longer than 1 hour to initiate corrective actions, alarm time will be counted as the actual amount of time taken by the owner or operator to initiate corrective actions); if inspection of the FF or ESP system demonstrates that no corrective actions are necessary, no alarm time will be counted.

3. Each stack emissions source from a PSH operation subject to an opacity limit, which is controlled by a wet scrubber	Maintain the 3-hour block average exhaust gas stream pressure drop across the wet scrubber greater than or equal to the pressure drop operating limit established during the PM performance test; and maintain the 3-hour block average scrubbing liquid flow rate greater than or equal to the flow rate operating limit established during the performance test	Collecting the wet scrubber operating data according to all applicable requirements in §63.7113 and reducing the data according to §63.7113(a); maintaining the 3-hour block average exhaust gas stream pressure drop across the wet scrubber greater than or equal to the pressure drop operating limit established during the PM performance test; and maintaining the 3-hour block average scrubbing liquid flow rate greater than or equal to the flow rate operating limit established during the performance test (the continuous scrubbing liquid flow rate measuring device must be accurate within ±1% and the continuous pressure drop measurement device must be accurate within ±1%).
4. For each lime kiln or lime cooler equipped with a FF or an ESP that uses a COMS as the monitoring device	a. Maintain and operate the FF or ESP such that the average opacity for any 6-minute block period does not exceed 15 percent	i. Installing, maintaining, calibrating and operating a COMS as required by 40 CFR part 63, subpart A, General Provisions and according to PS–1 of appendix B to part 60 of this chapter, except as specified in §63.7113(g)(2); and
		ii. Collecting the COMS data at a frequency of at least once every 15 seconds, determining block averages for each 6-minute period and demonstrating for each 6-minute block period the average opacity does not exceed 15 percent.

Table 6 to Subpart AAAAA of Part 63—Periodic Monitoring for Compliance With Opacity and Visible Emissions Limits

As required in §63.7121 you must periodically demonstrate compliance with each opacity and VE limit that applies to you, according to the following table:

For . . .	For the following emission limitation . . .	You must demonstrate ongoing compliance . . .
1. Each PSH operation subject to an opacity limitation as required in Table 1 to this subpart, or any vents from buildings subject to an opacity limitation	a. 7–10 percent opacity, depending on the PSH operation, as required in Table 1 to this subpart	(i) Conducting a monthly 1-minute VE check of each emission unit in accordance with §63.7121(e); the check must be conducted while the affected source is in operation; (ii) If no VE are observed in 6 consecutive monthly checks for any emission unit, you may decrease the frequency of VE checking from monthly to semi-annually for that emission unit; if VE are observed during any semiannual check, you must resume VE checking of that emission unit on a monthly basis and maintain that schedule until no VE are observed in 6 consecutive monthly checks;
		(iii) If no VE are observed during the semiannual check for any emission unit, you may decrease the frequency of VE checking from semi-annually to annually for that emission unit; if VE are observed during any annual check, you must resume VE checking of that emission unit on a monthly basis and maintain that schedule until no VE are observed in 6 consecutive monthly checks; and
		(iv) If VE are observed during any VE check, you must conduct a 6-minute test of opacity in accordance with Method 9 of appendix A to part 60 of this chapter; you must begin the Method 9 test within 1 hour of any observation of VE and the 6-minute opacity reading must not exceed the applicable opacity limit.
2. Any building subject to a VE limit, according to item 8 of Table 1 to this subpart	a. No VE	(i) Conducting a monthly VE check of the building, in accordance with the specifications in §63.7112(k); the check must be conducted while all the enclosed PSH operations are operating; (ii) The check for each affected building must be at least 5 minutes, with each side of the building and roof being observed for at least 1 minute;

		(iii) If no VE are observed in 6 consecutive monthly checks of the building, you may decrease the frequency of checking from monthly to semi-annually for that affected source; if VE are observed during any semi-annual check, you must resume checking on a monthly basis and maintain that schedule until no VE are observed in 6 consecutive monthly checks; and
		(iv) If no VE are observed during the semi-annual check, you may decrease the frequency of checking from semi-annually to annually for that affected source; and if VE are observed during any annual check, you must resume checking of that emission unit on a monthly basis and maintain that schedule until no VE are observed in 6 consecutive monthly checks (the source is in compliance if no VE are observed during any of these checks).

Table 7 to Subpart AAAAA of Part 63—Requirements for Reports

As required in §63.7131, you must submit each report in this table that applies to you.

You must submit a . . .	The report must contain . . .	You must submit the report . . .
1. Compliance report	a. If there are no deviations from any emission limitations (emission limit, operating limit, opacity limit, and VE limit) that applies to you, a statement that there were no deviations from the emission limitations during the reporting period;	Semiannually according to the requirements in §63.7131(b).
	b. If there were no periods during which the CMS, including any operating parameter monitoring system, was out-of-control as specified in §63.8(c)(7), a statement that there were no periods during which the CMS was out-of-control during the reporting period;	Semiannually according to the requirements in §63.7131(b).
	c. If you have a deviation from any emission limitation (emission limit, operating limit, opacity limit, and VE limit) during the reporting period, the report must contain the information in §63.7131(d);	Semiannually according to the requirements in §63.7131(b).

	d. If there were periods during which the CMS, including any operating parameter monitoring system, was out-of-control, as specified in §63.8(c)(7), the report must contain the information in §63.7131(e); and	Semiannually according to the requirements in §63.7131(b).
	e. If you had a startup, shutdown or malfunction during the reporting period and you took actions consistent with your SSMP, the compliance report must include the information in §63.10(d)(5)(i)	Semiannually according to the requirements in §63.7131(b).
2. An immediate startup, shutdown, and malfunction report if you had a startup, shutdown, or malfunction during the reporting period that is not consistent with your SSMP	Actions taken for the event	By fax or telephone within 2 working days after starting actions inconsistent with the SSMP.
3. An immediate startup, shutdown, and malfunction report if you had a startup, shutdown, or malfunction during the reporting period that is not consistent with your SSMP	The information in §63.10(d)(5)(ii)	By letter within 7 working days after the end of the event unless you have made alternative arrangements with the permitting authority. See §63.10(d)(5)(ii).

Table 8 to Subpart AAAAA of Part 63—Applicability of General Provisions to Subpart AAAAA

As required in §63.7140, you must comply with the applicable General Provisions requirements according to the following table:

Citation	Summary of requirement	Am I subject to this requirement?	Explanations
§63.1(a)(1)–(4)	Applicability	Yes	
§63.1(a)(5)		No	
§63.1(a)(6)	Applicability	Yes	
§63.1(a)(7)–(a)(9)		No	
§63.1(a)(10)–(a)(14)	Applicability	Yes	
§63.1(b)(1)	Initial Applicability Determination	Yes	§§63.7081 and 63.7142 specify additional applicability determination requirements.

§63.1(b)(2)		No	
§63.1(b)(3)	Initial Applicability Determination	Yes	
§63.1(c)(1)	Applicability After Standard Established	Yes	
§63.1(c)(2)	Permit Requirements	No	Area sources not subject to subpart AAAAA, except all sources must make initial applicability determination.
§63.1(c)(3)		No	
§63.1(c)(4)–(5)	Extensions, Notifications	Yes	
§63.1(d)		No	
§63.1(e)	Applicability of Permit Program	Yes	
§63.2	Definitions		Additional definitions in §63.7143.
§63.3(a)–(c)	Units and Abbreviations	Yes	
§63.4(a)(1)–(a)(2)	Prohibited Activities	Yes	
§3.4(a)(3)–(a)(5)		No	
§63.4(b)–(c)	Circumvention, Severability	Yes	
§63.5(a)(1)–(2)	Construction/Reconstruction	Yes	
§63.5(b)(1)	Compliance Dates	Yes	
§63.5(b)(2)		No	
§63.5(b)(3)–(4)	Construction Approval, Applicability	Yes	
§63.5(b)(5)		No	
§63.5(b)(6)	Applicability	Yes	
§63.5(c)		No	
§63.5(d)(1)–(4)	Approval of Construction/Reconstruction	Yes	
§63.5(e)	Approval of Construction/Reconstruction	Yes	
§63.5(f)(1)–(2)	Approval of Construction/Reconstruction	Yes	
§63.6(a)	Compliance for Standards and Maintenance	Yes	

§63.6(b)(1)–(5)	Compliance Dates	Yes	
§63.6(b)(6)		No	
§63.6(b)(7)	Compliance Dates	Yes	
§63.6(c)(1)–(2)	Compliance Dates	Yes	
§63.6(c)(3)–(c)(4)		No	
§63.6(c)(5)	Compliance Dates	Yes	
§63.6(d)		No	
§63.6(e)(1)	Operation & Maintenance	Yes	See §63.7100 for OM&M requirements.
§63.6(e)(2)		No	
§63.6(e)(3)	Startup, Shutdown Malfunction Plan	Yes	
§63.6(f)(1)–(3)	Compliance with Emission Standards	Yes	
§63.6(g)(1)–(g)(3)	Alternative Standard	Yes	
§63.6(h)(1)–(2)	Opacity/VE Standards	Yes	
§63.6(h)(3)		No	
§63.6(h)(4)–(h)(5)(i)	Opacity/VE Standards	Yes	This requirement only applies to opacity and VE performance checks required in Table 4 to subpart AAAAA.
§63.6(h)(5) (ii)–(iii)	Opacity/VE Standards	No	Test durations are specified in subpart AAAAA; subpart AAAAA takes precedence.
§63.6(h)(5)(iv)	Opacity/VE Standards	No	
§63.6(h)(5)(v)	Opacity/VE Standards	Yes	
§63.6(h)(6)	Opacity/VE Standards	Yes	
§63.6(h)(7)	COM Use	Yes	
§63.6(h)(8)	Compliance with Opacity and VE	Yes	
§63.6(h)(9)	Adjustment of Opacity Limit	Yes	
§63.6(i)(1)–(i)(14)	Extension of Compliance	Yes	
§63.6(i)(15)		No	

§63.6(i)(16)	Extension of Compliance	Yes	
§63.6(j)	Exemption from Compliance	Yes	
§63.7(a)(1)–(a)(3)	Performance Testing Requirements	Yes	§63.7110 specifies deadlines; §63.7112 has additional specific requirements.
§63.7(b)	Notification	Yes	
§63.7(c)	Quality Assurance/Test Plan	Yes	
§63.7(d)	Testing Facilities	Yes	
§63.7(e)(1)–(4)	Conduct of Tests	Yes	
§63.7(f)	Alternative Test Method	Yes	
§63.7(g)	Data Analysis	Yes	
§63.7(h)	Waiver of Tests	Yes	
§63.8(a)(1)	Monitoring Requirements	Yes	See §63.7113.
§63.8(a)(2)	Monitoring	Yes	
§63.8(a)(3)		No	
§63.8(a)(4)	Monitoring	No	Flares not applicable.
§63.8(b)(1)–(3)	Conduct of Monitoring	Yes	
§63.8(c)(1)–(3)	CMS Operation/Maintenance	Yes	
§63.8(c)(4)	CMS Requirements	No	See §63.7121.
§63.8(c)(4)(i)–(ii)	Cycle Time for COM and CEMS	Yes	No CEMS are required under subpart AAAAA; see §63.7113 for CPMS requirements.
§63.8(c)(5)	Minimum COM procedures	Yes	COM not required.
§63.8(c)(6)	CMS Requirements	No	See §63.7113.
§63.8(c)(7)–(8)	CMS Requirements	Yes	
§63.8(d)	Quality Control	No	See §63.7113.
§63.8(e)	Performance Evaluation for CMS	No	
§63.8(f)(1)–(f)(5)	Alternative Monitoring Method	Yes	
§63.8(f)(6)	Alternative to Relative Accuracy test	No	
§63.8(g)(1)–(g)(5)	Data Reduction; Data That Cannot Be Used	No	See data reduction requirements in §§63.7120 and 63.7121.

§63.9(a)	Notification Requirements	Yes	See §63.7130.
§63.9(b)	Initial Notifications	Yes	
§63.9(c)	Request for Compliance Extension	Yes	
§63.9(d)	New Source Notification for Special Compliance Requirements	Yes	
§63.9(e)	Notification of Performance Test	Yes	
§63.9(f)	Notification of VE/Opacity Test	Yes	This requirement only applies to opacity and VE performance tests required in Table 4 to subpart AAAAA. Notification not required for VE/opacity test under Table 6 to subpart AAAAA.
§63.9(g)	Additional CMS Notifications	No	Not required for operating parameter monitoring.
§63.9(h)(1)–(h)(3)	Notification of Compliance Status	Yes	
§63.9(h)(4)		No	
§63.9(h)(5)–(h)(6)	Notification of Compliance Status	Yes	
§63.9(i)	Adjustment of Deadlines	Yes	
§63.9(j)	Change in Previous Information	Yes	
§63.10(a)	Recordkeeping/Reporting General Requirements	Yes	See §§63.7131 through 63.7133.
§63.10(b)(1)–(b)(2)(xii)	Records	Yes	
§63.10(b)(2)(xiii)	Records for Relative Accuracy Test	No	
§63.10(b)(2)(xiv)	Records for Notification	Yes	
§63.10(b)(3)	Applicability Determinations	Yes	
§63.10(c)	Additional CMS Recordkeeping	No	See §63.7132.
§63.10(d)(1)	General Reporting Requirements	Yes	
§63.10(d)(2)	Performance Test Results	Yes	

§63.10(d)(3)	Opacity or VE Observations	Yes	For the periodic monitoring requirements in Table 6 to subpart AAAAA, report according to §63.10(d)(3) only if VE observed and subsequent visual opacity test is required.
§63.10(d)(4)	Progress Reports	Yes	
§63.10(d)(5)	Startup, Shutdown, Malfunction Reports	Yes	
§63.10(e)	Additional CMS Reports	No	See specific requirements in subpart AAAAA, see §63.7131.
§63.10(f)	Waiver for Recordkeeping/Reporting	Yes	
§63.11(a)–(b)	Control Device Requirements	No	Flares not applicable.
§63.12(a)–(c)	State Authority and Delegations	Yes	
§63.13(a)–(c)	State/Regional Addresses	Yes	
§63.14(a)–(b)	Incorporation by Reference	No	
§63.15(a)–(b)	Availability of Information	Yes	

Attachment D

Indiana Department of Environmental Management
Office of Air Quality

Source Name:	**Synergy Management, LLC**
Source Location:	**5600 N. US Highway 421, Monon, IN 47959**
County:	**White**
SIC Code:	**3274**
Operation Permit No.:	**T181-26877-00050**

Title 40: Protection of Environment
PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Source: 71 FR 39172, July 11, 2006, unless otherwise noted.

What This Subpart Covers

§ 60.4200 Am I subject to this subpart?

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (3) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

(1) Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is:

(i) 2007 or later, for engines that are not fire pump engines,

(ii) The model year listed in table 3 to this subpart or later model year, for fire pump engines.

(2) Owners and operators of stationary CI ICE that commence construction after July 11, 2005 where the stationary CI ICE are:

(i) Manufactured after April 1, 2006 and are not fire pump engines, or

(ii) Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

(3) Owners and operators of stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005.

(b) The provisions of this subpart are not applicable to stationary CI ICE being tested at a stationary CI ICE test cell/stand.

(c) If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not

required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart applicable to area sources.

(d) Stationary CI ICE may be eligible for exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C (or the exemptions described in 40 CFR part 89, subpart J and 40 CFR part 94, subpart J, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security.

Emission Standards for Manufacturers

§ 60.4201 What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer?

(a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 kilowatt (KW) (3,000 horsepower (HP)) and a displacement of less than 10 liters per cylinder to the certification emission standards for new nonroad CI engines in 40 CFR 89.112, 40 CFR 89.113, 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable, for all pollutants, for the same model year and maximum engine power.

(b) Stationary CI internal combustion engine manufacturers must certify their 2007 through 2010 model year non-emergency stationary CI ICE with a maximum engine power greater than 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder to the emission standards in table 1 to this subpart, for all pollutants, for the same maximum engine power.

(c) Stationary CI internal combustion engine manufacturers must certify their 2011 model year and later non-emergency stationary CI ICE with a maximum engine power greater than 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder to the certification emission standards for new nonroad CI engines in 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable, for all pollutants, for the same maximum engine power.

(d) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder to the certification emission standards for new marine CI engines in 40 CFR 94.8, as applicable, for all pollutants, for the same displacement and maximum engine power.

§ 60.4202 What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

(a) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (a)(1) through (2) of this section.

(1) For engines with a maximum engine power less than 37 KW (50 HP):

(i) The certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants for model year 2007 engines, and

(ii) The certification emission standards for new nonroad CI engines in 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, 40 CFR 1039.115, and table 2 to this subpart, for 2008 model year and later engines.

(2) For engines with a maximum engine power greater than or equal to 37 KW (50 HP), the certification emission standards for new nonroad CI engines for the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year 2007.

(b) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a maximum engine power greater than 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder that are not fire pump engines to the emission standards specified in paragraphs (b)(1) through (2) of this section.

(1) For 2007 through 2010 model years, the emission standards in table 1 to this subpart, for all pollutants, for the same maximum engine power.

(2) For 2011 model year and later, the certification emission standards for new nonroad CI engines for engines of the same model year and maximum engine power in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants.

(c) Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines to the certification emission standards for new marine CI engines in 40 CFR 94.8, as applicable, for all pollutants, for the same displacement and maximum engine power.

(d) Beginning with the model years in table 3 to this subpart, stationary CI internal combustion engine manufacturers must certify their fire pump stationary CI ICE to the emission standards in table 4 to this subpart, for all pollutants, for the same model year and NFPA nameplate power.

§ 60.4203 How long must my engines meet the emission standards if I am a stationary CI internal combustion engine manufacturer?

Engines manufactured by stationary CI internal combustion engine manufacturers must meet the emission standards as required in §§60.4201 and 60.4202 during the useful life of the engines.

Emission Standards for Owners and Operators

§ 60.4204 What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of less than 10 liters per cylinder must comply with the emission standards in table 1 to this subpart. Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder must comply with the emission standards in 40 CFR 94.8(a)(1).

(b) Owners and operators of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.

(c) Owners and operators of non-emergency stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder must meet the requirements in paragraphs (c)(1) and (2) of this section.

(1) Reduce nitrogen oxides (NO_X) emissions by 90 percent or more, or limit the emissions of NO_Xin the stationary CI internal combustion engine exhaust to 1.6 grams per KW-hour (g/KW-hr) (1.2 grams per HP-hour (g/HP-hr)).

(2) Reduce particulate matter (PM) emissions by 60 percent or more, or limit the emissions of PM in the stationary CI internal combustion engine exhaust to 0.15 g/KW-hr (0.11 g/HP-hr).

§ 60.4205 What emission standards must I meet for emergency engines if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of pre-2007 model year emergency stationary CI ICE with a displacement of less than 10 liters per cylinder that are not fire pump engines must comply with the emission standards in table 1 to this subpart. Owners and operators of pre-2007 model year non-emergency stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards in 40 CFR 94.8(a)(1).

(b) Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE.

(c) Owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the emission standards in table 4 to this subpart, for all pollutants.

(d) Owners and operators of emergency stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder must meet the requirements in paragraphs (d)(1) and (2) of this section.

(1) Reduce NO_Xemissions by 90 percent or more, or limit the emissions of NO_Xin the stationary CI internal combustion engine exhaust to 1.6 grams per KW-hour (1.2 grams per HP-hour).

(2) Reduce PM emissions by 60 percent or more, or limit the emissions of PM in the stationary CI internal combustion engine exhaust to 0.15 g/KW-hr (0.11 g/HP-hr).

§ 60.4206 How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

Owners and operators of stationary CI ICE must operate and maintain stationary CI ICE that achieve the emission standards as required in §§60.4204 and 60.4205 according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine.

Fuel Requirements for Owners and Operators

§ 60.4207 What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

(a) Beginning October 1, 2007, owners and operators of stationary CI ICE subject to this subpart that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a).

(b) Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

(c) Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart may petition the Administrator for approval to use remaining non-compliant fuel that does not meet the fuel requirements of paragraphs (a) and (b) of this section beyond the dates required for the purpose of using up existing fuel inventories. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.

(d) Owners and operators of pre-2011 model year stationary CI ICE subject to this subpart that are located in areas of Alaska not accessible by the Federal Aid Highway System may petition the Administrator for approval to use any fuels mixed with used lubricating oil that do not meet the fuel requirements of paragraphs (a) and (b) of this section. Owners and operators must demonstrate in their petition to the Administrator that there is no other place to use the lubricating oil. If approved, the petition will be valid for a period of up to 6 months. If additional time is needed, the owner or operator is required to submit a new petition to the Administrator.

(e) Stationary CI ICE that have a national security exemption under §60.4200(d) are also exempt from the fuel requirements in this section.

Other Requirements for Owners and Operators

§ 60.4208 What is the deadline for importing or installing stationary CI ICE produced in the previous model year?

(a) After December 31, 2008, owners and operators may not install stationary CI ICE (excluding fire pump engines) that do not meet the applicable requirements for 2007 model year engines.

(b) After December 31, 2009, owners and operators may not install stationary CI ICE with a maximum engine power of less than 19 KW (25 HP) (excluding fire pump engines) that do not meet the applicable requirements for 2008 model year engines.

(c) After December 31, 2014, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 19 KW (25 HP) and less than 56 KW (75 HP) that do not meet the applicable requirements for 2013 model year non-emergency engines.

(d) After December 31, 2013, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 56 KW (75 HP) and less than 130 KW (175 HP) that do not meet the applicable requirements for 2012 model year non-emergency engines.

(e) After December 31, 2012, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 130 KW (175 HP), including those above 560 KW (750 HP), that do not meet the applicable requirements for 2011 model year non-emergency engines.

(f) After December 31, 2016, owners and operators may not install non-emergency stationary CI ICE with a maximum engine power of greater than or equal to 560 KW (750 HP) that do not meet the applicable requirements for 2015 model year non-emergency engines.

(g) In addition to the requirements specified in §§60.4201, 60.4202, 60.4204, and 60.4205, it is prohibited to import stationary CI ICE with a displacement of less than 30 liters per cylinder that do not meet the applicable requirements specified in paragraphs (a) through (f) of this section after the dates specified in paragraphs (a) through (f) of this section.

(h) The requirements of this section do not apply to owners or operators of stationary CI ICE that have been modified, reconstructed, and do not apply to engines that were removed from one existing location and reinstalled at a new location.

§ 60.4209 What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

If you are an owner or operator, you must meet the monitoring requirements of this section. In addition, you must also meet the monitoring requirements specified in §60.4211.

(a) If you are an owner or operator of an emergency stationary CI internal combustion engine, you must install a non-resettable hour meter prior to startup of the engine.

(b) If you are an owner or operator of a stationary CI internal combustion engine equipped with a diesel particulate filter to comply with the emission standards in §60.4204, the diesel particulate filter must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached.

Compliance Requirements

§ 60.4210 What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?

(a) Stationary CI internal combustion engine manufacturers must certify their stationary CI ICE with a displacement of less than 10 liters per cylinder to the emission standards specified in §60.4201(a) through (c) and §60.4202(a), (b) and (d) using the certification procedures required in 40 CFR part 89, subpart B, or 40 CFR part 1039, subpart C, as applicable, and must test their engines as specified in those parts. For the purposes of this subpart, engines certified to the standards in table 1 to this subpart shall be subject to the same requirements as engines certified to the standards in 40 CFR part 89. For the purposes of this subpart, engines certified to the standards in table 4 to this subpart shall be subject to the same requirements as engines certified to the standards in 40 CFR part 89, except that engines with NFPA nameplate power of less than 37 KW (50 HP) certified to model year 2011 or later standards shall be subject to the same requirements as engines certified to the standards in 40 CFR part 1039.

(b) Stationary CI internal combustion engine manufacturers must certify their stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder to the emission standards specified in §60.4201(d) and §60.4202(c) using the

certification procedures required in 40 CFR part 94 subpart C, and must test their engines as specified in 40 CFR part 94.

(c) Stationary CI internal combustion engine manufacturers must meet the requirements of 40 CFR 1039.120, 40 CFR 1039.125, 40 CFR 1039.130, 40 CFR 1039.135, and 40 CFR part 1068 for engines that are certified to the emission standards in 40 CFR part 1039. Stationary CI internal combustion engine manufacturers must meet the corresponding provisions of 40 CFR part 89 or 40 CFR part 94 for engines that would be covered by that part if they were nonroad (including marine) engines. Labels on such engines must refer to stationary engines, rather than or in addition to nonroad or marine engines, as appropriate. Stationary CI internal combustion engine manufacturers must label their engines according to paragraphs (c)(1) through (3) of this section.

(1) Stationary CI internal combustion engines manufactured from January 1, 2006 to March 31, 2006 (January 1, 2006 to June 30, 2006 for fire pump engines), other than those that are part of certified engine families under the nonroad CI engine regulations, must be labeled according to 40 CFR 1039.20.

(2) Stationary CI internal combustion engines manufactured from April 1, 2006 to December 31, 2006 (or, for fire pump engines, July 1, 2006 to December 31 of the year preceding the year listed in table 3 to this subpart) must be labeled according to paragraphs (c)(2)(i) through (iii) of this section:

(i) Stationary CI internal combustion engines that are part of certified engine families under the nonroad regulations must meet the labeling requirements for nonroad CI engines, but do not have to meet the labeling requirements in 40 CFR 1039.20.

(ii) Stationary CI internal combustion engines that meet Tier 1 requirements (or requirements for fire pumps) under this subpart, but do not meet the requirements applicable to nonroad CI engines must be labeled according to 40 CFR 1039.20. The engine manufacturer may add language to the label clarifying that the engine meets Tier 1 requirements (or requirements for fire pumps) of this subpart.

(iii) Stationary CI internal combustion engines manufactured after April 1, 2006 that do not meet Tier 1 requirements of this subpart, or fire pumps engines manufactured after July 1, 2006 that do not meet the requirements for fire pumps under this subpart, may not be used in the U.S. If any such engines are manufactured in the U.S. after April 1, 2006 (July 1, 2006 for fire pump engines), they must be exported or must be brought into compliance with the appropriate standards prior to initial operation. The export provisions of 40 CFR 1068.230 would apply to engines for export and the manufacturers must label such engines according to 40 CFR 1068.230.

(3) Stationary CI internal combustion engines manufactured after January 1, 2007 (for fire pump engines, after January 1 of the year listed in table 3 to this subpart, as applicable) must be labeled according to paragraphs (c)(3)(i) through (iii) of this section.

(i) Stationary CI internal combustion engines that meet the requirements of this subpart and the corresponding requirements for nonroad (including marine) engines of the same model year and HP must be labeled according to the provisions in part 89, 94 or 1039, as appropriate.

(ii) Stationary CI internal combustion engines that meet the requirements of this subpart, but are not certified to the standards applicable to nonroad (including marine) engines of the same model year and HP must be labeled according to the provisions in part 89, 94 or 1039, as appropriate,

but the words “stationary” must be included instead of “nonroad” or “marine” on the label. In addition, such engines must be labeled according to 40 CFR 1039.20.

(iii) Stationary CI internal combustion engines that do not meet the requirements of this subpart must be labeled according to 40 CFR 1068.230 and must be exported under the provisions of 40 CFR 1068.230.

(d) An engine manufacturer certifying an engine family or families to standards under this subpart that are identical to standards applicable under parts 89, 94, or 1039 for that model year may certify any such family that contains both nonroad (including marine) and stationary engines as a single engine family and/or may include any such family containing stationary engines in the averaging, banking and trading provisions applicable for such engines under those parts.

(e) Manufacturers of engine families discussed in paragraph (d) of this section may meet the labeling requirements referred to in paragraph (c) of this section for stationary CI ICE by either adding a separate label containing the information required in paragraph (c) of this section or by adding the words “and stationary” after the word “nonroad” or “marine,” as appropriate, to the label.

(f) Starting with the model years shown in table 5 to this subpart, stationary CI internal combustion engine manufacturers must add a permanent label stating that the engine is for stationary emergency use only to each new emergency stationary CI internal combustion engine greater than or equal to 19 KW (25 HP) that meets all the emission standards for emergency engines in §60.4202 but does not meet all the emission standards for non-emergency engines in §60.4201. The label must be added according to the labeling requirements specified in 40 CFR 1039.135(b). Engine manufacturers must specify in the owner's manual that operation of emergency engines is limited to emergency operations and required maintenance and testing.

(g) Manufacturers of fire pump engines may use the test cycle in table 6 to this subpart for testing fire pump engines and may test at the NFPA certified nameplate HP, provided that the engine is labeled as “Fire Pump Applications Only”.

(h) Engine manufacturers, including importers, may introduce into commerce uncertified engines or engines certified to earlier standards that were manufactured before the new or changed standards took effect until inventories are depleted, as long as such engines are part of normal inventory. For example, if the engine manufacturers' normal industry practice is to keep on hand a one-month supply of engines based on its projected sales, and a new tier of standards starts to apply for the 2009 model year, the engine manufacturer may manufacture engines based on the normal inventory requirements late in the 2008 model year, and sell those engines for installation. The engine manufacturer may not circumvent the provisions of §§60.4201 or 60.4202 by stockpiling engines that are built before new or changed standards take effect. Stockpiling of such engines beyond normal industry practice is a violation of this subpart.

(i) The replacement engine provisions of 40 CFR 89.1003(b)(7), 40 CFR 94.1103(b)(3), 40 CFR 94.1103(b)(4) and 40 CFR 1068.240 are applicable to stationary CI engines replacing existing equipment that is less than 15 years old.

§ 60.4211 What are my compliance requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) If you are an owner or operator and must comply with the emission standards specified in this subpart, you must operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's written instructions or procedures developed by the owner

or operator that are approved by the engine manufacturer. In addition, owners and operators may only change those settings that are permitted by the manufacturer. You must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.

(b) If you are an owner or operator of a pre-2007 model year stationary CI internal combustion engine and must comply with the emission standards specified in §§60.4204(a) or 60.4205(a), or if you are an owner or operator of a CI fire pump engine that is manufactured prior to the model years in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) through (5) of this section.

(1) Purchasing an engine certified according to 40 CFR part 89 or 40 CFR part 94, as applicable, for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.

(2) Keeping records of performance test results for each pollutant for a test conducted on a similar engine. The test must have been conducted using the same methods specified in this subpart and these methods must have been followed correctly.

(3) Keeping records of engine manufacturer data indicating compliance with the standards.

(4) Keeping records of control device vendor data indicating compliance with the standards.

(5) Conducting an initial performance test to demonstrate compliance with the emission standards according to the requirements specified in §60.4212, as applicable.

(c) If you are an owner or operator of a 2007 model year and later stationary CI internal combustion engine and must comply with the emission standards specified in §60.4204(b) or §60.4205(b), or if you are an owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to your fire pump engine power rating in table 3 to this subpart and must comply with the emission standards specified in §60.4205(c), you must comply by purchasing an engine certified to the emission standards in §60.4204(b), or §60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications.

(d) If you are an owner or operator and must comply with the emission standards specified in §60.4204(c) or §60.4205(d), you must demonstrate compliance according to the requirements specified in paragraphs (d)(1) through (3) of this section.

(1) Conducting an initial performance test to demonstrate initial compliance with the emission standards as specified in §60.4213.

(2) Establishing operating parameters to be monitored continuously to ensure the stationary internal combustion engine continues to meet the emission standards. The owner or operator must petition the Administrator for approval of operating parameters to be monitored continuously. The petition must include the information described in paragraphs (d)(2)(i) through (v) of this section.

(i) Identification of the specific parameters you propose to monitor continuously;

(ii) A discussion of the relationship between these parameters and $NO_X$and PM emissions, identifying how the emissions of these pollutants change with changes in these parameters, and how limitations on these parameters will serve to limit $NO_X$and PM emissions;

(iii) A discussion of how you will establish the upper and/or lower values for these parameters which will establish the limits on these parameters in the operating limitations;

(iv) A discussion identifying the methods and the instruments you will use to monitor these parameters, as well as the relative accuracy and precision of these methods and instruments; and

(v) A discussion identifying the frequency and methods for recalibrating the instruments you will use for monitoring these parameters.

(3) For non-emergency engines with a displacement of greater than or equal to 30 liters per cylinder, conducting annual performance tests to demonstrate continuous compliance with the emission standards as specified in §60.4213.

(e) Emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. Anyone may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. For owners and operators of emergency engines meeting standards under §60.4205 but not §60.4204, any operation other than emergency operation, and maintenance and testing as permitted in this section, is prohibited.

Testing Requirements for Owners and Operators

§ 60.4212 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (d) of this section.

(a) The performance test must be conducted according to the in-use testing procedures in 40 CFR part 1039, subpart F.

(b) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR part 1039 must not exceed the not-to-exceed (NTE) standards for the same model year and maximum engine power as required in 40 CFR 1039.101(e) and 40 CFR 1039.102(g)(1), except as specified in 40 CFR 1039.104(d). This requirement starts when NTE requirements take effect for nonroad diesel engines under 40 CFR part 1039.

(c) Exhaust emissions from stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8, as applicable, must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable

standard in 40 CFR 89.112 or 40 CFR 94.8, as applicable, determined from the following equation:

$$\text{NTE requirement for each pollutant} = (1.25) \times (\text{STD}) \qquad \text{(Eq. 1)}$$

Where:

STD = The standard specified for that pollutant in 40 CFR 89.112 or 40 CFR 94.8, as applicable.

Alternatively, stationary CI ICE that are complying with the emission standards for new CI engines in 40 CFR 89.112 or 40 CFR 94.8 may follow the testing procedures specified in §60.4213 of this subpart, as appropriate.

(d) Exhaust emissions from stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) must not exceed the NTE numerical requirements, rounded to the same number of decimal places as the applicable standard in §60.4204(a), §60.4205(a), or §60.4205(c), determined from the equation in paragraph (c) of this section.

Where:

STD = The standard specified for that pollutant in §60.4204(a), §60.4205(a), or §60.4205(c).

Alternatively, stationary CI ICE that are complying with the emission standards for pre-2007 model year engines in §60.4204(a), §60.4205(a), or §60.4205(c) may follow the testing procedures specified in §60.4213, as appropriate.

§ 60.4213 What test methods and other procedures must I use if I am an owner or operator of a stationary CI internal combustion engine with a displacement of greater than or equal to 30 liters per cylinder?

Owners and operators of stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder must conduct performance tests according to paragraphs (a) through (d) of this section.

(a) Each performance test must be conducted according to the requirements in §60.8 and under the specific conditions that this subpart specifies in table 7. The test must be conducted within 10 percent of 100 percent peak (or the highest achievable) load.

(b) You may not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in §60.8(c).

(c) You must conduct three separate test runs for each performance test required in this section, as specified in §60.8(f). Each test run must last at least 1 hour.

(d) To determine compliance with the percent reduction requirement, you must follow the requirements as specified in paragraphs (d)(1) through (3) of this section.

(1) You must use Equation 2 of this section to determine compliance with the percent reduction requirement:

$$\frac{C_i - C_o}{C_i} \times 100 = R \qquad \text{(Eq. 2)}$$

Where:

C_i= concentration of NO_Xor PM at the control device inlet,

C_o= concentration of NO_Xor PM at the control device outlet, and

R = percent reduction of NO_Xor PM emissions.

(2) You must normalize the NO_Xor PM concentrations at the inlet and outlet of the control device to a dry basis and to 15 percent oxygen (O_2) using Equation 3 of this section, or an equivalent percent carbon dioxide (CO_2) using the procedures described in paragraph (d)(3) of this section.

$$C_{adj} = C_d \frac{5.9}{20.9 - \%\,O_2} \qquad \text{(Eq. 3)}$$

Where:

C_{adj}= Calculated NO_Xor PM concentration adjusted to 15 percent O_2.

C_d= Measured concentration of NO_Xor PM, uncorrected.

5.9 = 20.9 percent O_2−15 percent O_2, the defined O_2correction value, percent.

$\%O_2$= Measured O_2concentration, dry basis, percent.

(3) If pollutant concentrations are to be corrected to 15 percent $O_2$and CO_2concentration is measured in lieu of O_2concentration measurement, a CO_2correction factor is needed. Calculate the CO_2correction factor as described in paragraphs (d)(3)(i) through (iii) of this section.

(i) Calculate the fuel-specific $F_o$value for the fuel burned during the test using values obtained from Method 19, Section 5.2, and the following equation:

$$F_o = \frac{0.209\,F_d}{F_c} \qquad \text{(Eq. 4)}$$

Where:

F_o= Fuel factor based on the ratio of O_2volume to the ultimate CO_2volume produced by the fuel at zero percent excess air.

0.209 = Fraction of air that is O_2, percent/100.

F_d= Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm^3 /J (dscf/10^6 Btu).

F_c= Ratio of the volume of CO_2produced to the gross calorific value of the fuel from Method 19, dsm^3 /J (dscf/10^6 Btu).

(ii) Calculate the CO_2correction factor for correcting measurement data to 15 percent O_2, as follows:

$$X_{CO_2} = \frac{5.9}{F_c} \qquad \text{(Eq. 5)}$$

Where:

X_{CO2}= CO_2correction factor, percent.

5.9 = 20.9 percent O_2−15 percent O_2, the defined O_2correction value, percent.

(iii) Calculate the $NO_X$and PM gas concentrations adjusted to 15 percent O_2using CO_2as follows:

$$C_{adj} = C_d \frac{X_{CO_2}}{\%CO_2} \qquad \text{(Eq. 6)}$$

Where:

C_{adj}= Calculated NO_Xor PM concentration adjusted to 15 percent O_2.

C_d= Measured concentration of NO_Xor PM, uncorrected.

$\%CO_2$= Measured CO_2concentration, dry basis, percent.

(e) To determine compliance with the NO_Xmass per unit output emission limitation, convert the concentration of NO_Xin the engine exhaust using Equation 7 of this section:

$$ER = \frac{C_d \times 1.912 \times 10^{-3} \times Q \times T}{\text{KW-hour}} \qquad \text{(Eq. 7)}$$

Where:

ER = Emission rate in grams per KW-hour.

C_d= Measured NO_Xconcentration in ppm.

1.912×10^{-3}= Conversion constant for ppm $NO_X$to grams per standard cubic meter at 25 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meter per hour.

T = Time of test run, in hours.

KW-hour = Brake work of the engine, in KW-hour.

(f) To determine compliance with the PM mass per unit output emission limitation, convert the concentration of PM in the engine exhaust using Equation 8 of this section:

$$ER = \frac{C_{adj} \times Q \times T}{KW\text{-}hour} \qquad (Eq\ 8)$$

Where:

ER = Emission rate in grams per KW-hour.

C_{adj}= Calculated PM concentration in grams per standard cubic meter.

Q = Stack gas volumetric flow rate, in standard cubic meter per hour.

T = Time of test run, in hours.

KW-hour = Energy output of the engine, in KW.

Notification, Reports, and Records for Owners and Operators

§ 60.4214 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary CI internal combustion engine?

(a) Owners and operators of non-emergency stationary CI ICE that are greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified, must meet the requirements of paragraphs (a)(1) and (2) of this section.

(1) Submit an initial notification as required in §60.7(a)(1). The notification must include the information in paragraphs (a)(1)(i) through (v) of this section.

(i) Name and address of the owner or operator;

(ii) The address of the affected source;

(iii) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;

(iv) Emission control equipment; and

(v) Fuel used.

(2) Keep records of the information in paragraphs (a)(2)(i) through (iv) of this section.

(i) All notifications submitted to comply with this subpart and all documentation supporting any notification.

(ii) Maintenance conducted on the engine.

(iii) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards.

(iv) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.

(b) If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time.

(c) If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached.

Special Requirements

§ 60.4215 What requirements must I meet for engines used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands?

(a) Stationary CI ICE that are used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands are required to meet the applicable emission standards in §60.4205. Non-emergency stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder, must meet the applicable emission standards in §60.4204(c).

(b) Stationary CI ICE that are used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands are not required to meet the fuel requirements in §60.4207.

§ 60.4216 What requirements must I meet for engines used in Alaska?

(a) Prior to December 1, 2010, owners and operators of stationary CI engines located in areas of Alaska not accessible by the Federal Aid Highway System should refer to 40 CFR part 69 to determine the diesel fuel requirements applicable to such engines.

(b) The Governor of Alaska may submit for EPA approval, by no later than January 11, 2008, an alternative plan for implementing the requirements of 40 CFR part 60, subpart IIII, for public-sector electrical utilities located in rural areas of Alaska not accessible by the Federal Aid Highway System. This alternative plan must be based on the requirements of section 111 of the Clean Air Act including any increased risks to human health and the environment and must also be based on the unique circumstances related to remote power generation, climatic conditions, and serious economic impacts resulting from implementation of 40 CFR part 60, subpart IIII. If EPA approves by rulemaking process an alternative plan, the provisions as approved by EPA under that plan shall apply to the diesel engines used in new stationary internal combustion engines subject to this paragraph.

§ 60.4217 What emission standards must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels?

(a) Owners and operators of stationary CI ICE that do not use diesel fuel, or who have been given authority by the Administrator under §60.4207(d) of this subpart to use fuels that do not meet the fuel requirements of paragraphs (a) and (b) of §60.4207, may petition the Administrator for approval of alternative emission standards, if they can demonstrate that they use a fuel that is not

the fuel on which the manufacturer of the engine certified the engine and that the engine cannot meet the applicable standards required in §60.4202 or §60.4203 using such fuels.

(b) [Reserved]

General Provisions

§ 60.4218 What parts of the General Provisions apply to me?

Table 8 to this subpart shows which parts of the General Provisions in §§60.1 through 60.19 apply to you.

Definitions

§ 60.4219 What definitions apply to this subpart?

As used in this subpart, all terms not defined herein shall have the meaning given them in the CAA and in subpart A of this part.

Combustion turbine means all equipment, including but not limited to the turbine, the fuel, air, lubrication and exhaust gas systems, control systems (except emissions control equipment), and any ancillary components and sub-components comprising any simple cycle combustion turbine, any regenerative/recuperative cycle combustion turbine, the combustion turbine portion of any cogeneration cycle combustion system, or the combustion turbine portion of any combined cycle steam/electric generating system.

Compression ignition means relating to a type of stationary internal combustion engine that is not a spark ignition engine.

Diesel fuel means any liquid obtained from the distillation of petroleum with a boiling point of approximately 150 to 360 degrees Celsius. One commonly used form is number 2 distillate oil.

Diesel particulate filter means an emission control technology that reduces PM emissions by trapping the particles in a flow filter substrate and periodically removes the collected particles by either physical action or by oxidizing (burning off) the particles in a process called regeneration.

Emergency stationary internal combustion engine means any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary ICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary ICE used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity are not considered to be emergency engines.

Engine manufacturer means the manufacturer of the engine. See the definition of “manufacturer” in this section.

Fire pump engine means an emergency stationary internal combustion engine certified to NFPA requirements that is used to provide power to pump water for fire suppression or protection.

Manufacturer has the meaning given in section 216(1) of the Act. In general, this term includes any person who manufactures a stationary engine for sale in the United States or otherwise introduces a new stationary engine into commerce in the United States. This includes importers who import stationary engines for sale or resale.

Maximum engine power means maximum engine power as defined in 40 CFR 1039.801.

Model year means either:

(1) The calendar year in which the engine was originally produced, or

(2) The annual new model production period of the engine manufacturer if it is different than the calendar year. This must include January 1 of the calendar year for which the model year is named. It may not begin before January 2 of the previous calendar year and it must end by December 31 of the named calendar year. For an engine that is converted to a stationary engine after being placed into service as a nonroad or other non-stationary engine, model year means the calendar year or new model production period in which the engine was originally produced.

Other internal combustion engine means any internal combustion engine, except combustion turbines, which is not a reciprocating internal combustion engine or rotary internal combustion engine.

Reciprocating internal combustion engine means any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work.

Rotary internal combustion engine means any internal combustion engine which uses rotary motion to convert heat energy into mechanical work.

Spark ignition means relating to a gasoline, natural gas, or liquefied petroleum gas fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to the theoretical Otto combustion cycle. Spark ignition engines usually use a throttle to regulate intake air flow to control power during normal operation. Dual-fuel engines in which a liquid fuel (typically diesel fuel) is used for CI and gaseous fuel (typically natural gas) is used as the primary fuel at an annual average ratio of less than 2 parts diesel fuel to 100 parts total fuel on an energy equivalent basis are spark ignition engines.

Stationary internal combustion engine means any internal combustion engine, except combustion turbines, that converts heat energy into mechanical work and is not mobile. Stationary ICE differ from mobile ICE in that a stationary internal combustion engine is not a nonroad engine as defined at 40 CFR 1068.30 (excluding paragraph (2)(ii) of that definition), and is not used to propel a motor vehicle or a vehicle used solely for competition. Stationary ICE include reciprocating ICE, rotary ICE, and other ICE, except combustion turbines.

Subpart means 40 CFR part 60, subpart IIII.

Useful life means the period during which the engine is designed to properly function in terms of reliability and fuel consumption, without being remanufactured, specified as a number of hours of operation or calendar years, whichever comes first. The values for useful life for stationary CI ICE with a displacement of less than 10 liters per cylinder are given in 40 CFR 1039.101(g). The values for useful life for stationary CI ICE with a displacement of greater than or equal to 10 liters per cylinder and less than 30 liters per cylinder are given in 40 CFR 94.9(a).

Table 1 to Subpart IIII of Part 60—Emission Standards for Stationary Pre-2007 Model Year Engines With a Displacement of <10 Liters per Cylinder and 2007–2010 Model Year Engines >2,237 KW (3,000 HP) and With a Displacement of <10 Liters per Cylinder

[As stated in §§60.4201(b), 60.4202(b), 60.4204(a), and 60.4205(a), you must comply with the following emission standards]

Maximum engine power	Emission standards for stationary pre-2007 model year engines with a displacement of <10 liters per cylinder and 2007–2010 model year engines >2,237 KW (3,000 HP) and with a displacement of <10 liters per cylinder in g/KW-hr (g/HP-hr)				
	NMHC + NO_X	HC	NO_X	CO	PM
KW<8 (HP<11)	10.5 (7.8)			8.0 (6.0)	1.0 (0.75)
8≤KW<19 (11≤HP<25)	9.5 (7.1)			6.6 (4.9)	0.80 (0.60)
19≤KW<37 (25≤HP<50)	9.5 (7.1)			5.5 (4.1)	0.80 (0.60)
37≤KW<56 (50≤HP<75)			9.2 (6.9)		
56≤KW<75 (75≤HP<100)			9.2 (6.9)		
75≤KW<130 (100≤HP<175)			9.2 (6.9)		
130≤KW<225 (175≤HP<300)		1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)
225≤KW<450 (300≤HP<600)		1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)
450≤KW≤560 (600≤HP≤750)		1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)
KW>560 (HP>750)		1.3 (1.0)	9.2 (6.9)	11.4 (8.5)	0.54 (0.40)

Table 2 to Subpart IIII of Part 60—Emission Standards for 2008 Model Year and Later Emergency Stationary CI ICE <37 KW (50 HP) With a Displacement of <10 Liters per Cylinder

[As stated in §60.4202(a)(1), you must comply with the following emission standards]

Engine power	Emission standards for 2008 model year and later emergency stationary CI ICE <37 KW (50 HP) with a displacement of <10 liters per cylinder in g/KW-hr (g/HP-hr)			
	Model year(s)	NO_X+ NMHC	CO	PM
KW<8 (HP<11)	2008+	7.5 (5.6)	8.0 (6.0)	0.40 (0.30)
8≤KW<19 (11≤HP<25)	2008+	7.5 (5.6)	6.6 (4.9)	0.40 (0.30)
19≤KW<37 (25≤HP<50)	2008+	7.5 (5.6)	5.5 (4.1)	0.30 (0.22)

Table 3 to Subpart IIII of Part 60—Certification Requirements for Stationary Fire Pump Engines

[As stated in §60.4202(d), you must certify new stationary fire pump engines beginning with the following model years:]

Engine power	Starting model year engine manufacturers must certify new stationary fire pump engines according to §60.4202(d)
KW<75 (HP<100)	2011
75≤KW<130 (100≤HP<175)	2010
130≤KW≤560 (175≤HP≤750)	2009
KW>560 (HP>750)	2008

Table 4 to Subpart IIII of Part 60—Emission Standards for Stationary Fire Pump Engines

[As stated in §§60.4202(d) and 60.4205(c), you must comply with the following emission standards for stationary fire pump engines]

Maximum engine power	Model year(s)	NMHC + NO_X	CO	PM
KW<8 (HP<11)	2010 and earlier	10.5 (7.8)	8.0 (6.0)	1.0 (0.75)
	2011+	7.5 (5.6)		0.40 (0.30)
8≤KW<19 (11≤HP<25)	2010 and earlier	9.5 (7.1)	6.6 (4.9)	0.80 (0.60)
	2011+	7.5 (5.6)		0.40 (0.30)
19≤KW<37 (25≤HP<50)	2010 and earlier	9.5 (7.1)	5.5 (4.1)	0.80 (0.60)
	2011+	7.5 (5.6)		0.30 (0.22)
37≤KW<56 (50≤HP<75)	2010 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2011+[1]	4.7 (3.5)		0.40 (0.30)
56≤KW<75 (75≤HP<100)	2010 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2011+[1]	4.7 (3.5)		0.40 (0.30)
75≤KW<130 (100≤HP<175)	2009 and earlier	10.5 (7.8)	5.0 (3.7)	0.80 (0.60)
	2010+[2]	4.0 (3.0)		0.30 (0.22)
130≤KW<225 (175≤HP<300)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009+[3]	4.0 (3.0)		0.20 (0.15)
225≤KW<450 (300≤HP<600)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009+[3]	4.0 (3.0)		0.20 (0.15)
450≤KW≤560 (600≤HP≤750)	2008 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2009+	4.0 (3.0)		0.20 (0.15)
KW>560 (HP>750)	2007 and earlier	10.5 (7.8)	3.5 (2.6)	0.54 (0.40)
	2008+	6.4 (4.8)		0.20 (0.15)

[1]For model years 2011–2013, manufacturers, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 revolutions per minute (rpm) may comply with the emission limitations for 2010 model year engines.

[2]For model years 2010–2012, manufacturers, owners and operators of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2009 model year engines.

[3]In model years 2009–2011, manufacturers of fire pump stationary CI ICE in this engine power category with a rated speed of greater than 2,650 rpm may comply with the emission limitations for 2008 model year engines.

Table 5 to Subpart IIII of Part 60—Labeling and Recordkeeping Requirements for New Stationary Emergency Engines

[You must comply with the labeling requirements in §60.4210(f) and the recordkeeping requirements in §60.4214(b) for new emergency stationary CI ICE beginning in the following model years:]

Engine power	Starting model year
19≤KW<56 (25≤HP<75)	2013
56≤KW<130 (75≤HP<175)	2012
KW≥130 (HP≥175)	2011

Table 6 to Subpart IIII of Part 60—Optional 3-Mode Test Cycle for Stationary Fire Pump Engines

[As stated in §60.4210(g), manufacturers of fire pump engines may use the following test cycle for testing fire pump engines:]

Mode No.	Engine speed[1]	Torque (percent)[2]	Weighting factors
1	Rated	100	0.30
2	Rated	75	0.50
3	Rated	50	0.20

[1]Engine speed: ±2 percent of point.

[2]Torque: NFPA certified nameplate HP for 100 percent point. All points should be ±2 percent of engine percent load value.

Table 7 to Subpart IIII of Part 60—Requirements for Performance Tests for Stationary CI ICE With a Displacement of ≥30 Liters per Cylinder

[As stated in §60.4213, you must comply with the following requirements for performance tests for stationary CI ICE with a displacement of ≥30 liters per cylinder:]

For each	Complying with the requirement to	You must	Using	According to the following requirements
1. Stationary CI internal combustion engine with a displacement of ≥30 liters per cylinder	a. Reduce NO_Xemissions by 90 percent or more	i. Select the sampling port location and the number of traverse points;	(1) Method 1 or 1A of 40 CFR part 60, appendix A	(a) Sampling sites must be located at the inlet and outlet of the control device.
		ii. Measure O_2at the inlet and outlet of the control device;	(2) Method 3, 3A, or 3B of 40 CFR part 60, appendix A	(b) Measurements to determine O_2concentration must be made at the same time as the measurements for NO_Xconcentration.
		iii. If necessary, measure moisture content at the inlet and outlet of the control device; and,	(3) Method 4 of 40 CFR part 60, appendix A, Method 320 of 40 CFR part 63, appendix A, or ASTM D 6348–03 (incorporated by reference, see §60.17)	(c) Measurements to determine moisture content must be made at the same time as the measurements for NO_Xconcentration.
		iv. Measure NO_Xat the inlet and outlet of the control device	(4) Method 7E of 40 CFR part 60, appendix A, Method 320 of 40 CFR part 63, appendix A, or ASTM D 6348–03 (incorporated by reference, see §60.17)	(d) NO_Xconcentration must be at 15 percent O_2, dry basis. Results of this test consist of the average of the three 1-hour or longer runs.
	b. Limit the concentration of NO_Xin the stationary CI internal combustion engine exhaust.	i. Select the sampling port location and the number of traverse points;	(1) Method 1 or 1A of 40 CFR part 60, appendix A	(a) If using a control device, the sampling site must be located at the outlet of the control device.

		ii. Determine the O_2concentration of the stationary internal combustion engine exhaust at the sampling port location; and,	(2) Method 3, 3A, or 3B of 40 CFR part 60, appendix A	(b) Measurements to determine O_2concentration must be made at the same time as the measurement for NO_Xconcentration.
		iii. If necessary, measure moisture content of the stationary internal combustion engine exhaust at the sampling port location; and,	(3) Method 4 of 40 CFR part 60, appendix A, Method 320 of 40 CFR part 63, appendix A, or ASTM D 6348–03 (incorporated by reference, see §60.17)	(c) Measurements to determine moisture content must be made at the same time as the measurement for NO_Xconcentration.
		iv. Measure NO_Xat the exhaust of the stationary internal combustion engine	(4) Method 7E of 40 CFR part 60, appendix A, Method 320 of 40 CFR part 63, appendix A, or ASTM D 6348–03 (incorporated by reference, see §60.17)	(d) NO_Xconcentration must be at 15 percent O_2, dry basis. Results of this test consist of the average of the three 1-hour or longer runs.
	c. Reduce PM emissions by 60 percent or more	i. Select the sampling port location and the number of traverse points;	(1) Method 1 or 1A of 40 CFR part 60, appendix A	(a) Sampling sites must be located at the inlet and outlet of the control device.
		ii. Measure O_2at the inlet and outlet of the control device;	(2) Method 3, 3A, or 3B of 40 CFR part 60, appendix A	(b) Measurements to determine O_2concentration must be made at the same time as the measurements for PM concentration.
		iii. If necessary, measure moisture content at the inlet and outlet of the control device; and	(3) Method 4 of 40 CFR part 60, appendix A	(c) Measurements to determine and moisture content must be made at the same time as the measurements for PM concentration.

		iv. Measure PM at the inlet and outlet of the control device	(4) Method 5 of 40 CFR part 60, appendix A	(d) PM concentration must be at 15 percent O_2, dry basis. Results of this test consist of the average of the three 1-hour or longer runs.
	d. Limit the concentration of PM in the stationary CI internal combustion engine exhaust	i. Select the sampling port location and the number of traverse points;	(1) Method 1 or 1A of 40 CFR part 60, appendix A	(a) If using a control device, the sampling site must be located at the outlet of the control device.
		ii. Determine the O_2concentration of the stationary internal combustion engine exhaust at the sampling port location; and	(2) Method 3, 3A, or 3B of 40 CFR part 60, appendix A	(b) Measurements to determine O_2concentration must be made at the same time as the measurements for PM concentration.
		iii. If necessary, measure moisture content of the stationary internal combustion engine exhaust at the sampling port location; and	(3) Method 4 of 40 CFR part 60, appendix A	(c) Measurements to determine moisture content must be made at the same time as the measurements for PM concentration.
		iv. Measure PM at the exhaust of the stationary internal combustion engine	(4) Method 5 of 40 CFR part 60, appendix A	(d) PM concentration must be at 15 percent O_2, dry basis. Results of this test consist of the average of the three 1-hour or longer runs.

Table 8 to Subpart IIII of Part 60—Applicability of General Provisions to Subpart IIII

[As stated in §60.4218, you must comply with the following applicable General Provisions:]

General Provisions citation	Subject of citation	Applies to subpart	Explanation
§60.1	General applicability of the General Provisions	Yes	
§60.2	Definitions	Yes	Additional terms defined in §60.4219.
§60.3	Units and abbreviations	Yes	

§60.4	Address	Yes	
§60.5	Determination of construction or modification	Yes	
§60.6	Review of plans	Yes	
§60.7	Notification and Recordkeeping	Yes	Except that §60.7 only applies as specified in §60.4214(a).
§60.8	Performance tests	Yes	Except that §60.8 only applies to stationary CI ICE with a displacement of (≥30 liters per cylinder and engines that are not certified.
§60.9	Availability of information	Yes	
§60.10	State Authority	Yes	
§60.11	Compliance with standards and maintenance requirements	No	Requirements are specified in subpart IIII.
§60.12	Circumvention	Yes	
§60.13	Monitoring requirements	Yes	Except that §60.13 only applies to stationary CI ICE with a displacement of (≥30 liters per cylinder.
§60.14	Modification	Yes	
§60.15	Reconstruction	Yes	
§60.16	Priority list	Yes	
§60.17	Incorporations by reference	Yes	
§60.18	General control device requirements	No	
§60.19	General notification and reporting requirements	Yes	

Attachment E

DUST CONTROL PLAN
FOR
FUGITIVE PARTICULATE MATTER

Synergy Management, LLC
Synergy Lime Plant
Monon, Indiana

Prepared for:
Indiana Department of Environmental Management
Office of Air Quality
100 North Senate Ave.
Indianapolis, IN 43204

Prepared by:
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August 14, 2008

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Appendix A: DAILY TREATMENT LOG
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Appendix D: SYNERGY PLANT FLOW DIAGRAM (KILNS 1-2)**
Appendix E: PRODUCT HANDLING SYSTEM FLOW DIAGRAM**
Appendix F: MATERIAL HANDLING FLOW DIAGRAM (KILNS 1-2)**

**Not attached; Available with air quality permit application.

1.0 IMPLEMENTATION

1.1 All procedures described in this document will be implemented as defined within 326 IAC 6-1-11.1. Any circumstances delaying or modifying the application of any part of the program will require notification of the appropriate individuals listed under the personnel responsibilities.

1.2 The enclosed **Daily Treatment Log** (*See Appendix A*) will be completed under the supervision of the general Foreman.

2.0 PERSONNEL RESPONSIBILITIES

2.1 Plant Manager and General Foreman

2.1.1 Ensure that supervisory personnel understand the plan procedures and that implementation is performed in a timely fashion.

2.1.2 Review the daily record keeping forms to ensure the plant procedures are being performed as required.

2.1.3 When traveling throughout the plant, note whether the plant procedures have been implemented, and their effectiveness towards the control of fugitive emissions.

2.1.4 Advise the Area Operations Manager of any plan implementation problems, proposed postponement, or proposed modification of plan implementation.

2.2 Supervisory Personnel

2.2.1 Department supervisors, shift supervisors, and foremen will select and instruct the appropriate personnel who will implement the plan procedures.

2.2.2 Review the daily record keeping forms prior to forwarding to the Plant Manager.

2.2.3 Advise the Plant Manager or Production superintendent of any problems with the fugitive dust operating plan.

2.3 Plant Personnel

2.3.1 Will perform the appropriate assigned activity as required by the plan procedures.

2.3.2 Will complete the record keeping forms with the appropriate information upon completion of any plan procedure.

2.3.3 Will notify supervisory personnel of any fugitive dust emission in the plant that require attention.

2.3.4 Will notify supervisory personnel of the control effectiveness or lack therein of plan procedures.

3.0 COMPLIANCE DETERMINATION

3.1 The plant supervisory personnel will review on a daily basis the plant areas that are subject to fugitive dust control needs and/or actions. Comments of daily reviews will be included as necessary on the Daily Treatment Log Sheet.

3.2 Review of record keeping information.

3.3 Submit to the Indiana Department of Environmental Management a performance report on a quarterly basis identifying the dates and the number of times when specifies control measures were not implemented as required.

4.0 FACILITY DESCRIPTION

Locations of paved and unpaved roads, parking lots, material stockpiles, lime processing, material transfer equipment, kilns, and associated particulate handling equipment are shown in Appendices B-G. The FLC lime plant will manufacture dolomitic lime using two preheater rotary kilns with a total nominal production capacity of 1,800 tons per day. The facility is assigned Standard Industrial Classification (SIC) Code 3274. The lime production process begins with dolomitic limestone rock, which is composed primarily of calcium carbonate, $CaCO_3$, and magnesium carbonate, $MgCO_3$. Pre-sized limestone is “calcined” in the lime kiln in the presence of heat provided by a coal-fired heater. The reaction, which requires a minimum temperature of approximately 1300° F, is as follows:

$$CaCO_3 \cdot MgCO_3 + \text{heat} \rightarrow CaO \cdot MgO \text{ (dolomitic lime)} + 2CO_2$$

Other processes at the facility include screening, transfer, and storage of limestone and lime.

5.0 LOADING or UNLOADING of OPEN STOCKPILES and BULK MATERIALS

5.1 Transportation of Bulk Materials

5.1.1 Dolomitic Limestone

Dolomitic limestone for this plant will be extracted and processed at an independently owned quarry and rock crushing plant adjacent to the facility. Prepared limestone from the adjacent quarry will be conveyed to a stockpile at the lime manufacturing plant. An underground feed system will collect stone from the surface pile via a system of chutes and convey it to a screen for final classification prior to supplying the preheaters. The silt content of the crushed limestone is 1.6%. This factor, in addition to water sprays and retained moisture, are proposed strategies for reducing fugitive particulate emissions from stone handling operations.

5.1.2 Coal

Coal will be delivered to the facility by truck and unloaded to a storage pile. A front-end loader will move coal from the pile to a partially enclosed hopper that, in turn, will convey coal to a storage bin.

The coal silt content is approximately 2.2% by weight. This factor, in addition to the coal having a moisture content of approximately 15%, helps eliminate fugitive emissions from occurring during the coal transfer operations.

5.2 Transportation of Bulk Products

These materials are transported from the facility in haul trucks which are not the property of Synergy Lime Company. Open bed trucks are required to be equipped with tarpaulins which cover the bed of the truck. Covering of the bed of the truck is performed by the respective truck operator prior to exiting the plant.

Trucks are loaded in the load-out areas, which are equipped with aspirated, telescoping nozzles. Particulate emissions from these operations will be controlled by fabric filter baghouses and passive bin vent filters.

Cleaning of the wheels and bodies of the trucks will be the responsibility of each truck operator. It will also be the responsibility of the truck operator to maintain the body of the truck in good condition to ensure that material does not leak out during shipment. Truck wheel and body cleaning takes place at the load-out areas.

The load-out area housekeeping and maintenance will be a designated responsibility of the individual operator for each shift. The plant will have a water truck permanently located at the site for use in cleaning plant roadways. The plant supervisor will ensure that the housekeeping procedures are followed.

The plant speed limit will be 8 mph and will be strictly enforced as both a safety and fugitive dust control.

5.3 Outdoor Conveying

Material flow diagrams identifying existing control equipment for all processing lines are shown in the Plant Layout Diagram in the Report Appendices.

5.3.1 Undersize/Oversize Limestone

Limestone is transferred by gravimetric feed to an enclosed tunnel conveyor system. The limestone will be transferred by conveyors and separated by size. Undersized and oversized limestone will be transferred to separate piles by conveyors and screens. The moisture content of the limestone will make venting of the conveyor transfer points unnecessary.

5.3.2 Flue Dust

Flue dust will be transferred to a storage pile by a screw conveyor equipped with a water sprayer. The seven percent (7%) moisture content of the flue dust will be a sufficient fugitive dust control.

5.3.3 Coal

Coal is transferred by a front-end loader to a below-grade hopper. The hopper will feed a conveyor system which transfers the coal to an enclosed storage silo. The fifteen

(15%) moisture content of the coal makes venting the transfer points unnecessary.

5.4 Paved Road and Parking Areas

Primary roadways and parking areas at the Synergy plant are paved.

The primary roadway that will be used by vehicles traveling in the plant is indicated on the Plant Layout Diagram in the Report Appendices.

5.4.1 Listing of Roadway Segments (All distances are approximate)

5.4.1.1 Plant Entrance Segment – One thousand nine hundred and fifty (1950) feet long and seventy five (75) feet wide.

5.4.1.2 Fuel Haul Road Segment – Three thousand three hundred thirty (3330) feet long and fifty five (55) feet wide.

5.4.1.3 Product Haul Road Segment – Four thousand twenty (4020) feet long and fifty five (55) feet wide.

5.4.1.4 Employee Parking Entry Road and Parking Lot Segment – TBD

5.4.2 Vehicle Traffic Volume

The traffic volume on the plant roadways varies directly with lime production rates. Approximate vehicular traffic volumes and mileage are estimated as follows:

Materials Shipped	Vehicle Type	Number of Vehicle Trips Per Year	Annual Vehicle Miles on Site
Lime	Trucks	24,010	17,130
Coal	Trucks	4,730	6510
---	Employee Vehicles	TBD	TBD

5.4.3 Control Action – The active paved roadways will be watered and/or swept as needed except as specified in AP-42 on

those days when precipitation exceeds 0.1 inch, or on those days when freezing conditions could create a safety hazard.

5.5 Unpaved Roads

5.5.1 Plant Road Segment – This unpaved roadway is approximately one thousand three hundred thirty five (1335) feet long and seventy five (75) feet wide. The road will typically be used by front-end loaders and occasional plant trucks.

5.5.2 Haul Road Segment – This unpaved roadway is approximately seven hundred sixty one (761) feet long and fifty six (56) feet wide. The road will typically be used by haul trucks traveling to and from the loading and unloading locations and front-end loaders traveling to the coal hopper.

5.6 Unpaved Plant Areas (TBD)

5.6.1 Control Action – The active unpaved areas will be watered as needed except as specified in AP-42 on those days when precipitation exceeds 0.1 inch, or on those days when freezing conditions could create a safety hazard.

5.7 Stockpiles

5.7.1 Limestone

The limestone stockpiles are fed by conveyors from the adjacent quarry.

The retained moisture content of the limestone will effectively control fugitive emissions from the stockpile.

The front-end loader used to work the stockpiles will not generate significant fugitive emissions due to the moisture content of the limestone. If conditions warrant, a water truck will be used to minimize fugitive dust generation.

5.7.2 Undersized Limestone

The undersized limestone stockpile is fed by enclosed conveyors from limestone stockpiles.

The retained moisture content of the limestone will effectively control fugitive emissions from the stockpile.

The front-end loader used to work the stockpiles will not generate significant fugitive emissions due to the moisture content of the limestone. If conditions warrant, a water truck will be used to minimize fugitive dust generation.

5.7.3 Oversized Limestone

The oversized limestone stockpile is fed by enclosed conveyors from limestone stockpiles.

The retained moisture content of the limestone will effectively control fugitive emissions from the stockpile.

The front-end loader used to work the stockpiles will not generate significant fugitive emissions due to the moisture content of the limestone. If conditions warrant, a water truck will be used to minimize fugitive dust generation.

5.7.4 Flue Dust

The flue dust stockpile is fed by a screw conveyor equipped with a water sprayer. The seven percent (7%) moisture content of the flue dust will be a sufficient fugitive dust control.

The front-end loader used to work the stockpiles will not generate significant fugitive emissions due to the moisture content of the flue dust. If conditions warrant, a water truck will be used to minimize fugitive dust generation.

6.0 CONDITIONS WHICH WILL PREVENT CONTROL MEASURES and PRACTICES from IMPLEMENTATION

All equipment used to implement control measures identified in this plan will have replacement components or substitutes that can be employed within a reasonable time frame.

7.0 FUGITIVE DUST EMISSIONS OBSERVATIONS

Observations will be made on a monthly basis of the following activities:

7.1 The average instantaneous opacity of fugitive particulate emissions from paved and/or unpaved roads shall not exceed ten percent (10%). The average instantaneous opacity shall be the average of

twelve (12) instantaneous opacity readings, taken for four (4) vehicle passes, consisting of three (3) opacity readings for each vehicle pass. The three (3) opacity readings for each vehicle pass shall be taken as follows:

(A) The first shall be taken at the time of emission generation.
(B) The second shall be taken five (5) seconds later.
(C) The third shall be taken five (5) seconds later or ten (10) seconds after the first.

The three (3) readings shall be taken at the point of maximum opacity. The observer shall stand approximately fifteen (15) feet from the plume and at approximately right angles to the plume. Each reading shall be taken approximately four (4) feet above the surface of the roadway or parking area.

7.2 The average instantaneous opacity of fugitive particulate emissions from batch transfer shall not exceed ten percent (10%). The average instantaneous opacity shall consist of the average of three (3) opacity readings taken five (5) seconds, ten (10) seconds, and fifteen (15) seconds after the end of the (1) batch loading or unloading operation. The three (3) readings shall be taken at the point of maximum opacity. The observer shall stand approximately fifteen (15) feet from the plume and at approximately right angles to the plume.

7.3 The opacity due to wind erosion from storage piles and exposed areas shall be determined using 40 CFR 60, Appendix a, Method 9, except that the opacity shall be observed at approximately four (4) feet from the surface at the point of maximum opacity. The observer shall stand approximately fifteen (15) feet from the plume and approximately right angles to the plume. The opacity of fugitive particulate emissions from exposed areas shall not exceed ten percent (10%) on a six (6) minute average.

7.4 The opacity of fugitive particulate emissions from the in-plant transportation of material by front end loaders shall not exceed ten percent (10%). Compliance with this limitation shall be determined by the average of three (3) opacity readings taken at five (5) second intervals. The three (3) opacity readings shall be taken as follows:

(A) The first shall be taken at the time of emission generation.
(B) The second shall be taken five (5) seconds later.
(C) The third shall be taken five (5) seconds later or ten (10) seconds after the first.

The three (3) readings shall be taken at the point of maximum opacity. The observer shall stand at least fifteen (15) feet from the plume and at right angles to the plume. Each reading shall be taken approximately four (4) feet above the surface of the roadway or parking area.

7.5 Material transported by truck that is enclosed and covered is considered in compliance with the in-plant transportation requirement of zero (0) percent opacity.

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Prevention of Significant Deterioration (PSD) and Part 70 Permit

Source Description and Location

Source Name:	Synergy Management, LLC
Source Location:	5600 N. US Highway 421, Monon, IN 47959
County: White	
SIC Code:	3274
Operation Permit No.:	T181-26877-00050
Permit Reviewer:	Madhurima D. Moulik

Existing Approvals

There have been no previous approvals issued to this source.

County Attainment Status

The source is located in White County.

Pollutant Designation	
SO_2	Better than national standards.
CO	Unclassifiable or attainment effective November 15, 1990.
O_3	Unclassifiable or attainment effective June 15, 2004, for the 8-hour ozone standard.[1]
PM_{10}	Unclassifiable effective November 15, 1990.
NO_2	Cannot be classified or better than national standards.
Pb Not	designated.
[1]Unclassifiable or attainment effective October 18, 2000, for the 1-hour ozone standard which was revoked effective June 15, 2005. Unclassifiable or attainment effective April 5, 2005, for PM2.5.	

(a) Ozone Standards

(1) On October 25, 2006, the Indiana Air Pollution Control Board finalized a rule revision to 326 IAC 1-4-1 revoking the one-hour ozone standard in Indiana.

(2) On September 6, 2007, the Indiana Air Pollution Control Board finalized a temporary emergency rule to re-designate Allen, Clark, Elkhart, Floyd, LaPorte, and St. Joseph counties as attainment for the 8-hour ozone standard.

(3) On November 9, 2007, the Indiana Air Pollution Control Board finalized a temporary emergency rule to re-designate Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby counties as attainment for the 8-hour ozone standard.

(4) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) 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 NOx emissions are considered when evaluating the rule applicability relating to

ozone. White County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) White County has been classified as attainment for PM2.5. On May 8, 2008 U.S. EPA promulgated the requirements for Prevention of Significant Deterioration (PSD) for PM2.5 emissions, and the effective date of these rules is July 15, 2008. Indiana has three years from the publication of these rules to revise its PSD rules, 326 IAC 2-2, to include those requirements. The May 8, 2008 rule revisions require IDEM to regulate PM10 emissions as a surrogate for PM2.5 emissions until 326 IAC 2-2 is revised.

(c) Other Criteria Pollutants
White County has been classified as attainment or unclassifiable in Indiana for all other criteria pollutants. 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 lime manufacturing plant, 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.

Description of New Source Construction

The Office of Air Quality (OAQ) has reviewed a new source construction application, submitted by Synergy Management, LLC on August 15, 2008, relating to the construction of a low-sulfur dolomitic lime manufacturing facility. The following is a list of the proposed emission units and pollution control devices:

(a) Two (2) rotary lime kilns, permitted in 2009, each with a maximum capacity of 900 tons per day of lime produced, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using baghouse DC1 and baghouse DC2, respectively for PM control, and exhausting to Stack #1 and Stack #2, respectively.

(b) Two (2) preheaters, permitted in 2009, each with a maximum capacity of 1800 tons per day of limestone feed, identified as Preheater #1 and Preheater #2, using baghouses DC1 and DC2 for PM control, and exhausting to Stacks #1 and #2.

(c) Two (2) lime coolers, permitted in 2009, each with a maximum capacity of 900 tons per day, identified as Cooler #1 and Cooler #2, using baghouses DC3 and DC4 for PM control of lime offload transfers, exhausting to Stack #3 and Stack #4, respectively.

Loadout, storage silos and piles, drop points, and material transfer processes, identified as transfer points 1 through 153, including the following:

(d) Two (2) coal mills, permitted in 2009, each with a maximum capacity of 240 tons per day, identified as Coal Mill #1 and Coal Mill #2.

(e) Six (6) limestone screens, permitted in 2009, maximum capacities ranging from 500 tons per hour to 1000 tons per hour, identified as emission units S1 through S6.

(f) Two (2) lime screens, permitted in 2009, each with a maximum capacity of 50 tons per hour, identified as emission units S7 and S8, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(g) Two (2) lime screens, permitted in 2009, each with a maximum capacity of 50 tons per hour, identified as emission units S9 and S10, with baghouse DC8 for PM control, exhausting to Stack #8.

(h) Sixty-two (62) conveyors, permitted in 2009, identified as C1 through C57 and CC1 through CC5.

(i) Four (4) elevators, permitted in 2009, identified as BE1 through BE4, with baghouses DC5, DC6, DC7, and DC9 for PM control, exhausting to Stacks #5, 6, 9 and 7.

(j) Four (4) lime silos, permitted in 2009, each with a storage capacity of 1000 tons, identified as SL1 through SL4, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(k) One (1) lime fines silo, permitted in 2009, with a storage capacity of 50 tons, identified as SL5, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(l) One (1) Briquetter to Conveyor silo, permitted in 2009, with a storage capacity of 50 tons, identified as SL6, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(m) One (1) off-spec silo, permitted in 2009, with a storage capacity of 100 tons, identified as SL7, with baghouse DC9 for PM control, exhausting to Stack #9.

(n) One (1) flue dust silo, permitted in 2009, with a storage capacity of 250 tons, identified as SL8, with baghouse DC7 for PM control, exhausting to Stack #7.

(o) One (1) coal feed hopper, permitted in 2009, with a capacity of 20 tons, identified as SL9.

(p) Two (2) fuel bins or silos, permitted in 2009, each with a storage capacity of 100 tons, identified as B1 and B2.

(q) Three (3) screw conveyors, permitted in 2009, identified as DS1 through DS3, with baghouses DC1, DC2, and DC7 for PM control, exhausting to Stacks #1, 2, and 7.

(r) One (1) briquetter/mill, permitted in 2009, with a maximum capacity of 50 tons per hour, identified as BQ1, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and #6.

(s) One (1) pneumatic conveyor, permitted in 2009, with a maximum capacity of 50 tons per hour, identified as PN1, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and #6.

(t) Ten (10) feeders, permitted in 2009, identified as F1 through F7, LF1 through LF9 with baghouses DC3 and DC4 for PM control and exhausting to Stacks #3 and 4, and LF10 with baghouse DC9 for PM control and exhausting to Stack #9.

(u) Three (3) crushers, permitted in 2009, identified as CR1 (maximum capacity of 1000 tons per hour), CR2 (maximum capacity of 600 tons per hour) and CR3 (maximum capacity of 200 tons per hour).

(v) Eleven (11) storage piles, permitted in 2009, identified as KFP1 through KFP4 (kiln feed piles), Bit Pile 1 through 4 (bitumen piles), Pile 3 or OVR (oversized limestone pile), Pile 2 or UNDR (undersized limestone pile) and FLPL (fuel pile).

(w) Several material handling systems, or drop transfers, permitted in 2009, for transporting, transferring, and storing limestone, product lime, solid fuel (coal and coke), and lime kiln dust.

(x) One diesel-powered emergency generator, permitted in 2009, with a nominal capacity of 250 kW.

Enforcement Issues

There are no pending enforcement actions.

Stack Summary

Stack ID	Operation	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (^{0}F)
Stack #1	Kiln #1, Cooler 31, C42, DS1, DS2, DS3	150 5.0		117,450	452
Stack #2	Kiln #2, Cooler #2, DS1, DS2, DS7, C43	150 5.0		117,450	452,68
Stack #3	Preheaters #1, 2, C44, C45, LF1 - LF9	30 1.0		8,300	68
Stack #4	Preheaters #1, 2, C44, C45, LF1 - LF9	30 1.0		8,300	68
Stack #5	SL1, SL2, SL3, SL4, SL5, SL6, S7, S8, PN1, BQ1, C46-C51, BE1, BE2	30 1.5		8,833	68
Stack #6	SL 1, SL2, SL3. SL4, SL5, SL6, S7, S8, PN1, BQ1, C46-C51, BE!, BE2	50 1.5		8,333	68
Stack #7	SL8, DS1, DS2, DS7, BE4	30	1.0	100	68
Stack #8	C52-C56	30	1.67	10,500	68
Stack #9	SL7, LF10, BE3	30	1.0	100	68
Stack #10	C57	30	1.0	2,500	68

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.”

This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	**Potential To Emit** (ton/yr)
PM >250	
PM_{10} >250	
SO_2 657.0	
VOC <40.0	
CO 822.0	
NO_X 1151.0	

HAPs	**Potential To Emit** (ton/yr)
Single HAP	greater than 10
TOTAL	greater than 25

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 permit, and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

	Potential to Emit (ton/yr)					
Process / Emission Unit	**PM**	**PM_{10}**	**SO_2**	**VOC**	**CO**	**NO_X**
Transfer	1.39	0.46	--- --- --- ---			
Lime Process	60.20	185.00	657	39.3	821.00	1150
Stone Process	4.63	1.88	--- --- --- ---			
Vehicle and Emergency Generators	10.34	2.05	--- --- --- ---			
Pile Fugitive Emissions	1.99	1.00	--- --- --- ---			
Total	78.60	190.00	657.00	<40.0	822.00	1151.00
Major Source Threshold	100 100	100 100 100	100			

(a) The proposed lime manufacturing plant is major for PSD because the emissions of at least one criteria pollutant are greater than one hundred (>100) tons per year, and it is one of the twenty-eight (28) listed source categories.

(b) 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.

Federal Rule Applicability Determination

(a) The two (2) rotary kilns, Kiln #1 and Kiln #2 are subject to the New Source Performance Standards for Lime Manufacturing Plants (40 CFR 60, Subpart HH), which is incorporated by reference as 326 IAC 12. The units subject to this rule include the following:

- Two (2) rotary lime kilns, permitted in 2009, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using Baghouse DC1 and Baghouse DC2, respectively, for PM control, and exhausting to Stack #1 and Stack #2, respectively.

Nonapplicable portions of the NSPS will not be included in the permit. Kiln #1 and Kiln #2 are subject to the following portions of Subpart HH.

(1) 40 CFR 60.342(a)(1)
(2) 40 CFR 60.343(a)
(3) 40 CFR 60.344(b)(2)

(b) Emission units identified as conveyors C1 through C42, screens S1 through S6, and crushers CR1 through CR3 are 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 emissions units identified above are subject to the following portions of Subpart OOO.

(1) 40 CFR 60.670
(2) 40 CFR 60.671
(3) 40 CFR 60.672
(4) 40 CFR 60.675(c)(1)
(5) 40 CFR 60.676(h)

(c) The proposed diesel powered emergency generator is subject to the National Emission Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60, Subpart IIII), which is incorporated by reference as 326 IAC 12. The unit subject to this rule is as follows:

(1) One (1) diesel-powered emergency generator, permitted in 2009, with a nominal capacity of 250 kW.

The emergency generator identified above is subject to the following portions of Subpart IIII:

(1) 40 CFR 60.4200
(2) 40 CFR 60.4201
(3) 40 CFR 60.4202
(4) 40 CFR 60.4205
(5) 40 CFR 60.4206
(6) 40 CFR 60.4207
(7) 40 CFR 60.4209
(8) 40 CFR 60.4210
(9) 40 CFR 60.4211
(10) 40 CFR 60.4212
(11) 40 CFR 60.4213
(12) 40 CFR 60.4214
(13) 40 CFR 60.4218
(14) 40 CFR 60.4219

(d) The proposed lime manufacturing plant is subject to the National Emission Standards for Hazardous Air Pollutants for Lime Manufacturing Plants (40 CFR 63, Subpart AAAAA), which is incorporated by reference as 326 IAC 20-91. The units subject to this rule include the following:

(1) Two (2) rotary lime kilns, permitted in 2008, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using Baghouse DC1 and Baghouse DC2, respectively, for PM control, and exhausting to Stack #1 and Stack #2, respectively.

(2) Two (2) coolers, permitted in 2008, identified as Cooler #1 and Cooler #2, exhausting to Stack #1 and Stack #2, respectively.

(3) Six (6) screens, permitted in 2008, identified as emission units S1 through S6.

Nonapplicable portions of the NESHAP will not be included in the permit. The emissions units listed above are subject to the following portions of Subpart AAAAA:

(1) 40 CFR 63.7080
(2) 40 CFR 63.7081
(3) 40 CFR 63.7082
(4) 40 CFR 63.7083(a)
(5) 40 CFR 63.7090(a), (b), Table 1, Table 2(Item 1)
(6) 40 CFR 63.7100(d)
(7) 40 CFR 63.7120
(8) 40 CFR 63.7121
(9) 40 CFR 63.7114
(10) 40 CFR 63.7110
(11) 40 CFR 63.7112
(12) 40 CFR 63.7132
(13) 40 CFR 63.7130
(14) 40 CFR 63.7131

The provisions of 40 CFR 63 Subpart A – General Provisions, which are incorporated as 326 IAC 20-1-1, apply to the facility described in this section except when otherwise specified in 40 CFR 63 Subpart AAAAA.

(d) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is applicable to each new or modified pollutant-specific emission unit that meets the following criteria:

(1) has a potential to emit before controls equal to or greater than the Part 70 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 following table is used to identify the applicability of each of the criteria, under 40 CFR 64.1, to each new or modified emission unit involved, for PM and PM-10:

CAM Applicability Analysis							
Emission Unit	**Control Device Used**	**Emission Limitation** (Y/N)	**Uncontrolled PTE** (ton/yr)	**Controlled PTE** (ton/yr)	**Part 70 Major Source Threshold** (ton/yr)	**CAM Applicable** (Y/N)	**Large Unit** (Y/N)
Stone Crushers CR1 - CR3	Y Y		<100 <100		100	N	N
Screens S1-S8	Y Y		<100 <100		100	N	N
Transfers	Y Y		<100 <100		100	N	N
Kilns #1 and #2 each	Y Y		>100 >100		100	N*	N

*****Emission units subject to a standard proposed after 11/15/90 pursuant to Section 111 or 112 of the CAA are exempt from the requirements of 40 CFR 64. The proposed lime kilns will be subject to the NESHAP Subpart AAAAA that was promulgated after 11/15/1990.

Based on this evaluation, the requirements of 40 CFR Part 64, CAM are not applicable to any of the emission units as part of this new source construction permit.

State Rule Applicability Determination

The state rule applicabilities for this lime manufacturing plant are as follows:

326 IAC 2-1.1-5 (Nonattainment New Source Review)
Nonattainment New Source Review applicability is discussed under the Permit Level Determination – PSD and Emission Offset section.

326 IAC 2-2 and 2-3 (PSD)
PSD applicability is discussed under the Permit Level Determination – PSD section.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))
Pursuant to 326 IAC 2-4.1-1(b)(2), the requirements of 326 IAC 2-4.1-1 do not apply to a major source specifically regulated, or exempt from regulation, by a standard issued pursuant to Section 112(d), 112(h), or 112(j) of the CAA. The proposed lime manufacturing plant is subject to 40 CFR 63, Subpart AAAAA under Section 112(d) of the Clean Air Act. Therefore, this plant is not subject to the requirements of 326 IAC 2-4.1.

326 IAC 2-6 (Emission Reporting)
Since this source is required to have an operating permit under 326 IAC 2-7, Part 70 Permit Program, this source is subject to 326 IAC 2-6 (Emission Reporting). This source is permitted to emit less than 2,500 tons per year of CO, NOx and SO2 each, and less than 250 tons per year of PM-10 or VOC each. Therefore, in accordance with the compliance schedule in 326 IAC 2-6-3, an emission statement must be submitted triennially. The first report is due no later than July 1, 2010, and subsequent reports are due every three (3) years thereafter. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4.

326 IAC 5-1-2 (Opacity Limitations)
(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period.

(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.

326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Operations at the proposed lime manufacturing plant are subject to PM emissions limitations under 326 IAC 2-2 (PSD). Therefore, in accordance with the exemption listed under 326 IAC 6-3-1(c)(1), the requirements of 326 IAC 6-3-2 do not apply.

326 IAC 7-1.1 (Sulfur Dioxide Emissions Limitations)
The potential SO2 emissions from each of the two (2) rotary kilns, Kiln #1 and Kiln #2, are greater than 25 tons per year. Therefore, 326 IAC 7-1.1 applies to Kiln #1 and Kiln #2.

326 IAC 7-3 (Sulfur Dioxide - Ambient Monitoring)
This source has potential to emit of SO2 below 10,000 tons per year. Therefore, the ambient monitoring requirements under 326 IAC 7-3 do not apply.

326 IAC 8-1-6 (VOC Rules: General Reduction Requirements)
The VOC emissions from each of the two (2) rotary kilns, Kiln #1 and Kiln #2, are limited to less than 25 tons per year. Therefore, Kiln #1 and Kiln #2 are not subject to the requirements of 326 IAC 8-1-6.

The emissions of VOC from Kiln #1 and Kiln #2 each, shall be less than 25 tons, and the combined kiln emissions of VOC shall be less than 39.3 tons per twelve (12) consecutive month period, with compliance determined at the end of each month. The monthly emissions of VOC from Kiln #1 and Kiln #2 shall be determined as follows:

Emissions (tons) = EF (lb/ton of lime produced) x tons of lime produced

Where EF = average VOC emission factor for the two kilns as determined in the most recent valid stack test. Until VOC stack testing of either Kiln #1 or Kiln #2 is performed, an average EF of 0.2 lb/ton of lime produced shall be used.

326 IAC 9-1-2 (Carbon Monoxide Emission Emissions)
The proposed facility has the potential to emit CO and will be constructed after the applicability date of March 21, 1972. However, there is no emission limit established under 326 IAC 9-1-2 for processes located at this facility.

326 IAC 10 (Nitrogen Oxides)
The proposed facility will not be located in Clark or Floyd counties and does not belong to any of the other listed source categories included in the applicability criteria under 326 IAC 10. Therefore, 326 IAC 10 is not applicable to any emission units at this source.

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.

The Compliance Determination Requirements applicable to this modification are as follows:

Kiln #1 and Kiln #2

(a) In order to demonstrate compliance with Condition D.1.3, baghouses DC1 and DC2 for the control of particulate matter emissions from Kiln 1 and Kiln 2 shall be in operation at all times when the associated kiln is 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.

(c) Pursuant to 326 IAC 3-5 (Continuous Monitoring of Emissions), the continuous opacity monitoring systems shall be calibrated, maintained, and operated for measuring opacity,

which meet all applicable performance specifications of 326 IAC 3-5-2.

(d) Within sixty (60) days after achieving maximum capacity but no later than one hundred eighty (180) days after initial startup of Kiln #1 or Kiln #2, whichever occurs first, the Permittee shall conduct initial performance tests on Kiln #1 or Kiln #2, to determine compliance with the limits on NOx, CO, SO2 and VOC, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every two and one-half (2.5) years from the date of the most recent valid compliance demonstration.

(e) Within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of Kiln #1 and Kiln #2, whichever occurs first, in order to demonstrate compliance with Condition D.1.2, the Permittee shall perform PM testing on Kiln #1 or Kiln #2, utilizing methods as approved by the Commissioner.

(f) In order to demonstrate compliance with Condition D.1.2, the Permittee shall perform PM10 testing on Kiln #1 or Kiln #2 within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of Kiln #1 and Kiln #2, or within 180 days of publication of the new or revised condensable PM test method(s) referenced in the U. S. EPA's Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5), signed on May 8, 2008, whichever occurs later. This testing shall be conducted utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensible PM.

Loadout, storage silos and piles, drop points, and material transfer processes, identified as transfer points 1 through 153

(a) In order to demonstrate compliance with Condition D.2.3, baghouses DC1, DC2, DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 for the control of particulate matter emissions shall be in operation at all times when the associated process is 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.

(c) Within sixty (60) days after achieving maximum capacity but no later than one hundred eighty (180) days after initial startup the associated process or emission unit, whichever occurs first, the Permittee shall perform PM testing on baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9 and DC10, in order to demonstrate compliance with Condition D.2.3, utilizing methods as approved by the Commissioner.

(d) In order to demonstrate compliance with Condition D.1.3, the Permittee shall perform PM10 testing on baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9 and DC10 within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of the associated process or emission units, or within 180 days of publication of the new or revised condensable PM test method(s) referenced in the U. S. EPA's Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5), signed on May 8, 2008, whichever occurs later. This testing shall be conducted utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensable PM.

Emergency Generator

(a) Within sixty (60) days after achieving maximum capacity but no later than one hundred eighty (180) days after initial startup the associated process or emission unit, whichever occurs first, the Permittee shall perform NOx and NMHC, SO2, CO, and PM testing on the emergency generator in order to demonstrate compliance with Condition D.2.3, utilizing methods as approved by the Commissioner.

(b) In order to demonstrate compliance with Condition D.3.4, the Permittee shall perform PM10 testing on the emergency generator within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of the associated process or emission units, or within 180 days of publication of the new or revised condensable PM test method(s) referenced in the U. S. EPA's Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5), signed on May 8, 2008, whichever occurs later. This testing shall be conducted utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensable PM.

The compliance monitoring requirements applicable to this modification are as follows:

Kiln #1 and Kiln #2

Visible Emissions Notations

(a) Visible emission notations shall be performed once per day for baghouses DC1 and DC2 controlling Kiln #1 and Kiln #2 during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) 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.

(c) 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.

(d) 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.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances.

Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

Baghouse Parametric Monitoring

(a) The Permittee shall record the pressure drop across baghouses DC1 and DC2 at least once per day when the associated kiln is in operation. When for any reading, the pressure drop across the baghouse is outside the normal range of 1.25 to 10.5 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range 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.

(b) The instrument used for determining the pressure shall comply with the Section C –

Instrument Specifications, and shall be calibrated in accordance with the manufacturer's specifications. The specifications shall be available on site with the Preventive Maintenance Plan.

Loadout, storage silos and piles, drop points, and material transfer processes, identified as transfer points 1 through 153

Visible Emissions Notations

(a) Visible emission notations shall be performed once per day for baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) 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.

(c) 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.

(d) 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.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances.

Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

Baghouse Parametric Monitoring

(a) The Permittee shall record the pressure drop across baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 at least once per day when the associated kiln is in operation. When for any reading, the pressure drop across the baghouse is outside the normal range of 1.25 to 10.5 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C – Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range 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.

(b) The instrument used for determining the pressure shall comply with the Section C – Instrument Specifications, and shall be calibrated in accordance with the manufacturer's specifications. The specifications shall be available on site with the Preventive Maintenance Plan.

Broken or Failed Bag Detection

(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 baghouses 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 emissions unit shall be shut down no later than the completion of the processing of the material. 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.

These monitoring conditions are necessary to ensure compliance with 326 IAC 2-2 and 26 IAC 2-7 (Part 70)).

Conclusion and Recommendation

The construction and operation of this proposed lime manufacturing plant shall be subject to the conditions of the attached proposed PSD and Part 70 permit no. T181-26877-00050. The staff recommends to the Commissioner that this NSR/PSD and Part 70 be approved.

Appendix A

Air Quality Analysis

Synergy - Lime Plant

Monon, Indiana (White County)

Tracking and Plant ID: 181-26877-00050

Proposed Project

Synergy Management, LLC (Synergy) submitted a PSD application on August 2008, to build a lime plant that will manufacture dolomitic lime one mile south of Monon, Indiana. The specifications for the site include using two preheater rotary kilns with a total nominal production capacity of 1800 tons per day.

Bison Engineering prepared the modeling portion of the permit application for Synergy. This technical support document provides the air quality analysis review of the submitted modeling by Bison Engineering for Synergy.

Analysis Summary

Based on the potential emissions after controls, a PSD air quality analysis was triggered for SO_2, PM_{10}, CO, and NO_2. For VOCs, no analysis is required. The significant impact analysis for NO_2, SO_2 and PM_{10} determined that modeling concentrations exceeded the significant impact levels. A refined analysis was required and showed no violation of the NAAQS and the PSD increment. CO did not exceed significant impact levels. (Pre-construction monitoring requirements are not necessary since nearby monitoring was available from Jasper and Lake Counties.) An additional impact analysis was conducted and showed no significant impact. A Hazardous Air Pollutant (HAP) analysis was performed since emissions of one HAP were greater than 10 tons per year. Based on the HAPs modeling results, the source will not pose a health concern. An EPA equivalence modeling demonstration was performed for BEEST-AERMOD and was approved by EPA.

Air Quality Impact Objectives

The purpose of the air quality impact analysis in the permit application is to accomplish the following objectives. Each objective is individually addressed in this document in each section outlined below.

A. Establish which pollutants require an air quality analysis based on PSD significant emission rates.

B. Provide analyses of actual stack heights with respect to Good Engineering Practice (GEP), the meteorological data used, a description of the model used in the analysis, and the receptor grid utilized for the analyses.

C. Determine the significant impact level, the area impacted by the source's emissions and background air quality levels.

D. Demonstrate that the source will not cause or contribute to a violation of the National Ambient Air Quality Standard (NAAQS) or PSD increment if the applicant exceeds significant impact levels.

E. Perform a qualitative analysis of the source's impact on general growth, soils, vegetation and visibility in the impact area with emphasis on any Class I areas. The nearest Class I area is Kentucky's Mammoth Cave National Park.

F. Perform a Hazardous Air Pollutant (HAP) screening for informational purposes.

G. Summarize the Air Quality Analysis.

Section A - Pollutants Analyzed for Air Quality Impact

Applicability

The PSD requirements, 326 IAC 2-2, apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a major stationary source or modification. Significant emission levels for each pollutant are defined in 326 IAC 2-2-1 and in the Code of Federal Regulations (CFR) 52.21(b) (23) (i).

Proposed Project Emissions

VOCs, PM_{10}, NO_2, SO_2, CO, Pb, Beryllium, Mercury, Fluorides, and Sulfuric Acid Mist are the pollutants that will be emitted from Synergy and are summarized below in Table 1. PM_{10}, NO_2, SO_2, CO, and Beryllium potential emissions after controls exceed the PSD significant emission rates and will require an air quality analysis.

TABLE 1
Significant Emission Rates for PSD

POLLUTANT	SOURCE EMISSION RATE (Facility totals in tons/year)	SIGNIFICANT EMISSION RATE (tons/year)	PRELIMINARY AQ ANALYSIS REQUIRED
VOC[1]	66.3 40		No[1]
PM_{10} 78.6		15	Yes
NO_2 1151		40	Yes
SO_2 657		40	Yes
CO 822		100	Yes
Pb .01		.06	No
Sulfuric Acid Mist[2] 6.04		7	No
Beryllium[2] .003		.0004	Yes
Mercury[2] .005		.1	No
Flourides[2] 1.54		3	No

[1] An air quality analysis is not performed for VOCs because they are photochemically reactive Photochemical models like UAM-V are used in regulatory or policy assessments to stimulate the impacts from all sources by estimating pollutant concentrations and deposition of both inert and chemically reactive pollutants over large spatial

scales. Currently, U.S. EPA has no regulatory photochemical models which can take into account small spatial scales or single source PSD modeling for ozone.
[2] Beryllium, Fluorides, and Mercury have monitoring concentration thresholds listed in 326 IAC 2-2-4. There is no National Ambient Air Quality Standard for these pollutants. Sulfuric Acid Mist has no monitoring threshold or National Ambient Air Quality Standard. No AQ analysis is required for Sulfuric Acid Mist under the PSD regulations.

Synergy's permitted emission rates were taken from emissions calculation sheets on page 15 of their application. These are also the emission rates that were modeled.

Section B – Good Engineering Practice (GEP), Met Data, Model Used, Receptor Grid and Terrain

Stack Height Compliance with Good Engineering Practice (GEP)

Applicability

Stacks should comply with GEP requirements established in 326 IAC 1-7-4. If stacks are lower than GEP, excessive ambient concentrations due to aerodynamic downwash may occur. Dispersion modeling credit for stacks taller than 65 meters (213 feet) are limited to GEP for the purpose of establishing emission limitations. The GEP stack height takes into account the distance and dimensions of nearby structures, which would affect the downwind wake of the stack. The downwind wake is considered to extend five times the lesser of the structure's height or width. A GEP stack height is determined for each nearby structure by the following formula:

$$Hg = H + 1.5L$$

Where: Hg is the GEP stack height
H is the structure height
L is the structure's lesser dimension (height or width)

New Stacks

Since the new stack heights for Synergy are below GEP stack height, the effect of aerodynamic downwash will be accounted for in the air quality analysis for the project.

Meteorological Data

The meteorological data used in AERMOD consisted of 1988 through 1992 surface data from the South Bend, Indiana and upper air measurements taken at Peoria, Illinois. The meteorological data was downloaded from Lakes Environmental and preprocessed using AERMET.

Model Description

Bison Engineering used AERMOD, Version 07026. OAQ used the same model version to determine maximum off-property concentrations or impacts for each pollutant. All regulatory default options were utilized in the U.S. EPA approved model, as listed in the 40 Code of Federal Register Part 51, Appendix W "Guideline on Air Quality Models".

The equivalency demonstration was approved by EPA for BEEST-AERMOD and was used for this modeling demonstration. Alternative models must have EPA approval based on an EPA memorandum dated December 11, 2007. Alternative models can contain proprietary software which could alter the outcome of the results. This demonstration verifies the alternative models used give the same results as the EPA approved regulatory version.

Receptor Grid

OAQ modeling used the same receptor grids generated by Bison Engineering. The receptor grid contains over 3100 individual receptors.

- 100 meter spacing along the facility's property boundary,
- 100 meter spacing from 0 to 1,000 meters from the facility,
- 250 meters spacing from 1,000 to 3,000 meters from the facility,
- 500 meters spacing from 3,000 to 10,000 meters from the facility.

Once the largest SIA was determined, the receptor set was reduced in size to 1,672 individual receptors.

Treatment of Terrain

Receptor terrain elevation inputs were interpolated from DEM (Digital Elevation Model) data obtained from the USGS. DEM terrain data was preprocessed using AERMAP. The terrain files that were used in the terrain analysis can be found on the CD-ROM in Appendix J of the air quality technical support document provided by Bison Engineering.

Section C - Significant Impact Level/Area (SIA) and Background Air Quality Levels

A significant impact analysis was conducted to determine if the source would exceed the PSD significant impact levels (concentrations). If the source's concentrations would exceed these levels, further air quality analysis is required. Refined modeling for PM_{10}, SO_2, and NO_2 was required because the results did exceed significant impact levels. Significant impact levels are defined by the following time periods in Table 2 below with all maximum-modeled concentrations from the worst case operating scenarios.

TABLE 2
Significant Impact Analysis

POLLUTANT	TIME AVERAGING PERIOD	MAXIMUM MODELED IMPACTS (ug/m^3)	SIGNIFICANT IMPACT LEVEL (ug/m^3)	REFINED AQ ANALYSIS REQUIRED
NO_2	Annual*	2.66	1	Yes
PM_{10}	Annual*	4.36	1	Yes
PM_{10}	24 hour*	20.13	5	Yes
SO_2	3 hour*	50.5	25	Yes
SO_2	24 hour*	15.84	5	Yes
SO_2	Annual*	1.51	1	Yes
CO 1	hour*	77.59	2000	No
CO 8	hour*	42.45	500	No

*First highest values per EPA NSR manual October 1990. Impacts are from Synergy only.

Pre-construction Monitoring Analysis

Applicability

The PSD rule, 326 IAC 2-2-4, requires an air quality analysis of the new source or the major modification to determine if the pre-construction monitoring threshold is triggered. In most cases, monitoring data taken from a similar geographic location can satisfy this requirement if the pre-

construction monitoring threshold has been exceeded. Also, post construction monitoring could be required if the air quality in that area could be adversely impacted by applicant's emissions. Beryllium has a monitoring concentration threshold listed in 326 IAC 2-2-4.

Modeling Results

The modeling results were compared to the PSD preconstruction monitoring thresholds. The results are shown in the table below.

TABLE 3
Preconstruction Monitoring Analysis

POLLUTANT	TIME AVERAGING PERIOD	MAXIMUM MODELED IMPACTS (ug/m^3)	DEMINIMIS LEVEL (ug/m3)	ABOVE DE MINIMIS LEVEL
NO_2 Annual*		2.66	14	No
PM_{10}	24 hour*	20.13	10	Yes
SO_2	24 hour*	15.84	13	Yes
Beryllium 24	hour*	.00009	.001	No

*First highest values per EPA NSR manual October 1990. Maximum modeled impacts are from Synergy only.

PM_{10} and SO_2 did trigger the preconstruction monitoring threshold level. Synergy can satisfy the preconstruction monitoring requirement since there is air quality monitoring data representative of the area in Jasper and Lake Counties.

Background Concentrations

Applicability
EPA's "Ambient Monitoring Guidelines for Prevention of Significant Deterioration" (EPA-450/4-87-007) Section 2.4.1 is cited for approval of the monitoring sites for this area.

Background Monitors
Background data was taken from the closest monitoring stations from Synergy. The closest SO_2 station is located in Jasper County. The closest PM_{10} and NO_2 monitoring stations are located in Lake County. Using background data from monitors located around industrialized areas represents a conservative approach since actual background values from rural White County would likely be lower. It was agreed between Synergy and IDEM that this approach be taken in place of the preconstruction monitoring requirement.

For all 24-hour background concentrations, the averaged second highest monitoring values were used. Annual background concentrations were taken from the maximum annual values.

TABLE 4
Existing Monitoring Data Used For Background Concentrations *

Pollutant	Monitoring Site	Averaging Period	Concentration (ug/m3)
NO_2 18-089-0022		Annual	34.4
PM_{10} 18-089-2010		Annual	19.3

PM_{10} 18-089-2010		24 hour	38.3
SO_2 18-073-0002		3 hour	104.8
SO_2 18-073-0002		24 hour	35.9
SO_2 18-073-0002		Annual	15.9

*OAQ used the most conservative values for the air quality analysis. It is standard policy to use the latest 3 years of data.

Section D - NAAQS and PSD Increment

NAAQS Compliance Analysis and Results

OAQ supplied emission inventories of all point sources within a 50-kilometer radius of Synergy. The NAAQS inventories are generated from I-STEPS (State Emission Processing System) in accordance with 326 IAC 2-6. The PSD increment inventories include sources that affect the increment and are compiled from permits issued by IDEM.

NAAQs modeling for the appropriate time-averaging periods for NO_2, PM_{10} and SO_2 was conducted and compared to the respective NAAQs limit. OAQ modeling results are shown in Table 5. All maximum-modeled concentrations were compared to the respective NAAQS limit. All maximum-modeled concentrations during the five years were below the NAAQS limits and further modeling was not required.

TABLE 5[3]
NAAQS Analysis

Pollutant	Year	Time-Averaging Period	Maximum Concentration ug/m3	Background Concentration ug/m3	Total ug/m3	NAAQS Limit ug/m3	NAAQS Violation
NO_2 91		Annual[1] 3.12		34.4	37.52	100	NO
PM_{10} 88		Annual[1] 4.03		19.3	23.33	50	NO
PM_{10}	88 24	hour	20.19	38.3	58.49	150	NO
SO_2 89		3 Hour[2] 61.66		104.8	166.46	1300	NO
SO_2 92		24 hour[2] 16.72		35.9	52.62	365	NO
SO_2 91		Annual[1] 2.50		15.9	18.4	80	NO

[1] First highest values per EPA NSR manual October 1990.
[2] High 2nd high values per EPA NSR manual October 1990.
[3] Any differences between the maximum concentration numbers in Tables 5 and 6 are due to different sources used for the NAAQS and the increment inventories. Table 3 maximum concentrations are from Synergy only.

Analysis and Results of Source Impact on the PSD Increment

Applicability

Maximum allowable increases (PSD increments) are established by 326 IAC 2-2 for NO_2, SO_2, and PM_{10}. This rule also limits a source to no more than 80 percent of the available PSD increment to allow for future growth.

Source Impact

Since the impact for NO_2, SO_2, and PM_{10} modeled above significant impact levels, a PSD increment analysis for Synergy and surrounding sources was required. Results of the increment modeling are summarized in Table 6 below.

TABLE 6[3]

Increment Analysis

Pollutant	Year	Time-Averaging Period	Maximum Concentration ug/m3	PSD Increment Ug/m3	Percent Impact on the PSD Increment	Increment Violation
NO_2 1988		Annual[1] 5.07		25	20.3%	NO
PM_{10} 1989		Annual[1] 4.00		17	23.5%	NO
PM_{10} 1988		24 hour[2] 19.95		30	66.5%	NO
SO_2 1992		Annual[1] 3.48		20	17.4%	NO
SO_2 1989		3 hour[2] 192.35		512	37.6%	NO
SO_2 1992		24 hour[2] 42.28		91	46.5%	NO

[1] First highest value per EPA NSR manual October 1990.
[2] Highest second high per EPA NSR manual October 1990.
[3] Any differences between the maximum concentration numbers in Tables 5 and 6 are due to different sources used for the NAAQS and the increment inventories. Table 3 maximum concentrations are from Synergy only.

The results of the increment analysis show all pollutants for all averaging periods were below 80% of the available increment. No further analysis is required.

Part E – Qualitative Analysis

Additional Impact Analysis

All PSD permit applicants must prepare an additional impact analysis for each pollutant subject to regulation under the Act. This analysis assesses the impacts on growth, soils and vegetation, endangered species and visibility caused by any increase in emissions of any regulated pollutant from the source. The Synergy modeling submittal provided an additional impact analysis performed by Bison Engineering.

Economic Growth

The purpose of the growth analysis is to quantify project associated growth and estimate the air quality impacts from this growth either quantitatively or qualitatively.

It is estimated that approximately 10 additional jobs will be created as a result of the proposed project. Some of the employees will be drawn from surrounding areas. Since the area is predominately rural, it is not expected the growth impacts will cause a violation of the NAAQs or the PSD increment.

Soils and Vegetation Analysis

A list of soil types present in the general area was determined. Soil types include the following: Loamy Glacial Till, Moderate Thick Loess over Loamy Glacial Till and Thin Loess over Loamy Glacial Till.

Due to the agricultural nature of the land, crops in the White County area consist mainly of corn, sorghum, wheat, soybeans, and oats (2002 Agricultural Census for White County). The maximum modeled concentrations for Synergy are well below the threshold limits necessary to have adverse impacts on the surrounding vegetation such as autumn bent, nimblewill, barnyard grass, bishopscap and horsetail, and milkweed (Flora of Indiana – Charles Deam). Livestock in White County consist mainly of hogs, cattle, and sheep (2002 Agricultural Census for White County) and will not be adversely impacted from the facility. Trees in the area are mainly hardwoods. These are hardy trees and no significant adverse impacts are expected due to modeled concentrations.

Federal and State Endangered Species Analysis

Federal and state endangered or threatened species are listed by the U.S. Fish and Wildlife Service; Division of Endangered Species for Indiana, and includes 5 amphibians, 27 birds, 10 fishes, 7 mammals, 15 mollusks, and 15 reptiles. Of the federal and state endangered species on the list, 1 amphibian, 5 reptiles, 14 mollusks, 5 fish, 9 birds, 3 insects and 4 mammals have habitat within White County. The mollusks, fish, amphibians and certain species of birds and mammals are found along rivers and lakes while the other species of birds and mammals are found in forested areas. The facility is not expected to have any additional adverse effects on the habitats of the species than what has already occurred from the industrial, farming, and residential activities in the area.

Federal and state endangered or threatened plants are listed by the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana. They list 17 state significant species of plants. At this time no federally endangered plant species are found in White County. The endangered plants do not thrive in industrialized and residential areas. The facility is not expected to adversely affect any plant on the endangered species list.

Visibility Analysis

The VISCREEN model is designed as a screening model to determine the visual impact parameters from a single source plume. It is used basically to determine whether or not a plume is visible as an object itself. The visibility impairment analysis considers the impacts that occur within the impact area of the source as defined by the user distances. The user distances are determined by the nearest interstate or airport. EPA has defined these locations in guidance to the state.

The PM_{10} and NO_2 emissions limits were used to run a local visibility Level 1 and a Level 2 analysis. VISCREEN Version 1.01 was used to determine if the color difference parameter (Delta-E) or the plume (green) contrast limits were exceeded. The Delta-E was developed to specify the perceived magnitude of color and brightness changes and is used as the primary basis for determining the perceptibility of plume visual impacts. The plume constant can be defined at any wavelength as the relative difference in the intensity (called spectral radiance) between the viewed object and its background. This is used to determine how the human eye responds differently to different wavelengths of light. The Delta-E of 2.0 and the plume contrast of 0.05 were not exceeded at the nearest interstate location along I-65 or at the White County Airport.

Potential visibility impacts to Mammoth Cave National Park (further than 300 km from Synergy) would be insignificant. This is due to the distance from the Class 1 area and magnitude and characteristics of emission sources at Synergy.

Additional Analysis Conclusions

Finally, the results of the additional impact analysis conclude the operation of the facility will have no significant impact on economic growth, soils, vegetation or visibility in the immediate vicinity or on any Class I area.

Part F – HAPs Analysis

OAQ currently requests data concerning the emission of 189 HAPs listed in the 1990 Clean Air Act Amendments (CAAA) that are either carcinogenic or otherwise considered toxic and may be used by industries in the State of Indiana. These substances are listed as air toxic compounds on the State of Indiana, Department of Environmental Management, Office of Air Quality's construction permit application Form GSD-08.

Potential emissions of aggregate HAPs are estimated to be over 22 tons per year. Hydrochloric acid is over 19 tons per year for a single HAP.

For Synergy, a full HAP analysis was completed comparing the maximum estimated concentrations of each pollutant with the Unit Risk Factor (URF) or Inhalation Unit Risk and the Reference Concentration (RfC). This analysis offers a refined, up to date site specific analysis that takes into account the different potencies and health effects that each pollutant presents to the public.

The Unit risk factor (URF) is the upper-bound excess lifetime cancer risk estimated to result from continuous inhalation exposure to a pollutant over a 70 year lifetime. Multiplying the estimated concentration by the URF will produce a cancer risk estimate. The cancer risk estimate is the conservative probability of developing cancer from exposure to a pollutant or a mixture of pollutants over a 70 year lifetime, usually expressed as the number of additional cancer cases in a given number of people, e.g., one in a million. For screening purposes at Synergy, the cancer estimates for each pollutant are considered to be additive when deriving the cumulative maximum individual cancer risk.

Non-cancer health effects are determined using the Reference Concentration (RfC). The RfC is an estimate of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. Dividing the estimated pollutant concentration by the RfC will determine the pollutant's Hazard Quotient (HQ). All of the HAPs' Hazard Quotients were added together to determine Synergy's Hazard Index (HI).

This HAP screening analysis uses health protective assumptions that overestimate the actual risk associated with emissions from Synergy. Estimates 1) assume a 70 year exposure time, 2) assume that all carcinogens cause the same type of cancer, 3) assume that all non-carcinogens have additive health effects, 4) assume maximum permit allowable emissions from the facility, and 5) use conservatively derived dose-response information. The risk analysis cannot accurately predict whether there will be observed health problems around Synergy; rather it identifies possible avenues of risk.

The results of the HAP modeling are in Table 7.

TABLE 7
Hazardous Air Pollutant Modeling Results

Compound	CAS Number	Annual Concentration	Adjusted Annual Concentration (ug/m3)	Cancer URF, (ug/m3)-1	Source	Cancer Risk	Non-Cancer Chronic RfC, ug/m3	Source of IDEM RfC	Hazard Quotient
1,1,1,2-tetrachloroethane	630206	**1.72E-06**	**2.59E-06**	7.4E-06	IRIS	1.91E-11			
2,4-Dinitrophenol	51285	**2.43E-08**	**3.65E-08**				7.00	Regions 6,9(R)	5.21E-09
2-chloroacetophenone	532274	**6.08E-07**	**9.13E-07**				0.03	IRIS	3.04E-05
Acenaphthene	83329	**4.46E-08**	**6.69E-08**				210.00	Regions 6,9(R)	3.19E-10
Acenaphthylene	208968	**2.13E-08**	**3.19E-08**				35.00	State of Michigan	9.13E-10
Acetaldehyde	75070	**4.97E-05**	**7.45E-05**	2.2E-06	IRIS	1.64E-10	9.00	IRIS	8.28E-06
Acetophenone	98862	**1.32E-06**	**1.98E-06**						
Acrolein	107028	**2.54E-05**	**3.80E-05**				0.02	IRIS	1.90E-03
Antimony Compounds	0	**1.52E-06**	**2.28E-06**				0.20	TRI	1.14E-05
Arsenic compounds	0	**3.55E-05**	**5.32E-05**	4.3E-03	IRIS	2.29E-07	0.03	CAL	1.77E-03
Benzene	71432	**1.12E-04**	**1.67E-04**	7.8E-06	IRIS	1.31E-09	30.00	IRIS	5.58E-06
Benzo[a]anthracene	56553	**6.90E-09**	**1.03E-08**	1.1E-04	CAL	1.14E-12			
Benzo[a]pyrene	50328	**3.24E-09**	**4.87E-09**	1.1E-03	CAL	5.35E-12			

TABLE 7 Continued
Hazardous Air Pollutant Modeling Results

Benzo[b]fluoranthene	205992	**9.53E-09**	**1.43E-08**	1.1E-04	CAL	1.57E-12			
Benzo[g,h,i]perylene	191242	**2.33E-09**	**3.50E-09**	8.9E-03	IDEM	3.11E-11			
Benzo[k]fluoranthene	207089	**9.53E-09**	**1.43E-08**	1.1E-04	CAL	1.57E-12			
Benzyl Chloride	100447	**6.08E-05**	**9.13E-05**	4.9E-05	IRIS	4.43E-09	10.15	Region 9	8.99E-06
Beryllium compounds	0	**1.83E-06**	**9.00E-05**	2.4E-03	IRIS	2.16E-07	0.02	IRIS	4.50E-03
Biphenyl	92524	**1.52E-07**	**2.28E-07**						
bis(2-Ethylhexyl)phthalate	117817	**6.29E-06**	**9.43E-06**	2.4E-06	CAL	2.26E-11	10.00	CAL	9.43E-07
Bromoform	75252	**3.35E-06**	**5.02E-06**	1.1E-06	IRIS	5.52E-12			
Cadmium compounds	7440439	**4.46E-06**	**6.69E-06**	1.8E-03	IRIS	1.20E-08	0.02	CAL	3.35E-04
Carbon disulfide	75150	**1.12E-05**	**1.67E-05**				700.00	IRIS	2.39E-08
Chlorobenzene	108907	**1.93E-06**	**2.89E-06**				1000.00	CAL	2.89E-09
Chloroform	67663	**5.07E-06**	**7.61E-06**	2.3E-05	IRIS	1.75E-10	0.30	Region 6(N)	2.54E-05
Chromium (VI) compounds	18540299	**2.23E-05**	**3.35E-05**	1.2E-02	IRIS	4.02E-07	0.10	IRIS	3.35E-04
Chrysene	218019	**8.62E-09**	**1.29E-08**	8.9E-04	CAL	1.15E-11			
Cobalt	0	**8.62E-06**	**1.29E-05**				0.10	ATSDR	1.29E-04
Cumene	98828	**4.56E-07**	**6.84E-07**				400.00	IRIS	1.71E-09
Cyanide Compounds	0	**2.13E-04**	**3.19E-04**				3.00	TRI	1.06E-04
Diethyl Sulfate	64675	**4.16E-06**	**6.24E-06**	3.4E-04	TRI	2.12E-09			
Chloroethane (Ethyl Chloride)	75003	**3.65E-06**	**5.48E-06**	1.3E-07	CAL		10000.00	IRIS	5.48E-10
Ethyl methanesulfonate	62500		**0.00E+00**	8.4E-02	HWIR	0.00E+00			
Ethylbenzene	100414	**8.11E-06**	**1.22E-05**				1000.00	IRIS	1.22E-08
Ethylene dibromide (1,2-dibromoethane)	106934	**1.01E-07**	**1.52E-07**	6.0E-04	IRIS	9.13E-11	9.00	IRIS	1.69E-08
Ethylene dichloride (1,2-dichloroethane)	107062	**3.45E-06**	**5.17E-06**	2.6E-05	IRIS	1.34E-10	4.90	Regions 3,9(N)	1.06E-06
Fluoranthene	206440	**6.19E-08**	**9.28E-08**				140.00	Regions 6,9(R)	6.63E-10
Fluorene	86737	**7.91E-08**	**1.19E-07**				140.00	Regions 6,9(R)	8.47E-10
Formaldehyde	50000	**2.03E-05**	**3.04E-05**	1.3E-05	IRIS	3.95E-10	9.80	ATSDR	3.10E-06
Hydrochloric Acid	7647010	**3.07E-02**	**4.61E-02**				20.00	IRIS	2.31E-03
Hydrofluoric acid	7664393	**3.29E-03**	**4.93E-03**				20.00	IRIS	2.46E-04
Indeno[1,2,3-cd]pyrene	193395	**5.27E-09**	**7.91E-09**	1.1E-04	CAL	8.70E-13			
Isophorone	78591	**5.07E-05**	**7.61E-05**	2.7E-07	IRIS	2.05E-11	2000.00	CAL	3.80E-08
Lead compounds	0	**1.52E-05**	**2.28E-05**				1.50	EPA OAQPS	1.52E-05
Manganese compounds	0	**4.26E-05**	**6.39E-05**				0.05	IRIS	1.28E-03
Mercury, elemental	7439976	**7.61E-06**	**1.14E-05**				0.30	IRIS	3.80E-05
Methyl ethyl ketone (MEK)	78933	**3.35E-05**	**5.02E-05**				5000.00	IRIS	1.00E-08
Methyl hydrazine	60344	**1.52E-05**	**2.28E-05**	2.2E-04	CAL	5.02E-09			
Methyl methacrylate	80626	**1.72E-06**	**2.59E-06**				700.00	IRIS	3.69E-09
Methyl tert butyl ether	1634044	**3.04E-06**	**4.56E-06**	2.6E-07	CAL	1.19E-12	3000.00	IRIS	1.52E-09
Methylene chloride	75092	**2.54E-05**	**3.80E-05**	4.7E-07	IRIS	1.79E-11	3000.00	HEAST	1.27E-08
Naphthalene	91203	**1.12E-06**	**1.67E-06**	3.4E-05	CAL	5.69E-11	3.00	IRIS	5.58E-07
Nickel compounds	0	**2.43E-05**	**3.65E-05**	2.4E-04	IRIS	8.76E-09	0.20	ATSDR	1.83E-04
Phenanthrene	85018	**2.33E-07**	**3.50E-07**				10.50	IDEM(R)	3.33E-08

TABLE 7 Continued
Hazardous Air Pollutant Modeling Results

Phenol	108952	**1.42E-06**	**2.13E-06**				200.00	CAL	1.06E-08
Propionaldehyde	123386	**3.24E-05**	**4.87E-05**						
Pyrene	129000	**2.84E-08**	**4.26E-08**				105.00	Regions 6,9(R)	4.06E-10
Selenium compounds	0	**1.12E-04**	**1.67E-04**				20.00	CAL	8.37E-06
Styrene	100425	**2.13E-06**	**3.19E-06**				1000.00	IRIS	3.19E-09
Toluene	108883	**2.03E-05**	**3.04E-05**				400.00	IRIS	7.61E-08
Vinyl Acetate	108054	**6.59E-07**	**9.89E-07**				200.00	IRIS	4.94E-09
Xylenes	1330207	**3.24E-06**	**4.87E-06**				100.00	IRIS	4.87E-08
					Σ Cancer Risk		**8.81E-07**	**Hazard Index (HI)**	**1.32E-02**
					IDEM Standard		**1.00E-06**	**IDEM Standard**	**1.00E+00**
					Comparison		**Below**		**Below**

Note: The annual concentrations were adjusted as a percent increase based on increased production capacity except for Beryllium compounds which were modeled using estimated emissions from Bison Engineering.

* Further information on URFs and RfCs can be found at the following EPA website: http://www.epa.gov/ttn/atw/toxsource/chronicsources.html

The Hazard Index for the project does not exceed 1. Pollutants with a Hazard Quotient (HQ) greater than 1 are considered to be at concentrations that could represent a health concern. Hazard Quotients above 1 do not represent areas where adverse health effects will be observed but indicate that the potential exists.

The additive cancer risk estimate from all HAPs is 8.81 additional cancer cases in ten million people. This means if an individual was exposed to these HAPs continuously for 70 years, the risk of getting cancer from this exposure would be 8.81 in ten million. The US EPA considers one in ten thousand (1.0E-04) excess cancer risks to be the upper range of acceptability with an ample margin of safety. The probability for the general public to be exposed to these HAPs for 24 hours a day, seven days a week, 52 weeks a year for 70 years is minimal.

Part H - Summary of Air Quality Analysis

Bison Engineering prepared the modeling portion of the PSD application. White County is designated as attainment for all criteria pollutants. VOCs, PM_{10}, NO_2, SO_2, CO and Beryllium emission rates associated with the proposed facility exceeded the respective significant emission rates. Modeling results taken from the latest version of the AERMOD model showed PM_{10}, SO_2, NO_2 impacts were predicted to be greater than the significant impact levels. Synergy did trigger the preconstruction monitoring threshold level for PM_{10} and SO_2 but can satisfy the preconstruction monitoring requirement since there is existing air quality monitoring data representative of the area. The NAAQS and increment modeling for PM_{10}, NO_2, and SO_2 showed no violations of the standards. The nearest Class I area is Mammoth Cave National Park in Kentucky over 300 kilometers away from the source. An additional impact analysis was required but the operation of the proposed facility will have no significant impact. A Hazardous Air Pollutant (HAP) analysis was performed and showed no likely adverse impact.

APPENDIX B: BACT ANALYSIS

Source Background and Description

Source Name:	Synergy Management, LLC
Source Location:	5600 N. US Highway 421, Monon, IN 47959
County: White	
SIC Code:	3274
Operation Permit No.:	T181-26877-00050
Permit Reviewer:	Madhurima D. Moulik

Affected Process

On August 15, 2008, the Office of Air Quality (OAQ) received an application from Synergy Management, LLC, for the Prevention of Significant Deterioration (PSD) relating to the construction of a low-sulfur dolomitic lime manufacturing facility. The emission units subject to PSD review are as follows:

(a) Two (2) rotary lime kilns, permitted in 2009, each with a maximum capacity of 900 tons per day of lime produced, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using baghouse DC1 and baghouse DC2, respectively for PM control, and exhausting to Stack #1 and Stack #2, respectively.

(b) Two (2) preheaters, permitted in 2009, each with a maximum capacity of 1800 tons per day of limestone feed, identified as Preheater #1 and Preheater #2, using baghouses DC1 and DC2 for PM control, and exhausting to Stacks #1 and #2.

(c) Two (2) lime coolers, permitted in 2009, each with a maximum capacity of 900 tons per day, identified as Cooler #1 and Cooler #2, using baghouses DC3 and DC4 for PM control of lime offload transfers, exhausting to Stack #3 and Stack #4, respectively.

Loadout, storage silos and piles, drop points, and material transfer processes, identified as transfer points 1 through 153, including the following:

(d) Two (2) coal mills, permitted in 2009, each with a maximum capacity of 240 tons per day, identified as Coal Mill #1 and Coal Mill #2.

(e) Six (6) limestone screens, permitted in 2009, maximum capacities ranging from 500 tons per hour to 1000 tons per hour, identified as emission units S1 through S6.

(f) Two (2) lime screens, permitted in 2009, each with a maximum capacity of 50 tons per hour, identified as emission units S7 and S8, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(g) Two (2) lime screens, permitted in 2009, each with a maximum capacity of 50 tons per hour, identified as emission units S9 and S10, with baghouse DC8 for PM control, exhausting to Stack #8.

(h) Sixty-two (62) conveyors, permitted in 2009, identified as C1 through C57 and CC1 through CC5.

(i) Four (4) elevators, permitted in 2009, identified as BE1 through BE4, with baghouses DC5, DC6, DC7, and DC9 for PM control, exhausting to Stacks #5, 6, 9 and 7.

(j) Four (4) lime silos, permitted in 2009, each with a storage capacity of 1000 tons, identified as SL1 through SL4, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(k) One (1) lime fines silo, permitted in 2009, with a storage capacity of 50 tons, identified as SL5, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(l) One (1) Briquetter to Conveyor silo, permitted in 2009, with a storage capacity of 50 tons, identified as SL6, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(m) One (1) off-spec silo, permitted in 2009, with a storage capacity of 100 tons, identified as SL7, with baghouse DC9 for PM control, exhausting to Stack #9.

(n) One (1) flue dust silo, permitted in 2009, with a storage capacity of 250 tons, identified as SL8, with baghouse DC7 for PM control, exhausting to Stack #7.

(o) One (1) coal feed hopper, permitted in 2009, with a capacity of 20 tons, identified as SL9.

(p) Two (2) fuel bins or silos, permitted in 2009, each with a storage capacity of 100 tons, identified as B1 and B2.

(q) Three (3) screw conveyors, permitted in 2009, identified as DS1 through DS3, with baghouses DC1, DC2, and DC7 for PM control, exhausting to Stacks #1, 2, and 7.

(r) One (1) briquetter/mill, permitted in 2009, with a maximum capacity of 50 tons per hour, identified as BQ1, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and #6.

(s) One (1) pneumatic conveyor, permitted in 2009, with a maximum capacity of 50 tons per hour, identified as PN1, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and #6.

(t) Ten (10) feeders, permitted in 2009, identified as F1 through F7, LF1 through LF9 with baghouses DC3 and DC4 for PM control and exhausting to Stacks #3 and 4, and LF10 with baghouse DC9 for PM control and exhausting to Stack #9.

(u) Three (3) crushers, permitted in 2009, identified as CR1 (maximum capacity of 1000 tons per hour), CR2 (maximum capacity of 600 tons per hour) and CR3 (maximum capacity of 200 tons per hour).

(v) Eleven (11) storage piles, permitted in 2009, identified as KFP1 through KFP4 (kiln feed piles), Bit Pile 1 through 4 (bitumen piles), Pile 3 or OVR (oversized limestone pile), Pile 2 or UNDR (undersized limestone pile) and FLPL (fuel pile).

(w) Several material handling systems, or drop transfers, permitted in 2009, for transporting, transferring, and storing limestone, product lime, solid fuel (coal and coke), and lime kiln dust.

(x) One diesel-powered emergency generator, permitted in 2009, with a nominal capacity of 250 kW.

Requirement for Best Available Control Technology (BACT)

326 IAC 2-2 requires a best available control technology (BACT) review for SO2, NOx, CO, PM/PM10 and Beryllium.

The detailed emissions calculations are included in Appendix A to the Technical Support Document.

Summary of the Best Available Control Technology (BACT) Process

The Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), has performed the following PSD BACT review for NOx emissions from a lime manufacturing facility owned by Synergy Management, LLC in Monon, Indiana. The source is located in White County which is designated as attainment for all criteria pollutants. The PSD Program requires a BACT review and an air quality analysis. BACT is an emission limitation based on the maximum degree of reduction of each pollutant subject to the PSD requirements. IDEM conducts BACT analyses in accordance with the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, which outlines the steps for conducting a top-down BACT analysis. Those steps are listed below.

(1) Identify all potentially available control options;
(2) Eliminate technically infeasible control options;
(3) Rank remaining control technologies by control effectiveness;
(4) Evaluate the most effective controls and document the results; and
(5) Selec t BACT.

Also in accordance with the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, BACT analyses take into account the energy, environmental, and economic impacts on the source. These reductions may be determined through the application of available control techniques, process design, and/or operational limitations. Such reductions are necessary to demonstrate that the emissions remaining after application of BACT will not cause or contribute to air pollution thereby protecting public health and the environment.

The BACT determinations are based on the following information:

(a) The BACT analysis submitted by Synergy Management, LLC
(b) Information IDEM gained from other regulatory agencies;
(c) Other IDEM permits and permits from other regulatory agencies; and
(d) The EPA RACT/BACT/LAER (RBLC) Clearinghouse.

Step 1: Identify all Potentially Available Control Options

The first step is to identify potentially "available" control options for each emission unit and for each pollutant under review. Available options should consist of a comprehensive list of those technologies with a potentially practical application to the emission unit in question. The list should include lowest achievable emission rate (LAER) technologies, innovative technologies, and controls applied to similar source categories. There is no requirement in the State or Federal regulations to require innovative control to be used as BACT.

Step 2: Eliminate Technically Infeasible Options

The second step is to eliminate technically infeasible options from further consideration. To be considered feasible, a technology must be both available and applicable. It is important in this step that any presentation of a technical argument for eliminating a technology from further consideration be clearly documented based on physical, chemical, engineering, and source-specific factors related to safe and successful use of the controls. Innovative control means a control that has not been demonstrated in a commercial application on similar units. Innovative controls are normally given a waiver from the BACT requirements due to the uncertainty of actual control efficiency. Based on this, the OAQ will not evaluate or require any innovative controls for this BACT analysis. Only available and proven control technologies are evaluated. A control technology is considered available when there are sufficient data indicating that the technology results in a reduction in emissions of regulated pollutants.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

The third step is to rank the technologies not eliminated in Step 2 in order of descending control effectiveness for each pollutant of concern.

Step 4: Evaluate the Most Effective Controls and Document the Results

The fourth step entails an evaluation of energy, environmental, and economic impacts for determining a final level of control. The ranked alternatives are reviewed in terms of environmental, energy, and economic impacts specific to the proposed modification. If the analysis determines that the evaluated alternative is not appropriate as BACT due to any of the impacts, then the next most effective is evaluated. This process is repeated until a control alternative is chosen as BACT. If the highest ranked technology is proposed as BACT, it is not necessary to perform any further technical or economic evaluation, except for the environmental analyses. The evaluation begins with the most stringent control option and continues until a technology under consideration cannot be eliminated based on adverse energy, environmental, or economic impacts.

Step 5: Select BACT

The fifth and final step is to select as BACT the most effective of the remaining technologies under consideration for each pollutant of concern. For the technologies determined to be feasible, there may be several different limits that have been set as BACT for the same control technology. The permitting agency has to choose the most stringent limit as BACT unless the applicant demonstrates in a convincing manner why that limit is not feasible. The final BACT determination would be the technology with the most stringent corresponding limit that is economically feasible. BACT must, at a minimum, be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits.

The Office of Air Quality (OAQ) makes BACT determinations by following the five steps identified above.

NOx BACT: Kiln, Preheater #1 and Kiln, Preheater #2

Step 1: Identification of NOx Control Technologies - Kiln, Preheater #1 and Kiln, Preheater #2

Low NOx Burners

Low NOx burners are designed to reduce peak flame temperature and/or reduce the residence time at high temperatures. These burners can be categorized as staged fuel burners or staged air burners. Staged fuel burners are compatible only with gas-fired combustion units. Staged air burners use a two-stage combustion process. Combustion initiates under fuel-rich, oxygen-deficient conditions in the primary combustion zone. Cooler supplemental air is introduced in the secondary zone to complete combustion. Low-NOx burner technology is compatible with only indirect-fired kiln designs.
Low NOx burners are not compatible with direct-fired kilns which use approximately 20% make-up air compared to 10% primary make-up air for indirect-fired kilns, which allows greater flexibility in air staging. In addition, the kiln must be capable of adjusting and responding quickly to changes in external conditions.

Synergy's burners, designed specifically for this project, will incorporated design features to optimize fuel efficiency and minimize NOx emissions. IDEM has eliminated additional low-NOx burners as a technically feasible control technology for NOx emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

Flue Gas Recirculation

Oxygen-deficient conditions (inhibiting the formation of thermal NOx) in the primary combustion zone can also be created by recycling a portion of the kiln exhaust to the burner, either in the primary air that accompanies the injected coal or directly into the flame. Low NOx burners may also utilize flue gas recirculation (FGR). FGRs have not been proven to reduce NOx more than can be achieved by controlling primary and secondary combustion air in a properly designed and operated kiln.

An FGR can distort the thermal profile of an optimally designed burner, leading to unacceptable product and probable increased NOx emissions. Therefore, IDEM has eliminated FGR as a technically feasible control technology for NOx emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

Selective Catalytic Reduction (SCR)

SCR is a post-combustion gas treatment technique that uses a catalyst to reduce NO and NO2 to molecular nitrogen, using ammonia as the reducing agent. Vaporized ammonia is injected into the flue gas upstream of the catalyst bed. The catalyst used in an SCR needs a narrow window of acceptable system inlet temperature. In addition, SO2 generated in a coal-fired lime kiln can lead to the formation of ammonium bisulfate and sulfuric acid, leading to clogging and corrosion of the catalyst and the system. SCR technology has not been used in lime kilns, and there is considerable uncertainty related to the control efficiency. There are no known examples of SCR technology applied to a coal-fired, rotary lime kiln. Consequently, its reliability and effectiveness in this application are unknown. Secondly, high concentrations of particulate and SO2 in the kiln exhaust would require that the unit be downstream of the fabric filter baghouse. Otherwise, catalyst effectiveness and longevity would be severely limited due to poisoning and plugging. Baghouse exhaust gas temperature is typically near 450 deg F - well below the optimum SCR inlet temperature range of approximately 575 to 800 deg F. Therefore, the gas stream would require reheating, which would generate combustion emissions.

IDEM has eliminated SCR as a technically feasible control technology for NOx emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

Selective Non-Catalytic Reduction (SNCR)

Like SCRs, SNCR reduces NOx to nitrogen and water, without using a catalyst. It injects a nitrogenous reducing agent, usually ammonia or urea. A high temperature of 1600 to 2100 deg F is required for the reduction to occur. Lime kiln exhausts do not have the high exhaust temperature required for SNCRs.

IDEM has eliminated SNCR as a technically feasible control technology for NOx emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

Optimization of Kiln Design and Operation

Modern lime kilns are designed for the optimization of kiln parameters such as burner operating conditions including flame temperature, fuel efficiency, use of preheaters, etc. The design includes monitoring and control systems for maintaining optimum conditions for external constraints such as feed quality, product quality, and fuel availability. Optimization of kiln operation also has an effect on the emissions of NOx.

Fuel Selection

NOx emissions depend on fuel selection due to variations in the amount of fuel-bound nitrogen which contributes directly to NOx emissions, as well as the variations in the fuel's combustion characteristics which determine the amount of thermal NOx generation. Coal-fired kilns typically have lower NOx emissions compared to natural gas-fired kilns although fuel-bound nitrogen is higher in coal. This is due to the fact that coal burns at lower temperatures, leading to reduction in thermal NOx pollution. The project's preliminary design and business plan is based on the use of coal or a mixture of coal and petroleum coke for normal operation. Alternative fuel selection is not a technically feasible option.

IDEM has eliminated fuel selection as a technically feasible control technology for NOx emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

Mid-Kiln Firing

This technology, employed in long cement kilns, has not been employed in lime kilns. A combustible material, such as tires or biomass, is introduced near the center of the cement kiln. This addition of heat midway through the calcining process reduces the temperature required in the primary combustion chamber, reducing thermal NOx production. Mid-kiln firing is not a technically feasible option for lime kilns which are short, and also have the potential of introducing impurities in the final product.

IDEM has eliminated mid-kiln firing as a technically feasible control technology for NOx emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

Existing NOx BACT Determinations for Lime Kilns

The RACT, BACT, LAER Clearinghouse (RBLC) were reviewed to obtain recent determinations for NOx emissions from lime kilns. The search criteria used was “Lime/Limestone Handling/Kilns/ Storage/Manufacturing (90.019)" with NOx as the pollutant. In addition, BACT determinations from recent permits not yet included in RBLC have been included from permit documents issued by state agencies.

The following table summarizes the results from the RACT/BACT/LAER Clearinghouse.

Table 1: RBLC BACT determinations - NOx - Lime Kiln

RBLC ID/ Permit No.	Company	Date Issued	Description	Rating	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Rotary lime kilns, with preheaters and fabric filter (Kiln #1 and Kiln #2)	1800 tons/day of lime produced (3600 tons per day of feed)	3.5 lb/ton of lime produced	Good combustion practices Use of preheater type rotary kiln

RBLC ID/ Permit No.	Company	Date Issued	Description	Rating	Limit	Controls
Permit No. 07-DCF-145	Graymont Western US Inc. - Superior (earlier known as Cutler-Magner Company) - Superior, Wisconsin	12/04/07	Lime Kiln #5	54 tons/hr stone feed, 27 tons/hr lime	1.83 lb/ton stone feed 24-hr rolling,), 0.7 lbs/MMBTU (monthly average) and not more than 98.8 lbs/hr (3 hour average).	Good combustion practices / optimization (tuning and analysis to minimize NOx)
WI-0233 Cutler-Ma gner Company - Superior, Wisconsin		08/16/06	Lime Kiln (P50)	650 tons/day	1.83 lb/ton stone feed 24-hr avg 98.8 lb/hr 3-hr avg 0.7 lb/mmBTU monthly avg (BACT)	Good combustion practices Use of preheater type rotary kiln
AR-0082 Arka nsas Lime Company - Independence, Arkansas		08/30/05	Lime Kiln SN-30Q	45254 tons/yr	3.5 lb/ton lime produced 30-day rolling avg (BACT)	None
AL-0082 C hemical Lime Company - Montevallo, Alabama		04/29/96	Lime Kiln	-	3.5 lb/ton	Proper kiln design and operation
WI-0900 W estern Lime Corporation - Green Bay		7/23/96	Lime Kiln #2	500 tons/day	60 lb/hr (BACT)	Good combustion practices
AL-0102 Carmeus e Lime, Inc. - Longview Division		9/15/97 Lime Kiln		2712 tons/day	3.1 lb/ton limestone feed (BACT)	Proper kiln design and operation
MI-0383 W estern Lime Corporation - Schoolcraft		01/30/04	Lime Kiln	--	132.6 lb/hr 532 tons/yr 12-month rolling (BACT)	Low-NOx burners, limit excess air
TX-0452 Austin White Lime Company - Mcneil Plant		11/19/03	Kiln No. 1 and 2	--	106 lb/hr 437 tons/yr (BACT)	None
TX-0452 Austin White Lime Company - Mcneil Plant		11/19/03	Kiln No. 3	--	118.3 lb/hr 425.7 tons/yr (BACT)	None
OH-0270 Carmeus e Lime, Inc. - Maple Grove Facility		10/14/03	Two (2) rotary kilns	650 tons/day	45.6 lb/ton 1234.9 lb/hr (each kiln) 5408.9 tons/yr (BACT)	None
IL-0084 Vu lcan Materials, Illinois		10/28/02	Lime Kiln	1296 tons/day	4.5 lb/ton 242.5 lb/hr (BACT)	Best combustion practices
MT-0029 Gra ymont Western US, Inc. , Montana		11/01/00 Rotar y Lime Kiln		187500 tons/yr	100 lb/hr (BACT)	Good combustion practices
AR-0034 Arka nsas Lime Company - Independence		05/18/00	Rotary Lime Kiln No. 2	600 tons/day	3.65 lb/ton 399.3 tons/yr (BACT)	None
AR-0028 Arka nsas Lime Company - Independence		09/14/99 Lime Kiln		625 tons/day	3.5 lb/ton 91.2 lb/hr (BACT)	Proper design and operation

RBLC ID/ Permit No.	Company	Date Issued	Description	Rating	Limit	Controls
TX-0360 T	exas Lime Company, Texas	08/02/99	Lime Kiln No. 4, 4-WS-1	-- 104.3	lb/hr 393.4 tons/yr (Other)	None

The BACT limitations in units of pounds per hour and tons per year have not been considered in this analysis, as these limitations are dependent on the production rate (throughput) of the kilns, which varies from one source to another. The BACT determination of 1.83 lb/ton of limestone fed to the kiln at Graymont Western US Inc. - Superior (formerly known as Cutler-Magner Company - Superior, Wisconsin) is equivalent to 3.66 lb/ton of lime produced (assuming a typical ratio of stone feed to lime produced of about 2:1 on a weight basis). The Chemical Lime Company - Montevallo, Alabama has a BACT of 3.1 lb/ton of limestone feed, which is equivalent to a NOx limit of 6.2 lb/ton of lime produced.

The BACT emission limitation proposed by Synergy is as stringent as the most stringent comparable BACT limitation in the RBLC and permits issued to lime kilns.

Step 2: Eliminate Technically Infeasible Options

As explained in Step 1 of this analysis, optimum kiln design is the only remaining technically feasible option.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

As explained in Step 1 of this analysis, optimum kiln design is the only remaining technically feasible option.

Step 4: Evaluate the Most Effective Controls and Document the Results

As explained in Step 1 of this analysis, optimum kiln design is the only remaining technically feasible option.

<u>Proposed BACT</u>

The Permittee has proposed the following as BACT for NOx emissions from Kiln #1 and Kiln #2:

(a) The Permittee shall adopt good combustion practices and use a preheater type rotary kiln in order to minimize NOx emissions.

(b) The NOx emissions from Kiln #1 and Kiln #2 shall not exceed 3.5 pounds per ton of lime produced.

(c) The NOx emissions from Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 131 pounds per hour from each of the stacks.

Step 5: Select BACT

The following has been determined to be BACT for NOx emissions from Kiln #1 and Kiln #2:

(a) The Permittee shall adopt good combustion practices and use a preheater type rotary kiln in order to minimize NOx emissions.

(b) The NOx emissions from Kiln #1 and Kiln #2 shall not exceed 3.5 pounds per ton of lime produced.

(c) The NOx emissions from Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 131 pounds per hour from each of the stacks.

NOx + NMHC BACT: Emergency Generator

Step 1: Identification of NOx and NMHC Control Technologies

Traditional NOx control strategies are technically feasible options for control of NOx emissions from generators. However, due to the limited hours of operation of emergency generators, IDEM has determined that traditional NOx control strategies are not economically feasible options, and will not be evaluated further.

Ultra Low Sulfur Diesel (ULSD)

Ultra-low sulfur diesel fuel was proposed by EPA as a new standard for the sulfur content in on-road diesel fuel sold in the United States since October 15, 2006, except for rural Alaska. This new regulation applies to all diesel fuel, diesel fuel additives and distillate fuels blended with diesel for on-road use, such as kerosene, however, it does not yet apply to railroad locomotives, marine, or off-road uses. The EPA mandated the use of ULSD fuel in model year 2007 and newer highway diesel fuel engines equipped with advanced emission control systems that require the new fuel.

The allowable sulfur content for ULSD (15 ppm) is much lower than the previous U.S. on-highway standard for low sulfur diesel (LSD, 500 ppm), which not only reduces emissions of sulfur compounds (a cause of acid rain), but also allows advanced emission control systems to be fitted that would otherwise be poisoned by these compounds. These systems can greatly reduce emissions of oxides of nitrogen and particulate matter.

The formation of NOx results primarily from thermal oxidation in the combustion air. The rate of formation is dependent on the combustion temperature, residence time of combustion products at high temperatures, and the availability of oxygen in the flame zone of a combustion turbine generator. Tier III emission standards limit the combined emissions of non-methane hydrocarbons (NMHC) and NOx for engines rated between 225 and 450 kW to no more than 3.0 g/hp-hr.

Existing NOx + NMHC BACT Determinations for - Emergency Generator

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for NOx + NMHC emissions from emergency generators. In addition, BACT determinations from recent permits not yet included in RBLC have been included from permit documents issued by state agencies.

The following table summarizes the results from the RACT/BACT/LAER Clearinghouse.

Table 2: RBLC BACT determinations - NOx + NMHC - Emergency Generator

RBLC ID/ Permit No.	Company	Date Issued	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Emergency diesel generator (300 HP) model yr 2008	3.0 g/hp-hr	Proper design and operation and USLD*
Permit No. 031-23360-00026	Honda Manufacturing of Indiana, LLC, Greenburg, IN	10/19/06	Diesel generator between 100 and 175 HP (model yr 2007 or later)	3.0 g/hp-hr (BACT)	ULSD
			Diesel generator between 175 and 750 hp (model yr 2007 or later)	3.0 g/hp-hr (BACT)	ULSD
			Emergency fire pump between 175 and 750 hp (model yr 2008 or later)	7.8 g/hp-hr (BACT)	ULSD

RBLC ID/ Permit No.	Company	Date Issued	Description	Limit	Controls
LA-0101 Cresce	nt City Power, LLC	06/06/05 Emerge	ncy generator (size not specified)	8.9 lb/hr 9.5 g/hp-hr (annual avg.) (BACT)	Pollution prevention
NC-0101 F	orsyth Energy Projects, LLC	09/29/05 Emerge	ncy generator (size not specified)	7.7 g/hp-hr 36.48 lb/hr (BACT)	None
OH-0252 D	uke Energy Hanging Rock, LLC	12/28/04 F	ire pump Emergency generator	8.2 lb/hr, 14.0 g/hp-hr 10.2 lb/hr, 6.9 g/hp-hr (BACT)	None
WI-0228 W	isconsin Public Service	10/19/04 F	ire pump Booster pump	14.26 g/hp-hr 200 hrs per rolling 12 month (BACT)	ULSD
WI-0227 W	E Energies Port Washington Generating Station	10/13/04 Diese	l generator 27.36	g/hp-hr 500 hr per rolling 12 month (BACT)	Engine design Low sulfur diesel

***** Ultra low sulfur diesel

Synergy's proposed BACT for NOx + NMHC emissions from the emergency generator (3.0 g/hp-hr) is the most stringent BACT as listed in the RBLC.

Step 2: Eliminate Technically Infeasible Options

Add-on controls are available for generators, but IDEM has determined that add-on controls are not a feasible option for emergency generators that are limited to 500 hours of operation annually. None of the emergency generators listed in the RBLC are required to have add-on controls for NOx emissions.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

Proper design and operation and the use of ultra-low sulfur diesel have been identified as the only feasible control method for NOx and NMHC emissions from emergency generators.

Step 4: Evaluate the Most Effective Controls and Document the Results

As explained in Step 2 of this analysis, proper design and operation and the use of ultra-low sulfur diesel have been identified as the only feasible control method for NOx and NMHC emissions from emergency generators.

<u>Proposed BACT</u>

The Permittee has proposed the following as BACT for NOx + NMHC emissions from the emergency generator:

(a) The Permittee shall employ proper design and operation and use of ultra-low sulfur diesel for the emergency generator.

(b) The combined emissions of non-methane hydrocarbons (NMHC) and NOx shall be limited to 3.0 g/hp-hr.

Step 5: Select BACT

The following has been determined to be BACT for NOx and NMHC emissions from the emergency generator:

(a) The Permittee shall employ proper design and operation and use of ultra-low sulfur diesel for the emergency generator.

(b) The combined emissions of non-methane hydrocarbons (NMHC) and NOx shall not exceed 3.0 g/hp-hr.

SO2 BACT: Kiln, Preheater #1 and Kiln, Preheater #2

Step 1: Identification of SO2 Control Technologies - Kiln, Preheater #1 and Kiln, Preheater #2

Proper Kiln Design and Operation (including inherent scrubbing from the kiln, preheater and fabric filter baghouse)

Lime kilns function as large dry scrubbers, with high-calcium lime kilns able to achieve 90 to 98% SO2 control efficiency, which is higher than lime based dry scrubbers which can achieve 50 to 60% removal efficiency. Because lime and limestone are the primary alkaline reagents used in gas scrubbers, lime kiln systems act as large gas scrubbers with varying degrees of effectiveness. Lime kiln designs that include a preheater and a fabric filter baghouse provide relatively high SO2 control compared with those that do not since there is greater opportunity for the exhaust gases to come in contact with the lime and limestone. The fabric filter baghouse aids this process by collecting a cake of fine lime, limestone, and alkaline coal ash. As the exhaust gas passes through this porous filter cake, it is exposed to a large surface area of reactive substrate.

While SO2 scrubbing with high-calcium lime and limestone is widely applied, very little is known about scrubbing with dolime or dolomitic limestone, which have about 20 to 40% magnesium replacing the calcium. Although magnesium also reacts with SO2, the SO2 removal efficiency is largely unknown. Based on industry experience, the removal efficiency of SO2 is higher for kilns processing quicklime as compared to those processing dolime.

Fuel Selection

The fuel used to fire the kiln is the primary source of sulfur dioxide emissions from kilns. Natural gas and diesel fuel contain very little sulfur. The sulfur content in coal is about 0.2 to 5%, while petroleum coke has a sulfur content of 2 to 7%. Using heat content, liquid fusion characteristics, price, and availability as criteria, Synergy proposes to use a mixture of coal and petroleum coke available in the Indiana region.

The proposed project is designed as a coal-fired, preheater rotary kiln operation, and using natural gas as the primary fuel is not a technically feasible option. Use of natural gas could also potentially increase NOx emissions.

IDEM has eliminated fuel selection as a technically feasible control technology for SO2 emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

Supplemental Scrubbing

The installation of a scrubber between the preheaters and the kiln baghouses for the removal of additional SO2 from the exhaust gas is a viable control option. Scrubbers may use lime or limestone as the reagent. Scrubbers can be categorized as follows:

(1) Wet Scrubbing -- Wet scrubbers are regenerative processes which are designed to maximize contact between the exhaust gas and an absorbing liquid. The exhaust gas is scrubbed with a 5 - 15 percent slurry, comprised of lime (CaO) or limestone ($CaCO_3$) in suspension. The SO_2 in the exhaust gas reacts with the CaO or $CaCO_3$ to form calcium sulfite ($CaSO_3.2H_2O$) and calcium sulfate ($CaSO_4$). The scrubbing liquor is continuously recycled to the scrubbing tower after fresh lime or limestone has been added.

There are several potential operating problems associated with the use of wet scrubbers. Wet scrubbers require the handling, treatment, and disposal of a sludge by-product. Therefore, air emissions would be exchanged for a large-scale water pollution problem. Treatment of wet scrubber wastes requires advanced wastewater treatment including frequent maintenance by an experienced operator. In addition, the capital cost of a wet scrubber is two to three times higher than the capital cost for a dry scrubber. A wet scrubber is not in operation at any lime kilns currently in the U.S.

IDEM has eliminated wet scrubbers as a technically feasible control technology for SO2 emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

(2) Spray Dryer Absorption (SDA) -- An alternative to wet scrubbing is a process known as dry scrubbing, or spray-dryer absorption (SDA). As in wet scrubbing, the gas-phase SO_2 is removed by intimate contact with a suitable absorbing solution. Typically, this may be a solution of sodium carbonate (Na_2CO_3) or slaked lime [$Ca(OH)_2$]. In SDA systems the solution is pumped to rotary atomizers, which create a spray of very fine droplets. The droplets mix with the incoming SO_2-laden exhaust gas in a very large chamber and subsequent absorption leads to the formation of sulfites and sulfates within the droplets. Almost simultaneously, the heat of the exhaust gas which enters the chamber evaporates the water in the droplets, forming a dry powder before the gas leaves the spray dryer. The temperature of the desulfurized gas stream leaving the spray dryer is now approximately 30 - 50 ^{o}F above its dew point.

The exhaust gas from the SDA system contains a particulate mixture which includes reacted products. Typically, baghouses employing teflon-coated fiberglass bags (to minimize bag corrosion) are utilized to collect the precipitated particulates.

Although the scrubber has been proven in other applications to provide high removal efficiencies, there has not been consistent and widespread application of a dry scrubber to lime kilns. The Graymont Pleasant Gap kiln listed in the RBLC has not started operation and therefore has no data demonstrating compliance. No other kiln has successfully used add-on controls to control SO2 emissions.

SDA technology is considered to be a technically feasible option for control of SO2 emissions from Kiln #1 and Kiln #2.

Chemical Absorption

Chemical systems have been successfully employed in various industries to remove SO2 and other pollutants from concentrated waste streams. These systems are similar to the wet scrubbers except that these systems use a series of aqueous solutions or slurries as the contact and reaction media. The Tri-NOx Multi-Chem scrubber is manufactured by the Tri-Mer Corporation has been evaluated for application to lime manufacturing facilities and will be evaluated in this BACT analysis.

Chemical absorption is generally not considered to be an effective control option for large sources with relative SO2 concentrations. The Tri-NOx system has only been applied for flowrates below 60,000 cfm, which is approximately half of the exhaust flow rate from the facility's kilns.

IDEM has eliminated chemical absorption as a technically feasible control technology for SO2 emissions from Kiln #1 and Kiln #2. No further analysis will be conducted.

Existing SO2 BACT Determinations for Lime Kilns

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for SO2 emissions from similar processes. The search criteria used was “Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" with SO2 as the pollutant.

The following tables summarize the results from the RACT/BACT/LAER Clearinghouse.

Table 3: RBLC BACT determinations - SO2 (Kiln #1 and Kiln #2)

RBLC ID/ Permit No.	Company	Date Issued	Description	Rating	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Rotary lime kilns, with preheaters and fabric filter (Kiln #1 and Kiln #2)	1800 tons/day	2.0 lb/ton of lime produced	Good combustion practices (inherent scrubbing), sulfur content limit
Permit ID V-06-018 R1	Gallatin Materials, LLC - Verona, Kentucky	2/19/08	Kilns 1 and 2	840 tons/day each	12.25 lb/hr 3 hr avg.	Inherent SO2 scrubbing, fuel sulfur content limit
WI-0090	Western Lime Corporation - Green Bay	7/23/96	Lime Kiln #2	500 tons/day	10 lb/hr (other)	Low sulfur coal, good combustion
Wisconsin	Western Lime Corporation, Eden	1/13/97	Lime Kiln #2	500 tons/day	64.2 lb/hr	Low sulfur coal
Wyoming Dakota	Coal Company, Wyoming	4/24/06	Lime kiln (non-dolomitic)	500 tons/day	12.0 lb/hr 52.6 tpy	Proper design and operation
AL-0102 Carmeuse	Lime - Longview Division	9/15/97	Lime kiln	2712 tons/day	64.2 lb/hr	Baghouse and low sulfur fuel
WI-0233 Cutler-Magner	Company, Wisconsin	08/16/06	Rotary lime kiln with preheater and fabric filter (Kiln #5)	650 tons/day	33.7 lb/hr 3 hr avg. (BACT)	Sulfur content limit
AR-0082 Arkansas	Lime Company	08/30/05	Lime Kilns 1 and 3	45254 tons/yr	Fuel sulfur 4% on dry basis 24 hr avg. 3% by weight on 30 day rolling avg (BACT)	Inherent scrubbing, sulfur content limit
PA-0241 Graymont	Bellefonte Plant, Pennsylvania	07/09/04	Lime kiln #7	1050 tons/day	92.83 lb/hr (Other)	Low sulfur fuel and wet scrubber
PA-0241 Graymont	Bellefonte Plant, Pennsylvania	07/09/04	Lime kiln #6	1050 tons/day	305 lb/hr (Other)	Low sulfur fuel and wet scrubber
MI-0383	Western Lime Corporation, Michigan	01/30/04	Lime kiln	--	60.2 lb/hr monthly avg. 242 tpy (BACT)	Sulfur content limit
TX-0452 Austin	White Lime Company, Texas	11/19/03	Kiln no. 1 and 2	--	117.8 lb/hr 485.5 tons/yr (BACT)	Cylcone and wet scrubber
TX-0452 Austin	White Lime Company, Texas	11/19/03	Kiln no. 3	--	28.4 lb/hr 102.5 tons/yr (BACT)	Cyclone and wet scrubber
OH-0270 Carmeuse	Lime - Maple Grove Facility. Ohio	10/14/03	Two rotary lime kilns	650 tons/day	1102 lb/hr (each) 4826.8 tons/yr (BACT)	Sulfur content limit
IL-0084 Vulcan	Materials, Illinois	10/28/02	Lime kiln	1296 tons/day	2.76 lb/ton stone feed 138 lb/hr 3-hr	Baghouse and scrubber

RBLC ID/ Permit No.	Company	Date Issued	Description	Rating	Limit	Controls
AR-0034 Arka	nsas Lime Company, Independence, Arkansas	05/18/02 Rotar	y lime kiln no. 2	600 tons/day	2.07 lb/ton 227.0 tons/yr (BACT)	Sulfur content limit
AR-0028 Arka	nsas Lime Company, Independence, Arkansas	09/14/99 Lime	kiln	625 tons/day	65.2 lb/hr sulfur content - 4% daily, 3% 30-day rolling	Sulfur content limit
TX-0360 T	exas Lime Company, Johnson, Texas	08/02/99	Lime kiln #4	--	14.6 lb/hr 60.6 tons/yr (other)	None

The BACT limitations in units of pounds per hour and tons per year have not been considered in this analysis, as these limitations are dependent on the production rate (throughput) of the kilns, which varies from one source to another.
The BACT emission limitation proposed by Synergy in lb/ton unit is more stringent than comparable BACT determinations at other kilns.

Step 2: Eliminate Technically Infeasible Options

The remaining technically feasible options are Spray Dryer Absorption (SDA) and the proper kiln design and operation (inherent scrubbing).

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

The following table lists the SO2 control efficiency of the technically feasible option.

Table 4: SO2 Control Efficiency

Control Method	Additional SO2 Control Efficiency (%)
Proper kiln design and operation (inherent scrubbing)	90 - 95%
Spray Dry Absorption (SDA)	75 to 90%

Step 4: Evaluate the Most Effective Controls and Document the Results

As determined in Step 3, the most effective SO2 control option is proper kiln design and operation (inherent scrubbing).

<u>Proposed BACT</u>

The Permittee has proposed the following as BACT for SO2 emissions from Kiln #1 and Kiln #2:

(a) The emissions of SO2 from the kilns shall not exceed 2.0 pounds per ton of lime produced.

(b) The emissions of SO2 from Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 75.0 pounds per hour from each of the stacks, for a 3-hour averaging period.

Step 5: Select BACT

The following has been determined to be BACT for SO2 emissions from Kiln #1 and Kiln #2:

(a) The emissions of SO2 from the kilns shall not exceed 2.0 pounds per ton of lime produced.

(b) The emissions of SO2 from Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 75.0 pounds per hour from each of the stacks, for a 3-hour averaging period.

SO2 BACT: Emergency Generator

Step 1: Identification of SO2 Control Technologies - Emergency Generator

Conventional SO2 control technologies such as wet and dry scrubbers and chemical absorbers have not been identified in RBLC as viable control technologies for emergency generators. The use of ultra-low sulfur diesel has been identified as a viable control option.

Existing SO2 BACT Determinations for Emergency Generators

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for SO2 emissions from similar processes.

The following table summarizes the results from the RACT/BACT/LAER Clearinghouse.

Table 4: RBLC BACT determinations - SO2 (Emergency Generators)

RBLC ID/ Permit No.	Company	Permit Issuance Date	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Diesel generator - 250 kW	0.15 g/hp-hr	Ultra-low sulfur diesel (0.0015%), proper design and operation
NC-0101 F	orsyth Energy Projects, LLC	09/29/05	Die sel emergency generator - 11.4 mmBTU/hr	0.58 lb/hr each (BACT)	None
MO-0067	Aquila, Inc. - South Harper	12/29/04	Emergency diesel fire pump - 1.6 mmBTU/hr	0.80 lb/hr Sulfur limited to 0.05% by weight (BACT)	Sulfur content limit
OH-0275 PSI	Energy Madison Station	08/24/04	Emerge ncy diesel generator	8.61 lb/hr (BACT)	Low sulfur fuel
OH-0254 D	uke Energy North America - Ohio	08/14/03	Emergency generator	0.4 lb/hr 0.23 g/hp-hr	Combustion control
MT-0022 Bull	Mountain Development Company, Montana	07/21/03	Emergency generator	97.7% reduction in operating hours (BACT)	Limit hours of operation, low sulfur fuel
IA-0062 Interstate	Power & Light, Iowa	12/20/02	Black start generator	0.51 lb/mmBTU (BACT)	low sulfur fuel
NJ-0043 Liberty	Generating Station, New Jersey	03/38/02	Emerge ncy generator	0.8 lb/hr (Other)	None
NJ-0044 Mantua	Creek Generating Facility	06/26/01	Emergency generator	0.62 lb/hr (Other)	None

RBLC ID/ Permit No.	Company	Permit Issuance Date	Description	Limit	Controls
OK-0074 Kio	wa Power Partners LLC, Oklahoma	05/01/01	Emergency generator	2.0 g/100 scf (BACT)	Low sulfur fuel
TX-0326 The	AES Aurora, Texas	07/20/00	Emergency generator	0.0022 lb/hr (Other)	None
TX-0262 Arch	er Power Partners, Texas	01/03/00	Emergency generator	1.9 lb/hr , 0.32 g/hp-hr (BACT)	None
TX-0324 O	dessa-Ector Power Partner, Texas	11/18/99	Emergency generator	1.9 lb/hr (BACT)	None
CA-1077 US	Government Naval Air Station - North Island	10/07/99	Emergency IC engine Emergency generator	0.05% S in fuel 0.13 lb/hr	Low sulfur fuel

The SO2 BACT limitations proposed by Synergy Management LLC is the most stringent of all comparable BACT limitations in RBLC based on g/hp-hr units. The proposed BACT of 0.15 g/hp-hr is to be achieved through the use of ultra-low sulfur diesel with a sulfur content of 0.0015%, which is also more stringent than required by the NSPS Subpart IIII (0.05%).

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

As outlined in Step 1, IDEM has determined that the only viable control option for SO2 emissions from emergency generators is limiting fuel sulfur content, such as use of ultra-low sulfur diesel.

Step 4: Evaluate the Most Effective Controls and Document the Results

As determined above, the only feasible option for SO2 control from emergency generators is limiting fuel sulfur content.

<u>Proposed BACT</u>

The Permittee has proposed the following as BACT for SO2 emissions from the emergency generator:

(a) The emissions of SO2 from the emergency generator shall not exceed 0.15 g/hp-hr.

(b) The emergency generator shall use only ultra low sulfur diesel with a maximum sulfur content of 0.0015%.

Step 5: Select BACT

The following has been determined to be BACT for SO2 emission from the emergency generator:

(a) The emissions of SO2 from the emergency generator shall not exceed 0.15 g/hp-hr.

(b) The emergency generator shall use only ultra low sulfur diesel with a maximum sulfur content of 0.0015%.

CO BACT - Kiln, Preheater #1 and Kiln, Preheater #2

Step 1: Identification of CO Control Technologies - Kiln, Preheater #1 and Kiln, Preheater #2

Proper Kiln Design and Operation

Emissions of CO from a lime kiln result from incomplete combustion of organic constituents within the system. Product quality is critically dependent on the flame temperature and kiln atmosphere composition. These same factors are also important factors in the production of CO. New kilns are designed and operated to conserve heat and thereby reduce fuel costs. A preheater kiln design increases fuel efficiency, which serves to reduce CO emissions as well. The amount of lime produced per unit of fuel decreases the amount of combustion-related pollutants emitted per unit of product. The proposed design of Kiln #1 and Kiln #2 will involve a continuous kiln oxygen analysis to ensure that excess oxygen is available to minimize burner CO emissions.

Thermal Oxidizers

A thermal oxidizer controls CO emissions by using incineration equipment to raise the exhaust gas temperature to the combustion temperature of CO. A thermal oxidizer can be recuperative or regenerative. A regenerative thermal oxidizer uses a direct contact heat exchanger consisting of a bed of porous ceramic packing or other structured, high heat capacity media. A recuperative thermal incinerator controls CO in a gas stream pre-heated by exiting flue gas from the same system in a heat exchanger or recuperator. Thermal oxidizers are capable of reducing CO emissions by up to 95%. Due to lack of data related to the efficiency of thermal oxidizers in controlling CO emissions from kilns, 90% control efficiency is considered to be a conservative estimate for a lime kiln application.

Catalytic Oxidizers

A catalytic oxidizer is an add-on control device to control CO emissions by using a bed of catalyst that facilitates the oxidation of combustible gases. The catalyst increases the reaction rate and allows the conversion of CO at a lower temperature than a thermal incinerator. The optimum temperature range for catalytic oxidizers is generally 600 to 900 deg F. Typical problems encountered when using a catalytic incinerator is that the contaminants in the exhaust stream can poison or foul the catalyst bed. Catalytic oxidizers are generally capable of 90 to 95% removal efficiency.

IDEM has determined that a catalytic oxidizer is not a technically feasible CO control technology for Kiln #1 and Kiln #2. No further analysis will be conducted.

Excess Oxygen at the Burner

Introducing excess air in the combustion zone can reduce CO emissions by promoting complete combustion within the burner. Increasing oxygen concentration above normal levels produces excess SO2 which is absorbed by the lime, causing it to be unfit for many commercial applications. Other negative consequences of introducing excess oxygen to the burner include increased NOx and SO2 emissions and decreased thermal efficiency.

IDEM has determined that introducing excess air to reduce CO emissions is not a technically feasible control technology for Kiln #1 and Kiln #2. No further analysis will be conducted.

Step 2: Eliminate Technically Infeasible Options

The remaining technically feasible options are thermal oxidizers and proper kiln design and operation.

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for CO emissions from similar processes. The search criteria used was “Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" with CO as the pollutant. This search was limited to a review of all facilities listed since 1996.

The following tables summarize the results from the RACT/BACT/LAER Clearinghouse.

Existing CO BACT Determinations for Lime Kilns

Table 5: RBLC BACT determinations - CO (Lime Kilns)

RBLC ID/ Permit No.	Company	Date Issued	Description	Rating	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Rotary lime kilns, with preheaters and fabric filter (Kiln #1 and Kiln #2)	1800 tons/day	2.5 lb/ton	Proper design and operation
WI-0233	Cutler-Magner Company, Wisconsin	08/16/06	Lime Kiln (P50)	650 tons/day	84.2 lb/hr 3-hr avg. 1.56 lb/ton 24 hr avg. (BACT)	Good Combustion Practices
Wyoming	Dakota Coal Company, Wyoming Lime Producers	4/24/06	Lime Kiln	500 tons/day	21.0 lb/hr	Proper design and operation
Permit ID V-06-018 R1	Gallatin Materials, Inc. - Verona, Kentucky	2/19/08	Lime Kilns 1 and 2	840 tons/day each	52.5 lb/hr, 1-hr avg.	None
AL-0082	Chemical Lime Company of Alabama, Inc. - O'Neal	4/29/96	Lime Kiln	1356 tons/day	1.5 lb/ton lime produced	Proper design and operation
AL-0102	Carmeuse Lime, Inc. - Longview	9/15/97	Lime Kiln	2712 tons/day	1.5 lb/ton stone feed	Proper design and operation
AR-0082	Arkansas Lime Company, Arkansas	08/30/05	Lime Kiln SN-30Q	45254 tons/yr	3.0 lb/ton 30 day rolling (BACT)	Proper design and operation
AL-0220	Chemical Lime Company O'Neal Plant, Alabama	03/23/05	Kilns 1 and 2 and Coolers	1500 tons/day each	2.5 lb/ton lime produced annually 156.25 lb/hr (BACT)	None
PA-0241	Graymont Bellefonte Plant, Pennsylvania	07/09/04	Lime Kiln #6	1200 tons/day	1431 lb/hr 1314 tons/yr 12 month rolling avg. (BACT)	None
PA-0241	Graymont Bellefonte Plant, Pennsylvania	07/09/04	Lime Kiln #6	1050 tons/day	1800 lb/hr 1150 tons/yr 12 month rolling avg. (BACT)	None
MI-0383	Western Lime Corporation, Michigan	01/30/04	Lime Kiln	--	113.2 lb/hr 456 tons/yr. (BACT)	Efficient Fuel Combustion and Minimize Excess Air
TX-0452	Austin White Lime Company McNeil Plant and Quarry	11/19/03	Kilns No. 1 and 2	--	44.1 lb/hr 181.8 tons/yr. (BACT)	None

RBLC ID/ Permit No.	Company	Date Issued	Description	Rating	Limit	Controls
OH-0270 Carmeus	e Lime, Inc. Maple Grove Facility	10/14/03 T	wo Rotary Kilns	650 tons/day	270.83 lb/hr each 1186.23 tons/yr (BACT)	None
IL-0084 Vu	lcan Materials, Illinois	10/28/02 Lime	Kiln	1296 tons/day	43.2 lb/ton 2159 lb/hr (BACT)	Best Combustion Practices
AR-0034 Arka	nsas Lime Company, Independence	05/18/00 Rotar	y Lime Kiln #2	600 tons/day	3.12 lb/ton 342 tons/yr (Other)	None
TX-0360 T	exas Lime Company, Johnson	08/02/99	Lime Kiln No. 4, 4-WS-1	-- 22.0	lb/hr 91.3 tons/yr (Other)	None
TX-0360 T	exas Lime Company, Johnson	08/02/99	Lime Kiln No. 6, 6-WS-1	-- 38.6	lb/hr 157.1 tons/yr (Other)	None

The emissions of NOx and CO emissions at lime kilns tend to counterbalance such that the combustion conditions that reduce NOx emissions tend to increase CO emissions and vice versa. Of all the facilities listed in RBLC, the only facility that has a more stringent BACT limit for CO emissions from lime kilns as well as a more stringent (or equally stringent) BACT limit for NOx are located at the Chemical Lime Company of Alabama, Inc. - O'Neal. According to the Alabama Department of Environmental Management (ADEM), Air Division, Industrial Minerals Section, the lime kilns at Chemical Lime Company of Alabama, Inc. - O'Neal has not been able to meet the NOx limits in the old kiln (Kiln No. 1) consistently. These limits were also applied to the kiln during the Kiln No. 2 PSD project. The kilns are still having problems due to kiln variability over short time periods. In addition, the facility was not able to meet the CO limits in the old kiln (Kiln No. 1) and the new kiln (Kiln No. 2) consistently. In PSD permit number 411-0039-X028 issued on March 23, 2005, the CO limits for the lime kilns at the O'Neal plant were increased to 2.5 pounds per ton of lime produced.

Due to the compliance issues involved as explained above, and the relaxation of the CO limits for the lime kilns in 2005, the more stringent CO BACT listed in RBLC for the lime kilns at the Chemical Lime Company of Alabama, Inc. - O'Neal will not be considered as CO BACT.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

The following table lists the CO control efficiency of the only technically feasible control device.

Table 6: CO and VOC Control Efficiency

Control Method	Additional CO Control Efficiency (%)
Thermal oxidizer	90%

Step 4: Evaluate the Most Effective Controls and Document the Results

A cost effectiveness analysis was performed by Synergy Management LLC for the use of thermal oxidizers for the control of CO emissions from Kiln #1 and Kiln #2.

Emissions Used for Cost Effectiveness Analysis

Table 7: Emissions Parameters for CO Cost Effectiveness

Operation CO	Emissions (tons/yr) Uncontrolled	CO Emissions (tons/yr) controlled (90% control efficiency)	Emissions Reduction (tons/yr)
Kiln #1 and Kiln #2	780	78	702

Table 8: Cost Effectiveness Analysis - CO Emissions (Kiln #1 and Kiln #2)

A. Direct Capital Cost		
Item	**Cost Estimate**	**Reference/Source of Cost Estimate**
Purchase Equipment Costs		
1. Equipment Cost, A	$ 5,138,268	See note a
2. Instrumentation/controls, 0.10A	$ 513,827	EPA Cost Manual Table 2.8
3. Sales Tax	$ 0	
4. Freight, 0.05A	$ 256,913	EPA Cost Manual Table 2.8
5. Other	$ 0	
6. Purchased Equipment Subtotal, B	**$ 5,909,008**	
Direct Installation Costs		
7. Foundations and Supports, 0.08B	$ 472,721	EPA Cost Manual Table 2.8
8. Erection/Handling	$ 0	
9. Electrical	$ 0	
10. Piping	$ 0	
11. Insulation, 0.01B	$ 59,090	
12. Painting, 0.01B	$ 0	
13. Other - downstream ductwork upgrade	$ 590,901	
14. Direct Installation Costs Subtotal	**$ 1,122,712**	
15. Direct Capital Cost Subtotal	**$ 7,081,720**	
B. Indirect Installation Costs		
1. Engineering and Supervision, 0.10B	$ 590,901	EPA Cost Manual Table 2.8
2. Construction and Field Expenses, 0.05B	$ 295,450	
3. Construction Fees, 0.10B	$ 295,450	
4. Start-up, 0.02B	$ 118,180	
5. Performance Test, 0.01B	$ 59,090	
6. Contingencies, 0.03B	$ 177,270	
7. Other - contractor fees	$ 590,901	
8. Indirect Installation Costs Subtotal	**$ 2,127,243**	
C. Total Capital Cost	**$ 9,208,963**	
D. Direct Annual Cost		
1. Operating Labor Operator (1.0 hrs/shift) (shifts/yr) (24.22 $ per hour) Supervision (15% of labor)	$ 26,158 $ 3,924	EPA Cost Manual
2. Maintenance Labor Maintenance Labor (0.5 hrs/shift) (shifts/yr) (24.22 $/hr) Maintenance Materials (100% of labor)	$ 13,079 $ 13,079	
4. Utilities Gas & Electric (Gas @ 119,799 kft3/yr, $12/kft3) (Electricity @ 9,972,900, $0.058 /kw)	$ 1,437,584 $ 578,428	Vatavuk[a]
6. Direct Annual Cost Subtotal	**$ 2,059,173**	

E. Indirect Annual Costs		
1. Overhead (60% of direct O & M cost)	$ 33,743	EPA Cost Manual
2. Insurance (1% Total Capital Investment)	$ 92,090	
3. Administration (2% Total Capital Investment) Property Taxes	$ 184,179 $ 92,090	
5. Capital Recovery a. Interest Rate b. Economic Lifetime	 7% 10 years	
6. CAPITAL RECOVERY COST	$ 1,311,149	EPA Cost Manual
7. Indirect Annual Cost Subtotal	**$ 1,713,251**	
F. Total Annualized Cost Summary		
1. Direct Annual Costs Subtotal	$ 2,072,252	
2. Indirect Annual Costs Subtotal	$ 1,713,251	
3. Total Annualized Cost (TAC)	**$ 3,785,503**	
G. Cost Effectiveness		
1. Total Pollution Removed (tons/year)	702	90% control
4. Average Cost Effectiveness of BACT Option ($/ton)	**$ 5,470**	

"EPA Air Pollution Control Cost Manual, Sixth Edition", EPA-452-02-001, January 2002

[a] Installed cost for two RTO units in 2008 dollars. Estimate based on "Estimating Costs of Air Pollution controls", WM Vatavuk, 1990. Uses waste gas flow rate of 67,300 scfm per kiln. Cost adjusted from 1998 to 2008 dollars using Chemical Engineering Plant Cost Index Values 342.5 (1998) and 560.9 (April 2008)

The addition of a thermal oxidizer has a cost effectiveness of $5,392 per ton of CO controlled. This would add about $6.15 per ton of lime produced on a base production cost of $25 to $35 per ton of lime. None of the existing kilns listed in RBLC are required to install oxidizers. The additional production cost due to thermal oxidizer would place Synergy Management, LLC at an economic disadvantage with its competitors. In addition, the use of a thermal oxidizer would generate collateral emissions of combustion pollutants including NOx (about 11.4 tons per year) and CO (about 5.0 tons per year). Therefore, the addition of a thermal oxidizer has been eliminated as a feasible control method for control of CO emissions from Kiln #1 and Kiln #2.

Proposed BACT

The Permittee has proposed the following as BACT for CO emissions from Kiln #1 and Kiln #2:

(a) The Permittee shall adopt good combustion in order to minimize CO emissions.

(b) The emissions of CO from the Kiln #1 and Kiln #2 shall not exceed 2.5 lb/ton of lime produced.

(c) The emissions of CO from each of Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 94 lb/hr for each stack, for a 3-hr averaging period.

Step 5: Select BACT

The following has been determined to be BACT for CO emissions from Kiln #1 and Kiln #2:

(a) The Permittee shall adopt good combustion in order to minimize CO emissions.

(b) The emissions of CO from the Kiln #1 and Kiln #2 shall not exceed 2.5 lb/ton of lime produced.

(c) The emissions of CO from each of Stacks no. 1 (Kiln, Preheater 1) and 2 (Kiln, Preheater 2) shall not exceed 94 lb/hr for each stack, for a 3-hr averaging period.

CO BACT: Emergency Generator

Step 1: Identification of CO Control Technologies - Emergency Generator

The RBLC does not list any feasible CO control technologies for emergency diesel generators.

Existing CO BACT Determinations for Emergency Generators

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for CO emissions from similar processes.

The following table summarizes the results from the RACT/BACT/LAER Clearinghouse.

Table 9: RBLC BACT determinations - CO (Emergency Generators)

RBLC ID/ Permit No.	Company	Permit Issuance Date	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Diesel generator - 250 kW	2.6 g/hp-hr	Good combustion
OK-0110 Dalita	lia LLC, Oklahoma	10/21/05	Emerge ncy generator 0.006	7 lb/hp-hr (equivalent 3.05 g/hp-hr) (BACT)	Good combustion
OK-0111 Dalita	lia LLC	10/14/05	Emergency generator	0.0067 lb/hp-hr (equivalent 3.05 g/hp-hr) (BACT)	Good combustion
NC-0101 F	orsyth Energy Projects LLC	9/29/05	Emerge ncy generator & fire pump (Hp not specified)	9.69 lb/hr (BACT)	None
OH-0275 PSI	Energy Madison Station	08/24/04	Emerge ncy diesel generator	14.3 lb/hr (BACT)	None
OH-0254 D	uke Energy North America - Ohio	08/14/03	Emergency generator	15.2 lb/hr 8.6 g/hp-hr (BACT)	Combustion control
MT-0022 Bull	Mountain Development Company, Montana	07/21/03	Emerge ncy generator	97.7% reduction (BACT)	Limited hours of operation
IA-0062 Interstate	Power & Light, Iowa	12/20/02	Black start generator	0.85 lb/mmBTU (BACT)	Good combustion practices
NJ-0043 L	iberty Generating Station, New Jersey	03/38/02	Emerge ncy generator	11.1 lb/hr (Other)	None
NJ-0044 Mantua	Creek Generating Facility	06/26/01	Emerge ncy generator 7.0	lb/hr 0.6 lb/mmBTU (BACT)	None
CA-1015 Johns	on Power Systems, Los Angeles	07/11/01	Emerge ncy IC Engine 2.6	g/hp-hr (Other)	None
OK-0074 Kio	wa Power Partners LLC, Oklahoma	05/01/01	Emerge ncy generator 0.085	lb/mmBTU (BACT)	Good combustion practices

RBLC ID/ Permit No.	Company	Permit Issuance Date	Description	Limit	Controls
TX-0326 T	he AES Aurora, Texas	07/20/00	Emergency generator	1.12 lb/hr (Other)	None
TX-0324	Odessa-Ector Power Partner, Texas	11/18/99	Emergency generator	34.9 lb/hr (BACT)	None
CA-1077 U	S Government Naval Air Station - North Island	10/07/99	Emergency IC engine Emergency generator	8.5 g/hp-hr 3.03 g/hp-hr	Limited hours of operation

Step 2: Eliminate Technically Infeasible Options

IDEM has not identified any feasible CO control technologies for emergency diesel generators.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

IDEM has not identified any feasible CO control technologies for emergency diesel generators.

Step 4: Evaluate the Most Effective Controls and Document the Results

Proposed BACT

The Permittee has proposed the following as BACT for CO emissions from the emergency generator:

(a) The emissions of CO from the emergency generator shall not exceed 2.6 g/hp-hr.

The BACT proposed by Synergy Management, LLC, is the most stringent on a g/hp-hr basis as identified in the RBLC. The proposed BACT is also as stringent as the Tier 3 NSPS emission limitation under the NSPS, Subpart IIII. No further analysis is necessary.

Step 5: Select BACT

The following has been determined to be BACT for CO emissions from the emergency generator:

(a) The emissions of CO from the emergency generator shall not exceed 2.6 g/hp-hr.

PM/PM10 AND BERYLLIUM BACT - Kiln, Preheater #1 and Kiln, Preheater #2

Step 1: Identification of PM/PM10 and Beryllium Control Technologies - Kiln, Preheater #1 and Kiln, Preheater #2

Beryllium control technologies are identical to PM control technologies as both of these pollutants are captured and controlled by the same equipment and control method.

Electrostatic Precipitator (ESP)

ESPs use an electrostatic field to charge particulate matter contained in the gas stream and then attract and collect the particles on a collection surface of opposite charge.

Cyclones

Particulate removal in cyclone collectors is achieved through the action of inertial forces, especially centrifugal. As the gas stream enters the top of the cyclone, a vortex is induced as it is forced to travel a circular path. Centrifugal forces cause the heavier particles to concentrate near the outer wall of the cyclone and particle of lesser mass to remain closer to the center of the vortex. Frictional and gravitational forces then act on the particles closest to the wall, causing them to fall toward the bottom of the cyclone, where they are collected in a hopper. Within the lower segment of the cyclone, the direction of the gas-flow vortex is reversed, and an inner ascending vortex is formed. The inner vortex consists of comparatively particulate-free air, which is collected through an outlet duct at the top of the cyclone.

Scrubbers

Scrubbers can achieve a high particulate collection efficiency (90% or better), but at the expense of a punitive pressure drop (ranging from 6 - 20 inches of water), higher operational utilities, generation of large quantities of sludge along with the associated problem of sludge handling, de-watering, and disposal.

Fabric Filters/Baghouses

The exhaust air flows through tightly woven or felted fabric, causing PM to be collected on the fabric. As PM collects on the filter, collection efficiency increases while pressure drop through the system also increases. Bags are intermittently cleaned by shaking the bag, pulsing air through the bag, or temporarily reversing the airflow.

Cartridge Collectors

While baghouses rely on dust cake on the bags for particle filtration, cartridge collectors rely on filter media. They are preferred over baghouses where the particulate matter is dry, free-flowing, and non-sticky in a low humidity environment.

Dust Suppression

Water spray adds water with or without surfactant to material being transported or stored. Emissions are prevented through agglomerate formation by combining small dust particles with larger aggregate or with liquid droplets. Water retained by sprayed material prevents emissions of PM.

Enclosure

Enclosure technology employs structures or underground placement to shelter material from wind entrainment. Enclosures can either fully or partially surround the source.

Recent BACT Determinations for PM/PM-10 from Lime Kilns

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for PM/PM-10 emissions from similar processes. The search criteria used was “Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" with PM/PM-10 as the pollutants.

The following tables summarize the results from the RACT/BACT/LAER Clearinghouse.

Table 10: RBLC BACT determinations - PM/PM-10 from Lime Kilns

RBLC ID/ Permit No.	Company	Date Issued	Description	Rating	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Rotary lime kilns, with preheaters and fabric filter (Kiln #1 and Kiln #2)	1800 tons/day	0.01 gr/dscf 0.15 lb/ton PM 0.20 lb/ton PM-10 15% opacity	Baghouse
WI-0233	Graymont Western US Superior (formerly Cutler-Magner Company)	08/16/06	Lime Kiln (P50)	650 tons/day	5.4 lb/hr 3 hr avg. 0.10 lb/ton 3 hr avg. stone fed (BACT)	Fabric Filter
AR-0082	Arkansas Lime Company, Independence	08/30/05	Lime Kiln SN 30Q	45254 tons/yr	0.1 lb/ton of stone fed (BACT)	Baghouse
AL-0220	Chemical Lime Company - O'Neal Plant	03/23/05	Kiln 1 and Cooler	1500 tons/day	0.14 gr/dscf 3 hr avg. 0.12 lb/ton stone fed 15.0 lb/hr 3 hr avg. (BACT)	Baghouse
PA-0241	Graymont Bellefonte Plant	07/09/04	#6 Lime Kiln	1200 tons/day	0.10 gr/dscf 0.10 lb/ton (Other)	Fabric Filter
MI-0383	Western Lime Corporation, Michigan	01/30/04	Lime Kiln	Not available	7.5 lb/hr 29.2 tons/yr (BACT)	Fabric Filter, use of propane or No. 2 oil
OH-0270	Carmeuse Lime Inc. - Maple Grove Facility	10/14/03	Two Rotary Kilns	650 tons/day	14.23 lb/hr (each) 0.5 lb/ton (BACT)	Baghouse
AR-0034	Arkansas Lime Company, Independence	05/18/00	Rotary Lime Kiln No. 2	600 tons/day	7.3 lb/hr 0.292 lb/ton (BACT)	Baghouse
TX-0360	Texas Lime Company	08/02/99	Lime Kiln No. 4 4-WS-1	Not available	18.9 lb/hr 78.5 tons/yr (Other)	None

The BACTs listed in RBLC in pounds per hour and tons per year are dependent on the kiln capacities, and will not be considered as comparable BACTs. The proposed BACT in gr/dscf unit is the most stringent BACT as listed in RBLC. None of the listed RBLC BACTs include an opacity limitation. Pursuant to the permit issued to the Arkansas Lime Company (Permit No. 45-AOP-R2), the PM-10 BACT for the lime kiln is 0.015 gr/dscf, with no corresponding PM-10 BACT limit in lb/ton units. Therefore, the BACT limit listed for this facility in RBLC will not be considered. The BACT limits in units of lb/ton listed in RBLC that include the stone feed as the measurement unit are about twice as high as the emissions in units of lb/ton of lime produced. Therefore, the proposed BACT limit of 0.20 lb/ton of PM-10 matches the most stringent BACT listed in RBLC.

Step 2: Eliminate Technically Infeasible Options

None of the available control technologies have been identified as technically infeasible for control of PM and PM-10 emissions from lime kilns. Since the proposed BACT includes the requirement to operate baghouses at Kilns #1 and 2, no further analysis of alternative control technologies is needed.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

Fabric filters or baghouses are considered as the most effective control option for the control of particulate matter and filterable PM-10 emissions from lime kilns.

Step 4: Evaluate the Most Effective Controls and Document the Results

Proposed BACT

Synergy has proposed the use of baghouses for the control of PM, PM-10, and beryllium emissions from Kiln #1 and Kiln #2, with the following requirements:

(a) The emissions of PM, PM-10 (filterable), and beryllium shall be controlled by baghouses DC1 and DC2 at all times that the associated kiln or preheater is in operation.

(b) The emissions of PM and PM-10 (filterable) from the baghouses DC1 and DC2 shall not exceed 0.01 gr/dscf.

(c) The emissions of PM and PM-10 (filterable) from Kiln #1 and Kiln #2 shall not exceed 0.15 lb/ton, for a 3-hour averaging period. The emissions of PM-10 (filterable and condensible) shall not exceed 0.20 lb/ton of lime produced, for a 3-hour averaging period.

(d) The opacity at the stacks #1 and 2 shall not exceed 15%, with compliance determined by a continuous opacity monitoring system.

Step 5: Select BACT

The following has been determined to be BACT for PM, PM-10 and beryllium emissions from Kiln #1 and Kiln #2:

(a) The emissions of PM, PM-10 (filterable), and beryllium shall be controlled by baghouses DC1 and DC2 at all times that the associated kiln or preheater is in operation.

(b) The emissions of PM and PM-10 (filterable) from the baghouses DC1 and DC2 shall not exceed 0.01 gr/dscf.

(c) The emissions of PM and PM-10 (filterable) from Kiln #1 and Kiln #2 shall not exceed 0.15 lb/ton, for a 3-hour averaging period. The emissions of PM-10 (filterable and condensible) shall not exceed 0.20 lb/ton of lime produced, for a 3-hour averaging period.

(d) The opacity at the stacks #1 and 2 shall not exceed 15%, with compliance determined by a continuous opacity monitoring system.

PM/PM10 AND BERYLLIUM BACT- Loadout Operations

Step 1: Identification of PM/PM10 and Beryllium Control Technologies - Loadout Operations

Beryllium control technologies are identical to PM control technologies as both of these pollutants are captured and controlled by the same equipment and control method. The feasible control methods identified for PM/PM-10 and beryllium control are as follows: ESPs, baghouses, dust collectors. The use of a vacuum ring for truck filling of lime products has also been identified as a viable control option.

Recent BACT Determinations for PM/PM-10 from Loadout Operations

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for PM/PM-10 emissions from similar processes. The search criteria used was "Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" with PM/PM-10 as the pollutants.

The following tables summarize the results from the RACT/BACT/LAER Clearinghouse.

Table 11: RBLC BACT determinations - PM/PM-10 from Loadout Operations

RBLC ID/ Permit No.	Company	Date Issued	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Lime loadout, off-spec loadout, lime rail loadout	0.005 gr/dscf	Baghouse, vacuum ring for truck filling
WI-0233 Cutler-Ma gner Company		08/16/06	Small and large silo truck loading, core bin truck loading	0.0114 g/dscm (0.005 gr/dscf) (BACT)	Baghouse, vacuum ring for truck filling
AR-0082 Arka nsas Lime Company, Independence		08/30/05	Lime discharge Lime loadout	0.01 gr/dscf 0.015 gr/dscf (BACT)	Dust Collector Dust Collector
AL-0220 C hemical Lime Company - O'Neal Plant		03/23/05	Lime product loadout (truck and railcars)	0.005 through 0.009 gr/dscf (BACT)	None
TX-0452 Austin White Lime Company Mcneil		11/19/03	Off spec pebble loadout Pulverizer loadout, Product bin 1-7 loadout Hydrate loadout Product loading	9.0 lb/hr 1.2 ton/yr 0.09 lb/hr 0.38 ton/yr (Other) 0.15 lb/hr 0.66 ton/hr (BACT) 1.84 lb/hr 1.26 ton/yr (BACT)	Dust Collector Dust Collector Dust Collector Dust Collector
OH-0270 Carmeus e Lime Inc. - Maple Grove Facility		10/14/03	Product storage/loadout #2 Product loadout #1	1.3 lb/hr 5.69 ton/yr (BACT) 0.62 lb/hr 2.72 ton/yr (BACT)	Work Practices
TX-0360 T exas Lime Company		08/02/99	Dust bin loadout	0.36 lb/hr 1.58 ton/yr (Other)	None

Step 2: Eliminate Technically Infeasible Options

None of the available control technologies have been identified as technically infeasible for control of PM and PM-10 emissions from loadout operations. Since the proposed BACT includes the requirement to operate baghouses for lime loadout, off-spec loadout, and lime rail loadout operations, and baghouses are considered to be most efficient for PM/PM-10 control, no further analysis of alternative control technologies is needed.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

Fabric filters or baghouses is considered as the most effective control option for the control of particulate matter and filterable PM-10 emissions from loadout operations.

Step 4: Evaluate the Most Effective Controls and Document the Results

Proposed BACT

Synergy has proposed the use of baghouses for the control of PM, PM-10, and beryllium emissions from loadout operations:

(a) The emissions of PM, PM-10, and beryllium shall be controlled by baghouses DC3, DC4, DC8, DC9, and DC10 at all times that the associated loadout is in operation.

(b) The emissions of PM and PM-10 (filterable) from the baghouses DC3, DC4, DC8, DC9 and DC10 shall not exceed 0.005 gr/dscf.

(c) A vacuum ring shall be used for the truck filling of lime products.

Step 5: Select BACT

The following has been determined to be BACT for PM, PM-10 and beryllium emissions from loadout operations:

(a) The emissions of PM, PM-10, and beryllium shall be controlled by baghouses DC3, DC4, DC8, DC9, and DC10 at all times that the associated loadout is in operation.

(b) The emissions of PM and PM-10 (filterable) from the baghouses DC3, DC4, DC8, DC9 and DC10 shall not exceed 0.005 gr/dscf.

(c) A vacuum ring shall be used for the truck filling of lime products.

PM/PM10 AND BERYLLIUM BACT- Lime Kiln Dust Bin

Step 1: Identification of PM/PM10 and Beryllium Control Technologies - Lime Kiln Dust Bin Vent

Beryllium control technologies are identical to PM control technologies as both of these pollutants are captured and controlled by the same equipment and control method. The feasible control methods identified for PM/PM-10 and beryllium control are as follows: ESPs, baghouses, dust collectors.

Recent BACT Determinations for PM/PM-10 from Lime Kiln Dust Bin

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for PM/PM-10 emissions from similar processes. The search criteria used was “Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" with PM/PM-10 as the pollutants.

The following tables summarize the results from the RACT/BACT/LAER Clearinghouse.

Table 12: RBLC BACT determinations - PM/PM-10 from Lime Kiln Dust Bin

RBLC ID/ Permit No.	Company	Date Issued	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Lime kiln dust bin	0.005 gr/dscf	Baghouse
WI-0233 Cutler-Ma gner Company		08/16/06	Lime fine storage P56 Off spec bin storage	0.17 lb/hr 0.0114 g/'dscm (0.005 gr/dscf) 0.04 lb/hr 0.0114 g/dscm (0.005 gr/dscf) (BACT)	Baghouse, enclosure Baghouse, enclosure
AR-0082 Arka nsas Lime Company, Independence		08/30/05 Coal/c oke bin, lime storage silo		0.015 gr/dscf (BACT)	Dust collector
AL-0220 C hemical Lime Company - O'Neal Plant		03/23/05	Kiln dust bins and reject lime bins	0.005 gr/dscf through 0.009 gr/dscf (BACT)	None
TX-0452 Austin White Lime Company Mcneil		11/19/03	Kilns no. 1 and 2 dust stockpile Kilns no. 1 and 2 reject bin Kiln no. 3 dust bin	0.008 lb/hr 0.034 ton/yr 3.66 lb/hr 2.01 ton/yr 0.17 lb/hr 0.75 ton/yr (BACT)	Dust Collectors
TX-0360 T exas Lime Company		08/02/99	Dust bin	0.13 lb/hr 0.56 ton/yr (Other)	None

Step 2: Eliminate Technically Infeasible Options

None of the available control technologies have been identified as technically infeasible for control of PM and PM-10 emissions from the lime kiln dust bins. Since the proposed BACT includes the requirement to operate baghouses, and baghouses are considered to be most efficient for PM/PM-10 control, no further analysis of alternative control technologies is needed.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

Fabric filters or baghouses is considered as the most effective control option for the control of particulate matter and filterable PM-10 emissions from lime kiln dust bins.

Step 4: Evaluate the Most Effective Controls and Document the Results

Proposed BACT

Synergy has proposed the use of baghouses for the control of PM, PM-10, and beryllium emissions from the lime kiln dust bin:

(a) The emissions of PM, PM-10, and beryllium shall be controlled by baghouse DC7 at all times.

(b) The emissions of PM and PM-10 (filterable) from the baghouse DC7 shall not exceed 0.005 gr/dscf.

Step 5: Select BACT

The following has been determined to be BACT for PM, PM-10 and beryllium emissions from the lime kiln dust bin:

(a) The emissions of PM, PM-10, and beryllium shall be controlled by baghouse DC7 at all times.

(b) The emissions of PM and PM-10 (filterable) from the baghouse DC7 shall not exceed 0.005 gr/dscf.

PM/PM10 AND BERYLLIUM BACT- Lime Processing

Step 1: Identification of PM/PM10 and Beryllium Control Technologies - Lime Processing

Beryllium control technologies are identical to PM control technologies as both of these pollutants are captured and controlled by the same equipment and control method. The feasible control methods identified for PM/PM-10 and beryllium control are as follows: ESPs, baghouses, dust collectors.

Recent BACT Determinations for PM/PM-10 from Lime Processing

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for PM/PM-10 emissions from similar processes. The search criteria used was “Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" with PM/PM-10 as the pollutants.

The following tables summarize the results from the RACT/BACT/LAER Clearinghouse.

Table 13: RBLC BACT determinations - PM/PM-10 from Lime Processing

RBLC ID/ Permit No.	Company	Date Issued	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Lime processing	0.005 gr/dscf	Baghouse
WI-0233 Cutler-Magner Company		08/16/06	Lime crushing	0.58 lb/hr 0.0114 g.dscm (0.005 gr/dscf) (BACT)	Baghouse, enclosure
TX-0452 Austin	White Lime Company Mcneil	11/19/03	Crushing and screening - A section Crushing and screening - C section Bulk pulverizer	9.81 lb/hr 10.72 ton/yr 14.59 lb/hr 15.28 ton/yr 0.13 lb/hr 0.56 ton/yr (BACT)	Dust Collectors

Step 2: Eliminate Technically Infeasible Options

None of the available control technologies have been identified as technically infeasible for control of PM and PM-10 emissions from lime processing operations. Since the proposed BACT includes the requirement to operate baghouses for these operations, and baghouses are considered to be most efficient for PM/PM-10 control, no further analysis of alternative control technologies is needed.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

Fabric filters or baghouses is considered as the most effective control option for the control of particulate matter and filterable PM-10 emissions from the lime processing operation.

Step 4: Evaluate the Most Effective Controls and Document the Results

<u>Proposed BACT</u>

Synergy has proposed the use of baghouses for the control of PM, PM-10, and beryllium emissions from the lime processing operation:

(a) The emissions of PM, PM-10, and beryllium shall be controlled by baghouse DC5 at all times that the associated process is in operation.

(b) The emissions of PM and PM-10 (filterable) from the baghouse DC5 shall not exceed 0.005 gr/dscf.

Step 5: Select BACT

The following has been determined to be BACT for PM, PM-10 and beryllium emissions from the lime processing operation:

(a) The emissions of PM, PM-10, and beryllium shall be controlled by baghouse DC5 at all times.

(b) The emissions of PM and PM-10 (filterable) from the baghouse DC5 shall not exceed 0.005 gr/dscf.

PM/PM-10 BACT - Material Handling Systems

Step 1: Identification of PM/PM10 Control Technologies - Material Handling Systems

The available control methods for material handling systems at this lime manufacturing source are as follows: best operational practices, enclosures, wet dust suppression, electrostatic precipitators (ESP), and baghouses or fabric filters.

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for PM/PM-10 emissions from similar processes. The search criteria used was “Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" with PM/PM-10 as the pollutants.

The following tables summarize the results from the RACT/BACT/LAER Clearinghouse.

Table 15: RBLC BACT determinations - PM/PM-10 from Material Handling Systems

RBLC ID/ Permit No.	Company	Date Issued	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Rotary lime kilns, with preheaters and fabric filter (Kiln #1 and Kiln #2)	See Table 15a	See Table 15a
WI-0233 Cutler-Magner Company		08/16/06	Lime crushing and handlimg	0.58 lb/hr 0.0114 g/dscm (=0.005 g/dscf) (BACT)	Baghouse and enclosure
WI-0233 Cutler-Magner Company		08/16/06	Lime storage and handling	0.56 lb/hr 0.0114 g/dscm (=0.005 gr/dscf) (BACT)	Baghouse and enclosure
AR-0082 Arkansas Lime Company, Independence		08/30/05	Lime discharge, SN-32Q#3	0.01 gr/dscf (BACT)	Dust collector
AR-0082 Arkansas Lime Company, Independence		08/30/05	Lime loadout SN-38Q and SN-39Q	0.015 gr/dscf (BACT)	Dust collector
AL-0220 Chemical Lime Company - O'Neal Plant		03/23/05	Fuel handling and storage	0.0050 gr/dscf unit DC4619 0.0090 gr/dscf other units (BACT)	None
AL-0220 Chemical Lime Company - O'Neal Plant		03/23/05	Raw materials handling	0.0050 gr/dscf unit DC5134 and DC5155 0.0090 gr/dscf other units (BACT)	None
AL-0220 Chemical Lime Company - O'Neal Plant		03/23/05	Lime product handling and storage	0.0050 gr/dscf to 0.0090 gr/dscf (BACT)	None
OH-0270 Carmeuse Lime Inc. - Maple Grove Facility		10/14/03	Kiln dust handling	0.0018 lb/ton 0.21 tons/yr (fugitive)	Baghouse and watering (wet suppression)
OH-0270 Carmeuse Lime Inc. - Maple Grove Facility		10/14/03	Limestone material handling	4.34 tons/yr (PM) 2.1 tons/yr (PM-10) (BACT)	Wet suppression

RBLC ID/ Permit No.	Company	Date Issued	Description	Limit	Controls
OH-0270	Carmeuse Lime Inc. - Maple Grove Facility	10/14/03	Solid fuel handling	0.01 gr/dscf 0.89 lb/hr 3.9 tons/yr (BACT)	Work practices (BOP)
OH-0270	Carmeuse Lime Inc. - Maple Grove Facility	10/14/03	Lime material handling #2	0.50 lb/ton 1.38 lb/hr 6.04 tons/yr (BACT)	Baghouse
OH-0270	Carmeuse Lime Inc. - Maple Grove Facility	10/14/03	Lime material handling #1	0.04 lb/ton 1.05 lb/hr 4.6 tons/yr (BACT)	Baghouse
OH-0270	Carmeuse Lime Inc. - Maple Grove Facility	10/14/03	Common product handling	PM: 0.06 lb/ton 1.77lb/hr 7.75 tons/yr (BACT) PM-10: 0.30 tons/yr (BACT)	Work practices (BOP)

Table 15a: Proposed BACT - Material Handling

Transfer No.	PM Limit	Control
79, 81 through 140 (stone/lime/flue dust)	0.005 gr/dscf	Baghouse
141, 142 (fuel)	-	Moisture Control, Best Operating Practice
2 through 78, 80, 143 through 153	-	Moisture Control, Enclosure

Step 2: Eliminate Technically Infeasible Options

ESPs are considered technically infeasible for controlling particulate emissions from coal handling systems due to safety concerns. High concentrations of fine coal dust can be explosive, and environments inside an ESP where sparking can occur can pose a fire hazard. While there are significant safety concerns associated with collecting highly combustible coal dust in a fabric filter, these concerns can be mitigated, and such control is technically feasible. Fabric filters and ESPs are technically feasible control options for other material transfer sources.

Wet dust suppression has been deemed as technically infeasible for use with fuel handling systems, as spraying with water would disrupt kiln operations and reduce fuel efficiency.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

The following table ranks the PM/PM-10 control efficiencies of the technically feasible options for non-fuel transfer sources.

Table 16: Control Effectiveness - PM/PM-10 from Material Handling

Control Method	PM Control Efficiency (%)
Baghouse 99%	
ESP >	90%
Wet Suppression	90%
Full Enclosure	90%
Partial Enclosure	50%
Best Operating Practice	Variable

Step 4: Evaluate the Most Effective Controls and Document the Results

For material transfer sources, baghouses provide the highest level of control.

Fabric filter baghouse control has been deemed technically and economically feasible for many of the proposed material transfer sources (transfer points 79 and 81 through 140). Since baghouses provide the highest level of control, no further analysis is necessary for these sources.

A cost effectiveness analysis was performed by Synergy Management LLC for the use of baghouses for material transfer sources #1 through 78 and 80. Analysis of the proposed material transfer sources presumes an annualized cost of $19,500 for a control efficiency of 99.5%. Rather than calculating the cost effectiveness for each individual transfer point, the transfer point with the largest throughput and associated emissions was analyzed. The representative transfer point is transfer point #5. The uncontrolled emission rate is 0.187 tons per year. The resulting cost effectiveness is $318,919 per ton of PM removed, which is economically infeasible.

IDEM has evaluated the use of wet dust suppression for transfer sources for which use of baghouses were deemed to be economically infeasible. Wet dust suppression works by causing fine particles to agglomerate through the introduction of moisture into the material stream. For transfer points #1 through 78 and #80, Synergy LLC has proposed the use of wet suppression as BACT for PM and PM-10.

IDEM has evaluated the use of an enclosure in conjunction with transfer sources for transfer points for which wet suppression was deemed feasible, as well as transfer points for which no other control method was deemed to be technically or economically feasible.

Table 17: Cost Effectiveness Analysis: Enclosure for Control of PM/PM-10 Emissions from Material Transfer Sources - Transfer Points 1, 141, and 142

	Cost
Total Capital Investment (TCI)	$7000
Direct Annual Cost	
Operating Labor	
Operator (0 hr/shift)	$0
Supervisor (15% of operator)	$0
Maintenance	
Labor (0.1 hr/shift @ $26.40/hr)	$2,891
Material (25% of labor)	$723
Indirect Annual Cost	
Overhead (60% of total operating and maintenance cost)	$2,138
Administrative Charges (2% of TCI)	$140
Property Taxes (1% of TCI)	$70
Insurance (1% of TCI)	$70
Capital Recovery Factor (10 years at 7%)	$997
TOTAL ANNUAL COST	**$7,056**

Table 18: Cost Effectiveness - Enclosure for Control of PM/PM-10 from Material Handling

Transfer #	**PM Uncontrolled Emissions (tpy)**	**Control Efficiency (%)**	**Annual Cost**	**Cost Effectiveness ($/ton removed)**
1 0.370		50%	$7,056	$38,138
141 0.418		50%	$7,056	$337,699
142 0.209		50%	$7,056	$675,397

The estimated cost effectiveness for the use of enclosures for transfer points #1, 141, and 142 have been determined to be too high compared to similar sources.

Cost Analysis for Fuel Transfer Sources

Per EPA Pollution Control Technology Fact Sheet EPA-452/F-03-25, the annualized cost for a 2000 scfm pulsejet baghouse is $39 per scfm in 2002 dollars. This cost estimate assumes a conventional design under typical operating conditions and does not include auxiliary equipment such as fans and ductwork. Only the pulsejet baghouse is considered for this analysis; additional costs that would be incurred for the required collection system were not included.

Analysis for the proposed fuel transfer sources presumes an annualized cost of $39 per scfm, a flow rate of 500 scfm, and a resulting total annual cost of $19,500 for a control efficiency of 99.5%. Rather than calculating a cost effectiveness for individual transfer points (transfers no. 143-150 and 152), the transfer point with the largest throughput and associated emissions would have a higher cost per ton value; therefore, if baghouse control of transfer no. 143 is deemed economically infeasible, the same conclusion would hold for all other fuel transfer sources.

Baghouse control is not appropriate for transfer nos. 141, 142, 151, and 153. Transfers 141 and 142 are not localized or contained and the resulting emissions could not practically be captured for baghouse control. Transfers 151 and 153 are performed under negative pressure of the coal mills and do not result in any emissions.

Uncontrolled emissions of PM for transfer no. 143 would be 0.042 tpy (0.021 tons controlled emissions/50% control). At an assumed control efficiency of 99.5%, the baghouse would reduce emissions by 0.0418 tpy. This would result in a cost-effectiveness of $466,600 per ton of PM removed.

IDEM has determined that the use of a fabric filter is economically infeasible for the control of PM emissions from fuel transfer operations. Transfers 141 and 142 are not localized or contained and the resulting emissions could not practically be captured for baghouse control. Transfers 151 and 153 are accomplished under the negative pressure of the coal mills and do not result in any emissions.

Step 5: Select BACT

The following has been determined to be PM BACT for material transfer points:

Table 19: BACT- PM/PM-10 from Material Handling

Transfer No.	PM/PM-10 (filterable) Limit	Control
79, 81 through 140 (stone/lime/flue dust)	0.005 gr/dscf	Baghouse
1, 141, 142 (fuel)	-	Moisture Control, Best Operating Practice
2 through 78, 80, 143 through 153	-	Moisture Control, Enclosure

PM/PM-10 BACT - Limestone and Fuel Storage Piles

Step 1: Identification of PM/PM-10 Control Technologies - Limestone and Fuel Storage Piles

Due to the relatively large area over which emissions could occur and the resultant need for excessively large fans to collect the dispersed emissions, baghouses are not considered technically feasible for control of PM/PM-10 emissions from limestone and fuel storage piles. Best operating practices for minimization of fugitive dust emissions included in a Fugitive Dust Control Plan has been identified as the only viable control method for storage piles at lime kilns.

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for PM/PM-10 emissions from similar limestone and fuel storage piles at similar operations. The search criteria used was “Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" with PM/PM-10 as the pollutants.

The following tables summarize the results from the RACT/BACT/LAER Clearinghouse.

Table 20: Recent BACT Determinations for PM/PM-10 from Limestone and Fuel Storage Piles

RBLC ID/ Permit No.	Company	Date Issued	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Limestone and fuel storage piles	None Be	st Operating Practices Fugitive Dust Plan
WI-0233	Cutler-Magner Company	08/16/06	Lime and fuel storage	None	Fugitive Dust Plan
AL-0220	C hemical Lime Company - O'Neal Plant	03/23/05	Fuel storage	None	None
TX-0452	Austin White Lime Company, Texas	11/19/03	Coal and coke section fugitives, kiln dust stockpile	See footnote (a)	None
OH-0270	Carmeuse Lime Inc. - Maple Grove Facility	10/14/03	Material storage piles, product storage	See footnote (a)	Water application and daily inspection, work practices

(a) RBLC lists PM BACT limits for fugitive dust piles in lb/hr and tons per year units, which are the uncontrolled potential to emit of PM (fugitive).

Step 2: Eliminate Technically Infeasible Options

As explained in Step 1, use of enclosures and best operating practices as included in a Fugitive Dust Control Plan are the only feasible control method for limestone and fuel storage piles. No other control methods have been identified as a control measure in RBLC.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

As explained in Step 1, enclosures and use of best operating practices as included in a Fugitive Dust Control Plan are the only feasible control method for limestone and fuel storage piles. The use of a partial enclosure is estimated to achieve 50% control efficiency, with a full enclosure achieving close to 90%.

Step 4: Evaluate the Most Effective Controls and Document the Results

Table 21: Cost Effectiveness Analysis: Enclosure for Control of PM/PM-10 Emissions from Fuel and Limestone Storage Piles

	Cost
Total Capital Investment (TCI)	$250,000
Direct Annual Cost	
Operating Labor	
Operator (0 hr/shift)	$0
Supervisor (15% of operator)	$0
Maintenance	
Labor (0.1 hr/shift @ $26.40/hr)	$2,891
Material (25% of labor)	$723
Indirect Annual Cost	
Overhead (60% of total operating and maintenance cost)	$2,168
Administrative Charges (2% of TCI)	$1,500
Property Taxes (1% of TCI)	$2,500
Insurance (1% of TCI)	$2,500
Capital Recovery Factor (10 years at 7%)	$35,500
TOTAL ANNUAL COST	**$51,283**

Table 22: Cost Effectiveness - Enclosure for Control of PM/PM-10 from Fuel and Limestone Storage Piles

PM Uncontrolled Emissions (tpy)	**Control Efficiency (%)**	**Annual Cost**	**Cost Effectiveness ($/ton removed)**
0.22 50%	(partial)	$51,283	$466,400
0.22 90%	(full)	$51,283	$259,100

The estimated cost effectiveness for the use of enclosures to control PM emissions from fuel and limestone storage piles have been determined to be too high for comparable sources.

Proposed BACT

The Permittee has proposed the following as BACT for PM and PM-10 emissions from limestone and fuel storage piles:

(a) Fugitive PM and PM-10 emissions from limestone and fuel storage piles shall be minimized through best operating practices in accordance with the Fugitive Dust Control plan submitted on August 15, 2008.

Step 5: Select BACT

The following has been determined to be BACT for PM and PM-10 emissions from limestone and fuel storage piles:

(a) Fugitive PM and PM-10 emissions from limestone and fuel storage piles shall be minimized through best operating practices in accordance with the Fugitive Dust Control plan submitted on August 15, 2008.

PM/PM10 BACT - Emergency Generator

PM/PM-10 emissions result primarily from non-combustible metals in trace quantities in liquid fuels. Other sources of PM-10 include condensible unburned organics and particles in the combustion air.

NSPS Subpart IIII and 40 CFR 89 phase in progressively more restrictive emissions limits in a series of "tiers". The Tier 3 PM emission limit for engines rated between 225 and 450 kW is 0.15 g/hp-hr.

Step 1: Identification of PM/PM10 Control Technologies - Emergency Generator

Ultra-Low Sulfur Diesel (ULSD)

Ultra-low sulfur diesel fuel was proposed by EPA as a new standard for the sulfur content in on-road diesel fuel sold in the United States since October 15, 2006, except for rural Alaska. This new regulation applies to all diesel fuel, diesel fuel additives and distillate fuels blended with diesel for on-road use, such as kerosene, however, it does not yet apply to railroad locomotives, marine, or off road uses. The EPA mandated the use of ULSD fuel in model year 2007 and newer highway diesel fuel engines equipped with advanced emission control systems that require the new fuel.

The allowable sulfur content for ULSD (15 ppm) is much lower than the previous U.S. on-highway standard for low sulfur diesel (LSD, 500 ppm), which not only reduces emissions of sulfur compounds (a cause of acid rain), but also allows advanced emission control systems to be fitted that would otherwise be poisoned by these compounds. These systems can greatly reduce emissions of oxides of nitrogen and particulate matter.

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for PM/PM-10 emissions from emergency generators at other permitted facilities. No add-on controls have been identified as a feasible control method for this type of emission unit.

Table 14: RBLC BACT determinations - PM/PM-10 from Emergency Generators

RBLC ID/ Permit No.	Company	Permit Issuance Date	Description	Limit	Controls
Proposed PSD/NSR and Part 70 No. T181-26877-00050	Synergy Management LLC	Proposed	Diesel generator - 250 kW	0.15 g/hp-hr	Use of Ultra Low Sulfur Diesel (ULSD)
IDEM Permit No. T031-23360-00026	Honda Manufacturing of Indiana, LLC Greensburg, IN		Diesel generator between 100 and 175 hp (Model Year (MY) 2007 or later): 0.22 gram/horsepower-hour (g/hp-hr) Diesel generator between 175 and 750 hp (MY2007 or later): Emergency Fire Pump between 175 and 750 hp (MY2008 or later):	0.15 g/hp-hr 0.4 g/hp-hr	Use of Ultra-Low Sulfur Diesel (ULSD)
OK-0110 Dalita	lia LLC	10/21/2005	Emergency Generator	0.0022 lb/hp-hr 1.0 g/hp-hr	Good combustion
NC-0101 F	orsyth Energy Projects LLC	9/29/2005	Emergency Generator & Fire pump (Hp not specified)	1.14 lb/hour	No controls

RBLC ID/ Permit No.	Company	Permit Issuance Date	Description	Limit	Controls
OH-0252 D	uke Energy Hanging Rock LLC	12/28/2004	Fire Pump Back-up Generator	0.66 lb/hr 1.1 g/hp-hr 0.59 lb/hr 0.40 g/hp-hr	No controls
WI-0228	Wisconsin Public Service	10/19/2004	Fire Pump (460 Hp) Booster Pump (265 Hp)	1.01 lb/hr (equivalent 1.0 g/hp-hr) 200 hours/rolling 12-months 0.58 lb/hr (equivalent 1.0 g/hp-hr) 200 hours/rolling 12-months	Good combustion ULSD (0.003%)
WI-0227 W	E Energies Port Washington Generating Station	10/13/2004	Diesel Generator (Hp not specified)	0.89 lb/hr 500 hours/rolling 12-months	Low sulfur diesel (0.05%)

Step 2: Eliminate Technically Infeasible Options

The use of add-on controls has not been eliminated as technically infeasible. However, no add-on controls have been identified as a viable control option for emergency generators. Therefore, no further analysis of add-on controls will be conducted.

Step 3: Rank the Remaining Control Technologies by Control Effectiveness

IDEM has not identified any feasible PM control technologies for emergency diesel generators.

Step 4: Evaluate the Most Effective Controls and Document the Results

The diesel generator proposed by Synergy Management LLC are subject to the applicable requirements of 40 CFR Part 60.4200, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, which includes Tier 3 compliance. The Tier 3 PM emission limit for engines rated between 225 and 450 kW is 0.15 g/bhp-hr (0.20 g/kW-hr). Use of ultra-low sulfur diesel (ULSD) fuel (15 ppm maximum) will facilitate achievement of this limit.

<u>Proposed BACT</u>

The following has been determined to be BACT for PM and PM-10 emissions from the emergency generator:

(a) The Permittee shall employ proper design and operation of the emergency generator and use ultra-low sulfur diesel (ULSD).

(b) The emissions of PM/PM-10 from the emergency generator shall not exceed 0.15 g/hp-hr.

Step 5: Select BACT

The following has been determined to be BACT for PM/PM-10 emissions from the emergency generator:

(a) The Permittee shall employ proper design and operation of the emergency generator and use ultra-low sulfur diesel (ULSD).

(b) The emissions of PM/PM-10 from the emergency generator shall not exceed 0.15 g/hp-hr.

APPENDIX C

Emissions Calculations --Summary

Synergy Management, LLC
Emissions Summary

Source Group	Total PM_{10} (tpy)	PM (tpy)	SO_2 (tpy)	NOX (tpy)	CO (tpy)	VOC (tpy)	H_2SO_4 (tpy)	Pb (tpy)
Transfer Emissions	0.46	3.82	---	---	---	---	---	---
Lime Process Emissions	185	60.2	657	1150	821	65.7	6.04	0.01
Stone Process Emissions	1.88	4.63	---	---	---	---	---	---
Vehicle & Emergency Generator Emissions	2.05	10.34	---	0.83	0.57	0.59	---	---
Pile Fugitives	1.00	1.99	---	---	---	---	---	---
TOTAL	**190**	**81.0**	**657**	**1151**	**822**	**66.3**	**6.04**	**0.01**
Significant Emission Rate	15	25	40	40	100	40	7.0	0.6
Significant (PSD)?	YES	YES	YES	YES	YES	YES	NO	NO

APPENDIX C

Emissions Calculations --Material Transfers

Synergy Management, LLC
Transfer Emissions (Limestone, Lime, LKD & Fuel)

Transfer From	Transfer To	Max Material Process Rate[1] (ton/hr)	Emission Factor, TP[2] (lb/ton)	Emission Factor, PM10[2] (lb/ton)	Additional Control		PTE				Notes
					Control[3]	Control Efficiency	Emission Rate, TP (lb/hr)	Emission Rate, PM10 (lb/hr)	Emission Rate, TP (ton/yr)	Emission Rate, PM10 (ton/yr)	
LIMESTONE											
C01	C02	610	1.4E-04	4.6E-05	M, PE	50%	0.043	0.01403	0.19	0.0615	
C02	C03	610	1.4E-04	4.6E-05	M, PE	50%	0.043	0.01403	0.19	0.0615	
C07	C09	370	1.4E-04	4.6E-05	M, PE	50%	0.026	0.0085	0.113	0.0373	
C08	C09	100	1.4E-04	4.6E-05	M, PE	50%	0.007	0.0023	0.031	0.0101	
C09	C05	470	1.4E-04	4.6E-05	M, PE	50%	0.033	0.0108	0.144	0.0473	
C10	C22	230	1.4E-04	4.6E-05	M, PE	50%	0.016	0.00529	0.07	0.0232	
C11	C12	380	1.4E-04	4.6E-05	M, PE	50%	0.027	0.00874	0.12	0.0383	
C13	C23	125	1.4E-04	4.6E-05	M, PE	50%	0.009	0.0029	0.038	0.0126	
C14	C24	150	1.4E-04	4.6E-05	M, PE	50%	0.011	0.0035	0.046	0.0151	
C15	C16	110	1.4E-04	4.6E-05	M, PE	50%	0.008	0.0025	0.034	0.0111	
C16	C26	110	1.4E-04	4.6E-05	M, PE	50%	0.008	0.0025	0.034	0.0111	
C22	PL1	230	1.4E-04	4.6E-05	M, PE	50%	0.016	0.00529	0.07	0.0232	
C23	PL2	125	1.4E-04	4.6E-05	M, PE	50%	0.009	0.00288	0.04	0.0126	
C24	PL3	150	1.4E-04	4.6E-05	M, PE	50%	0.011	0.00345	0.05	0.0151	
C26	PL5	110	1.4E-04	4.6E-05	M, PE	50%	0.008	0.00253	0.03	0.0111	
PL1	C27	160	1.4E-04	4.6E-05	M, UE	90%	0.002	0.0007	0.010	0.0032	
C28	PL6	10	1.4E-04	4.6E-05	M, PE	50%	0.001	0.0002	0.003	0.0010	
C29	C30	5	1.4E-04	4.6E-05	M, PE	50%	0.000	0.0001	0.002	0.0005	
C30	PL7	5	1.4E-04	4.6E-05	M, PE	50%	0.000	0.0001	0.002	0.0005	
C42	C43	75	1.4E-04	4.6E-05	M, PE	50%	0.005	0.0017	0.023	0.0076	
CR1	C01	610	---	---	---	---	---	---	---	---	6
CR2	C07	370	---	---	---	---	---	---	---	---	6
CR3	C08	325	---	---	---	---	---	---	---	---	6
C12	S3	380	---	---	---	---	---	---	---	---	6
C27	S4	160	---	---	---	---	---	---	---	---	6
C03	S1	610	---	---	---	---	---	---	---	---	6
C04	F2	370	---	---	---	---	---	---	---	---	7
C42	PH1	75	---	---	---	---	---	---	---	---	8
C43	PH2	75	---	---	---	---	---	---	---	---	8
C05	S2	710	---	---	---	---	---	---	---	---	6
C06	F3	100	---	---	---	---	---	---	---	---	7
F1	C01	295	---	---	---	---	---	---	---	---	7
F1	CR1	315	---	---	---	---	---	---	---	---	7
F2	CR2	370	---	---	---	---	---	---	---	---	7
F3	CR3	100	---	---	---	---	---	---	---	---	7
F7	C27	160	---	---	---	---	---	---	---	---	7
PL1	F7	160	---	---	---	---	---	---	---	---	7
S1	C04	370	---	---	---	---	---	---	---	---	6
S1	C05	240	---	---	---	---	---	---	---	---	6
S2	C10	230	---	---	---	---	---	---	---	---	6
S2	C11	380	---	---	---	---	---	---	---	---	6
S2	C06	100	---	---	---	---	---	---	---	---	6
S3	C13	125	---	---	---	---	---	---	---	---	6
S3	C14	150	---	---	---	---	---	---	---	---	6
S3	C15	110	---	---	---	---	---	---	---	---	6
S4	C28	10	---	---	---	---	---	---	---	---	6
S4	C29	5	---	---	---	---	---	---	---	---	6
S4	C42	150	---	---	---	---	---	---	---	---	6
TRK	F1	610	---	---	---	---	---	---	---	---	7
C10	C17	0	---	---	---	---	---	---	---	---	
C13	C18	0	---	---	---	---	---	---	---	---	
C14	C19	0	---	---	---	---	---	---	---	---	
C16	C25	0	---	---	---	---	---	---	---	---	
C17	C20	0	---	---	---	---	---	---	---	---	
C18	C20	0	---	---	---	---	---	---	---	---	
C19	C20	0	---	---	---	---	---	---	---	---	
C20	C21	0	---	---	---	---	---	---	---	---	
C21	C25	0	---	---	---	---	---	---	---	---	

APPENDIX C

Emissions Calculations --Material Transfers

Transfer From	Transfer To	Max Material Process Rate[1] (ton/hr)	Emission Factor, TP[2] (lb/ton)	Emission Factor, PM10[2] (lb/ton)	Additional Control		PTE				Notes
					Control[3]	Control Efficiency	Emission Rate, TP (lb/hr)	Emission Rate, PM10 (lb/hr)	Emission Rate, TP (ton/yr)	Emission Rate, PM10 (ton/yr)	
C25	PL4	0	---	---	---	---	---	---	---	---	
C27	C31	0	---	---	---	---	---	---	---	---	
C31	S5	0	---	---	---	---	---	---	---	---	
C31	S6	0	---	---	---	---	---	---	---	---	
C32	C38	0	---	---	---	---	---	---	---	---	
C33	C39	0	---	---	---	---	---	---	---	---	
C34	C40	0	---	---	---	---	---	---	---	---	
C35	C37	0	---	---	---	---	---	---	---	---	
C36	C37	0	---	---	---	---	---	---	---	---	
C37	C41	0	---	---	---	---	---	---	---	---	
C38	PL8	0	---	---	---	---	---	---	---	---	
C39	PL9	0	---	---	---	---	---	---	---	---	
C40	PL10	0	---	---	---	---	---	---	---	---	
C41	PL11	0	---	---	---	---	---	---	---	---	
F4	C27	0	---	---	---	---	---	---	---	---	
F5	C27	0	---	---	---	---	---	---	---	---	
F6	C27	0	---	---	---	---	---	---	---	---	
PL2	F6	0	---	---	---	---	---	---	---	---	
PL3	F5	0	---	---	---	---	---	---	---	---	
PL4	F4	0	---	---	---	---	---	---	---	---	
S5	C36	0	---	---	---	---	---	---	---	---	
S56	C32	0	---	---	---	---	---	---	---	---	
S56	C33	0	---	---	---	---	---	---	---	---	
S56	C34	0	---	---	---	---	---	---	---	---	
S6	C35	0	---	---	---	---	---	---	---	---	
PEBBLE LIME											
Kiln 1	Cooler 1	400	0.0014	----	baghouse (DC1)	----	----	----	2.43	----	5,11
Cooler 1	Feeders	400	----	----	baghouse (DC1)	----	----	----	----	----	5
Kiln 2	Cooler 2	400	----	----	baghouse (DC2)	----	----	----	----	----	5
Cooler 2	LF1 - 8	400	----	----	baghouse (DC2)	----	----	----	----	----	5
LF1 - 8	LC1	100	----	----	baghouse (DC1)	----	----	----	----	----	5
LC1	LBE1	100	----	----	baghouse (DC3)	----	----	----	----	----	5
LBE1	LS1	100	----	----	baghouse (DC3)	----	----	----	----	----	5
LF1 - 8	LC2	100	----	----	baghouse (DC2)	----	----	----	----	----	5
LC2	LBE2	100	----	----	baghouse (DC4)	----	----	----	----	----	5
LBE2	LS2	100	----	----	baghouse (DC4)	----	----	----	----	----	5
LS1	LC5	100	----	----	baghouse (DC3)	----	----	----	----	----	5
LC5	LB1	100	----	----	baghouse (DC3)	----	----	----	----	----	5
LS1	LB2	100	----	----	baghouse (DC3)	----	----	----	----	----	5
LS2	LC4	100	----	----	baghouse (DC4)	----	----	----	----	----	5
LC4	LB3	100	----	----	baghouse (DC4)	----	----	----	----	----	5
LS2	LB4	100	----	----	baghouse (DC4)	----	----	----	----	----	5
LS1 or LS2	LC3	20	----	----	baghouse (DC3)	----	----	----	----	----	5
LC3	B4	20	----	----	baghouse (DC8)	----	----	----	----	----	5
LB1	QSC1	200	----	----	baghouse (DC8)	----	----	----	----	----	5
QSC1	Truck	200	----	----	baghouse (DC8)	----	----	----	----	----	5
LB2	QSC2	200	----	----	baghouse (DC8)	----	----	----	----	----	5
QSC2	Truck	200	----	----	baghouse (DC8)	----	----	----	----	----	5
LB3	QSC3	200	----	----	baghouse (DC8)	----	----	----	----	----	5
QSC3	Truck	200	----	----	baghouse (DC8)	----	----	----	----	----	5
LB4	QSC4	200	----	----	baghouse (DC8)	----	----	----	----	----	5
QSC4	Truck	200	----	----	baghouse (DC8)	----	----	----	----	----	5
LC1 or LC2	WBL1	100	----	----	baghouse (DC5)	----	----	----	----	----	5
WBL1	B9	100	----	----	baghouse (DC5)	----	----	----	----	----	5
B9	Truck	200	----	----	baghouse (DC5)	----	----	----	----	----	5
B9	LF9	100	----	----	baghouse (DC5)	----	----	----	----	----	5
LF9	LC2	100	----	----	baghouse (DC1)	----	----	----	----	----	5
LIME FINES											
QSC1 - 4	X8	20	---	---	baghouse (DC8)	---	---	---	---	---	5
X8	B4	20	---	---	baghouse (DC8)	---	---	---	---	---	5

APPENDIX C

Emissions Calculations --Material Transfers

Transfer From	Transfer To	Max Material Process Rate[1] (ton/hr)	Emission Factor, TP[2] (lb/ton)	Emission Factor, PM10[2] (lb/ton)	Additional Control: Control[3]	Additional Control: Control Efficiency	PTE: Emission Rate, TP (lb/hr)	PTE: Emission Rate, PM10 (lb/hr)	PTE: Emission Rate, TP (ton/yr)	PTE: Emission Rate, PM10 (ton/yr)	Notes
B4	BQ1	20	----	----	baghouse (DC8)	----	----	----	----	----	5
BQ1	B5	20	----	----	baghouse (DC8)	----	----	----	----	----	5
B5	LC6	20	----	----	baghouse (DC8)	----	----	----	----	----	5
LC6	QSC2	20	----	----	baghouse (DC8)	----	----	----	----	----	5
FLUE DUST (LKD)											
DC6	X1	10	----	----	baghouse (DC5)	----	----	----	----	----	5
DC7	X2	10	----	----	baghouse (DC5)	----	----	----	----	----	5
DC10	X5	10	----	----	baghouse (DC5)	----	----	----	----	----	5
X1	X3	10	----	----	baghouse (DC5)	----	----	----	----	----	5
X2	X3	10	----	----	baghouse (DC5)	----	----	----	----	----	5
X3	L1/X4	20	----	----	baghouse (DC5)	----	----	----	----	----	5
L1	B7	20	----	----	baghouse (DC5)	----	----	----	----	----	5
B7	Truck	200	----	----	baghouse (DC5)	----	----	----	----	----	5
FUEL											
Fuel Truck	Ground	20	4.8E-04	1.7E-04	----	0%	0.0095	0.003	0.042	0.015	
FE Loader	Fuel Pile	20	4.8E-04	1.7E-04	----	0%	0.0095	0.003	0.042	0.015	
FE Loader	CC1	20	4.8E-04	1.7E-04	PE	50%	0.0048	0.002	0.021	0.007	
CC1	CC2	20	4.8E-04	1.7E-04	PE	50%	0.0048	0.002	0.021	0.007	
CC2	CC3	10	4.8E-04	1.7E-04	PE	50%	0.0024	0.001	0.010	0.004	
CC3	FB1	10	4.8E-04	1.7E-04	PE	50%	0.0024	0.001	0.010	0.004	
FB1	CC4	10	4.8E-04	1.7E-04	BE	90%	0.0005	0.000	0.002	0.001	9
CC2	FB2	10	4.8E-04	1.7E-04	PE	50%	0.0024	0.001	0.010	0.004	
FB2	CC5	10	4.8E-04	1.7E-04	BE	90%	0.0005	0.000	0.002	0.001	9
CC4	CM1	0	4.8E-04	1.7E-04	PE	50%	0.0000	0.000	0.000	0.000	10
CC5	CM2	0	4.8E-04	1.7E-04	PE	50%	0.0000	0.000	0.000	0.000	10

1. System-wide transfer emissions are calculated here for the purposes of dispersion modeling and for calculating facility emissions. Equipment throughput rates were determined based on an approximate worst-case realistic material flow pattern at system capacity.

2. Stone transfer emission factors are from AP-42 Table 11.19.2-2 (Crushed Stone Processing and Pulverized Mineral Processing) for conveyor transfer point controlled by water sprays, retained moisture, or inherent moisture content. Limestone for this project will typically contain at least 2% moisture. See Note 4 for an explanation of fuel transfer emission factors.

3. A 90% control is assumed for transfers occurring in enclosures/tunnels. Enclosures provide a physical barrier to particulate emissions and block wind. Comparing emission factors derived from AP-42 Chapter 13.2.4, Equation 1 at different wind speeds helps quantify enclosure efficiency. Reducing mean wind speeds from the local average (10.13 mi/hr) to the minimum wind speed for which the equation is valid (1.3 mi/hr) yields a 93% reduction in the emission factor. A control efficiency of 50% is assumed for partial enclosure.

PE = Partial enclosure UE = Underground enclosure

BE = Bin/Bldg enclosure M = Moisture

4. Particulate emission factors for fuel transfers are calculated as follows:

$$E = k(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

AP-42 13.2.4 Eqn (1), Emission Rate in lb/ton mat'l processed

		Units	
k =	1	---	Particle Size Multiplier, Total Particulate
	0.35	---	Particle Size Multiplier, PM10
M =	15.00	---	% Moisture Content (Coal/Coke), design value
	7.00	---	% Lime Moisture Content (from AP-42 Table 13.2.4-1, for Iron and Steel Production, Flue Dust
U =	8.8	knots	Outdoor average wind speed, NOAA NCDC, South Bend, IN Station
	10.13	MPH	

5. Transfer point is controlled by baghouse. See "Lime Process Source" sheet for emission calculations.

6. Emissions resulting from transfers to and from screens and crushers are include in the emission factor for the screens and crushers themselves.

7. Feeders act as a funnel to direct material from one source to another. Since they do not stop the material, material is not actually transferred to them and so no emissions are assigned to them.

8. Emissions resulting from transfers to the preheaters are controlled by the kiln baghouses.

9. These fuel transfers occur inside the combustion building.

10. Emissions resulting from transfers to the coal mills are entrained with the combustion air supplied to the kiln burners.

11. Uncontrolled potential emission rate calculated to determine CAM applicability. This is the maximum lime throughput rate of any of the baghouse-controlled transfers and therefore represents the highest potential emission rate.

APPENDIX C

Emissions Calculations --Stone Process Sources

Synergy Management, LLC
Stone Processing Emissions

Stone Processing Emissions

Eqpt No.	Desc.	Process Rate[2] (TPH)	Emission Factors[1] TP (lb/ton)	PM10 (lb/ton)	Control Efficiency	Emission Rates TP (lb/hr)	TP (tpy)	PM10 (lb/hr)	PM10 (tpy)	Notes
S1	Screen	610	0.0022	0.00074	90%	0.13	0.59	0.05	0.198	
S2	Screen	710	0.0022	0.00074	90%	0.16	0.68	0.05	0.230	
S3	Screen	380	0.0022	0.00074	90%	0.08	0.37	0.03	0.123	
S4	Screen	160	0.0022	0.00074	90%	0.04	0.15	0.01	0.052	
S5	Screen	0	0.0022	0.00074	90%	0.00	0.00	0.00	0.000	3
S6	Screen	0	0.0022	0.00074	90%	0.00	0.00	0.00	0.000	3
CR1	Crusher	610	0.0012	0.00054	50%	0.37	1.60	0.16	0.721	
CR2	Crusher	370	0.0012	0.00054	50%	0.22	0.97	0.10	0.438	
CR3	Crusher	100	0.0012	0.00054	50%	0.06	0.26	0.03	0.118	
Maximum Uncontrolled Potential Emissions (for 40 CFR Part 64 (CAM) applicability[4])										
S2	Screen	710	0.0022	---	0%	---	6.84	---	---	3
CR1	Crusher	610	0.0054	---	0%	---	14.43	---	---	

Notes:

1. Emission Factors from AP-42 Table 11.19.2-2. A 90% control is assumed for transfers occurring in enclosures/tunnels. Enclosures provide a physical barrier to particulate emissions and block wind. Comparing emission factors derived from AP-42 Chapter 13.2.4, Equation 1 at different wind speeds helps quantify enclosure efficiency. Reducing mean wind speeds from the local average (10.13 mi/hr) to the minimum wind speed for which the equation is valid (1.3 mi/hr) yields a 93% reduction in the emission factor. A control efficiency of 50% is assumed for partial enclosure.

2. Throughput rates represent a realistic material flow scenario at system capacity to approximate maximum potential system-wide fugitive emissions.

3. S5 and S4 would only be active when stone is not being supplied to the kilns. Consequently, emissions from these sources are not included in the dispersion model or in the total facility potential emissions.

4. Compliance Assurance Monitoring (CAM) requirements may apply to sources whose pre-controlled potential emission rate exceeds 100 tons per year. These calculations show that, for the maximum throughput rate through a screen and crusher, uncontrolled potential to emit would be no more than 14.43 tons per year. CAM requirements would therefore not apply to any material processing equipment within the proposed facility. (Note that the screening emission calculation uses a "controlled" emission factor for retained or inherent moisture; moisture inherent in the stone justifies use of this factor, and, because it is an inherent control, and not an add-on control, it is not considered to be a control for the purpose of CAM applicability.)

APPENDIX C

Emissions Calculations --Lime Process Sources

Synergy Management, LLC
Kiln and Baghouse Emissions

Baghouse/Filter Emissons

Baghouses	Description	Flow Rate (acfm) [1]	Flow Rate (scfm)	Filterable PM/PM_{10} Grain Loading (gr/dscf)	PM Emission Rate		Filterable PM_{10} Emission Rate		Notes
					(lb/hr)	(tpy)	(lb/hr)	(tpy)	
DC1	Kiln1 Baghouse	117,423	67,301	--	5.63	24.64	19.88	87.05	
DC2	Kiln2 Baghouse	117,423	67,301	--	5.63	24.64	19.88	87.05	
DC3/4	Cooler Discharge	8,300	7,140	0.010	0.61	2.68	0.61	2.68	2,4
DC5/6	Lime Processing	8,833	8,833	0.010	0.76	3.32	0.76	3.32	3,4
DC7	LKD Bin Vent	100	100	0.010	0.01	0.04	0.01	0.04	3
DC8	Lime Loadout	10,500	10,500	0.010	0.90	3.94	0.90	3.94	3
DC9	Off-spec Loadout	100	100	0.010	0.01	0.04	0.01	0.04	
DC10	Lime Rail Loadout	2,500	2,500	0.010	0.21	0.94	0.21	0.94	3

Notes:
1. Flow rate through baghouses per design specifications.
2. SCFM calculated from ACFM at 150 deg F, 200 ft elevation, and 0% moisture.
3. SCFM assumed to equal ACFM for ambient temps and pressures.
4. Baghouses are redundant for maintenance purposes. Only one baghouse of the pair will be operating at a given time.

APPENDIX C

Emissions Calculations --Lime Process Sources

Kiln Emissions (per Kiln)

Kilns 1& 2 (each)	Lime Process Rate = 900 tons/day			
	Emission Factor (lbs/ton)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)	Notes
PM/PM_{10} - Filterable	0.150	5.63	24.6	1
Total PM_{10}	0.530	19.9	87.1	2
SO_2	2.00	75.0	329	3
NO_X	3.50	131	575	3
CO	2.50	94	411	3
VOC	0.20	7.50	32.9	3
H_2SO_4	7.66E-04	0.69	3.02	4
Lead	3.33E-05	1.25E-03	5.47E-03	5
Beryllium	8.44E-06	3.16E-04	1.39E-03	5
Mercury	1.67E-05	6.24E-04	2.73E-03	5
HF	4.67E-03	0.18	0.77	5

Lime Kiln Emissions Calculations Notes:

1. Emissions are controlled by baghouse; see results above. Production-related emission factor corresponds to BACT.
2. Emission factor from AP-42 Table 11.17-2 (2/98) for coal-fired rotary kilns with fabric filter control.
3. Emission factors derived from design constraints and BACT analyses.
4. See next page for calculations.
5. See HAPs emissions calculations. "lb/ton coal" factor multiplied by 0.185 ton coal (dry) / ton lime produced. Conversion based on a design value of 4.90 MMBtu/ton of lime and a dry basis fuel heat value of 13,240 btu/lb.

APPENDIX C

Emissions Calculations --Sulfuric Acid Mist

Synergy Management, LLC
Kiln Sulfuric Acid Mist Emissions

Input Values:

13,868 lb dry fuel per hour per kiln @ 800 tpd capacity; nominal design parameter
13.9% fuel moisture content; nominal design parameter
2.5% fuel sulfur content as received; operational design parameter
0.6% proportion of fuel sulfur emitted as SO3 for subbituminous coal; AP-42, Table 1.1-3 (footnote b)

$$13{,}868 \frac{\text{lb dry coal}}{\text{hr}} * \frac{1}{0.861} \frac{\text{lb A.R. coal}}{\text{lb dry coal}} * 0.025 \frac{\text{lb S}}{\text{lb A.R. coal}} * 0.006 \frac{\text{lb S (as SO3)}}{\text{lb S input}}$$

$$= 2.42 \frac{\text{lb S (as SO3)}}{\text{hr}}$$

32 MW S, lb/mol
16 MW O, lb/mol
1 MW H, lb/mol

$$2.42 \frac{\text{lb S (as SO3)}}{\text{hr}} * \frac{80}{32} \frac{\text{lb SO3}}{\text{lb S}} * \frac{98}{80} \frac{\text{lb H2SO4}}{\text{lb SO3}} = 7.40 \frac{\text{lb H2SO4}}{\text{hr}} \text{ (uncontrolled)}$$

90.68% SO2/SO3/H2SO4 scrubbing efficiency (inherent) -- derived using 2.0 lb SO2 / ton of lime proposed BACT limit
9.32% emission proportion (= 1 - scrubbing efficiency)

$$7.40 \frac{\text{lb } H_2SO_4 \text{ formed}}{\text{hr}} * 0.093 \frac{\text{lb emitted}}{\text{lb formed}} = 0.690 \frac{\text{lb } H_2SO_4 \text{ emitted}}{\text{hr}}$$

$$0.690 \frac{\text{lb } H_2SO_4}{\text{hr}} * \frac{8760}{2000} \frac{\text{hr/yr}}{\text{lb/ton}} = 3.02 \frac{\text{lb } H_2SO_4 \text{ emitted}}{\text{yr}} \text{ each kiln}$$

$$= 6.04 \frac{\text{lb } H_2SO_4 \text{ emitted}}{\text{yr}} \text{ 2 kilns, total}$$

APPENDIX C

Emissions Calculations –HAPs

Synergy Management, LLC
Kiln HAP Emissions

Combined Kilns -- Design Values		
Design Heat Rate (2 kilns) =	367.5	MMBtu/hr
Hours Per Year	8760	hr/y
Design Fuel Heat Value (dry basis) =	13,240	Btu/lb

Potential HAP Emissions from Lime Kilns (combined)

Hazardous Air Pollutant	CAS Number	Coal Heat Content (Btu/lb)	Emission Factor (EF)[a] (lb/ton)	Emission Factor (EF)[b] (lb/MMBtu)	EF Reference AP-42 Table	Annual Hours of Operation (hr/yr)	Emissions (lb/hr)	Emissions (tpy)
Organic HAPs								
1,1,1-Trichloroethane	71-55-6	13,240	2.0E-05	7.55E-07	1.1-14	8760	2.8E-04	1.2E-03
2-Chloroacetophenone	532-27-4	13,240	7.0E-06	2.64E-07	1.1-14	8760	9.7E-05	4.3E-04
2,4-Dinitrophenol	37359-43-6	13,240	2.8E-07	1.06E-08	1.1-14	8760	3.9E-06	1.7E-05
5-Methyl chrysene	3697-24-3	13,240	2.20E-08	8.31E-10	1.1-13	8760	3.1E-07	1.3E-06
Acenaphthene	83-39-9	13,240	5.1E-07	1.93E-08	1.1-13	8760	7.1E-06	3.1E-05
Acenaphthylene	208-96-8	13,240	2.5E-07	9.44E-09	1.1-13	8760	3.5E-06	1.5E-05
Acetaldeyde	75-07-0	13,240	5.7E-04	2.15E-05	1.1-14	8760	7.9E-03	3.5E-02
Acetophenone	98-86-2	13,240	1.5E-05	5.66E-07	1.1-14	8760	2.1E-04	9.1E-04
Acrolein	107-02-8	13,240	2.9E-04	1.10E-05	1.1-14	8760	4.0E-03	1.8E-02
Benzene	71-43-2	13,240	1.3E-03	4.91E-05	1.1-14	8760	1.8E-02	7.9E-02
Benzo(a)anthracene	56-55-3	13,240	8.0E-08	3.02E-09	1.1-13	8760	1.1E-06	4.9E-06
Benzo(a)pyrene	50-32-8	13,240	3.8E-08	1.44E-09	1.1-13	8760	5.3E-07	2.3E-06
Benzo(b+k)fluoranthene	205-99-2	13,240	1.1E-07	4.15E-09	1.1-13	8760	1.5E-06	6.7E-06
Benzo(g,h,I)Perylene	191-24-2	13,240	2.7E-08	1.02E-09	1.1-13	8760	3.7E-07	1.6E-06
Benzo(k)fluoranthene	207-08-9	13,240	1.1E-07	4.15E-09	1.1-14	8760	1.5E-06	6.7E-06
Benzyl chloride	100-44-7	13,240	7.0E-04	2.64E-05	1.1-14	8760	9.7E-03	4.3E-02
Biphenyl	92-52-4	13,240	1.70E-06	6.42E-08	1.1-13	8760	2.4E-05	1.0E-04
Bis(2-ethylhexyl)phthalate (DEHP)	126639-29-0	13,240	7.3E-05	2.76E-06	1.1.14	8760	1.0E-03	4.4E-03
Bromoform	75-25-2	13,240	3.9E-05	1.47E-06	1.1-14	8760	5.4E-04	2.4E-03
Carbon disulfide	75-15-0	13,240	1.3E-04	4.91E-06	1.1-14	8760	1.8E-03	7.9E-03
Chlorobenzene	1089-07-0	13,240	2.2E-05	8.31E-07	1.1-14	8760	3.1E-04	1.3E-03
Chloroform	67-66-3	13,240	5.9E-05	2.23E-06	1.1-14	8760	8.2E-04	3.6E-03
Chrysene	218-01-9	13,240	1.0E-07	3.78E-09	1.1-13	8760	1.4E-06	6.1E-06
Cumene	98-82-8	13,240	5.3E-06	2.00E-07	1.1-14	8760	7.4E-05	3.2E-04
Cyanide	74-90-8	13,240	2.5E-03	9.44E-05	1.1-14	8760	3.5E-02	1.5E-01
Dimethyl sulfate	77-78-1	13,240	4.8E-05	1.81E-06	1.1-14	8760	6.7E-04	2.9E-03
Ethyl benzene	100-41-4	13,240	9.4E-05	3.55E-06	1.1-14	8760	1.3E-03	5.7E-03
Ethyl chloride	75-00-3	13,240	4.2E-05	1.59E-06	1.1-14	8760	5.8E-04	2.6E-03
Ethylene dichloride	107-06-2	13,240	4.0E-05	1.51E-06	1.1-14	8760	5.6E-04	2.4E-03
Ethylene dibromide	106-93-4	13,240	1.2E-06	4.53E-08	1.1-14	8760	1.7E-05	7.3E-05
Fluoranthene	207-08-9	13,240	7.1E-07	2.68E-08	1.1-13	8760	9.9E-06	4.3E-05
Fluorene	86-73-7	13,240	9.1E-07	3.44E-08	1.1-13	8760	1.3E-05	5.5E-05
Formaldehyde	50-00-0	13,240	2.4E-04	9.06E-06	1.1-14	8760	3.3E-03	1.5E-02

APPENDIX C

Emissions Calculations --HAPs

Potential HAP Emissions from Lime Kilns (combined)

Hazardous Air Pollutant	CAS Number	Coal Heat Content (Btu/lb)	Emission Factor (EF)[a] (lb/ton)	Emission Factor (EF)[b] (lb/MMBtu)	EF Reference AP-42 Table	Annual Hours of Operation (hr/yr)	Emissions (lb/hr)	Emissions (tpy)
Hexane	110-54-3	13,240	6.7E-05	2.53E-06	1.1-14	8760	9.3E-04	4.1E-03
Indeno(1,2,3,c,d)pyrene	193-39-5	13,240	6.1E-08	2.30E-09	1.1-13	8760	8.5E-07	3.7E-06
Isophorone	102771-74-4	13,240	5.8E-04	2.19E-05	1.1-14	8760	8.0E-03	3.5E-02
Methyl bromide	74-83-9	13,240	1.6E-04	6.04E-06	1.1-14	8760	2.2E-03	9.7E-03
Methyl chloride	74-87-3	13,240	5.3E-04	2.00E-05	1.1-14	8760	7.4E-03	3.2E-02
Methyl ethyl ketone	78-93-3	13,240	3.9E-04	1.47E-05	1.1-14	8760	5.4E-03	2.4E-02
Methyl hydrazine	60-34-4	13,240	1.7E-04	6.42E-06	1.1-14	8760	2.4E-03	1.0E-02
Methyl methacrylate	80-62-6	13,240	2.0E-05	7.55E-07	1.1-14	8760	2.8E-04	1.2E-03
Methyl tert butyl ether	1634-04-4	13,240	3.5E-05	1.32E-06	1.1-14	8760	4.9E-04	2.1E-03
Methylene chloride	75-09-2	13,240	2.9E-04	1.10E-05	1.1-14	8760	4.0E-03	1.8E-02
Naphthalene	91-20-3	13,240	1.3E-05	4.91E-07	1.1-13	8760	1.8E-04	7.9E-04
Phenanthrene	85-01-8	13,240	2.7E-06	1.02E-07	1.1-13	8760	3.7E-05	1.6E-04
Phenols	68610-51-5	13,240	1.6E-05	6.04E-07	1.1-14	8760	2.2E-04	9.7E-04
Polychlorinated dibenzo-p-dioxins[f]	PCDD	13,240	4.28E-08	1.62E-09	1.1-12	8760	5.9E-07	2.6E-06
Polychlorinated dibenzo-p-furans[g]	PCDF	13,240	2.01E-07	7.59E-09	1.1-12	8760	2.8E-06	1.2E-05
Propionaldehyde	123-38-6	13,240	3.8E-04	1.44E-05	1.1-14	8760	5.3E-03	2.3E-02
Pyrene	129-00-0	13,240	3.3E-07	1.25E-08	1.1-13	8760	4.6E-06	2.0E-05
Tetrachloroethylene	127-18-4	13,240	4.3E-05	1.62E-06	1.1-14	8760	6.0E-04	2.6E-03
Toluene	108-88-3	13,240	2.4E-04	9.06E-06	1.1-14	8760	3.3E-03	1.5E-02
Styrene	100-42-5	13,240	2.5E-05	9.44E-07	1.1-14	8760	3.5E-04	1.5E-03
Xylenes	1330-20-7	13,240	3.7E-05	1.40E-06	1.1-14	8760	5.1E-04	2.2E-03
Vinyl acetate	108-05-4	13,240	7.6E-06	2.87E-07	1.1-14	8760	1.1E-04	4.6E-04
Total Organic HAPs				**3.48E-04**				**0.56**
Inorganic HAPs								
Antimony	7440-36-0	13,240	1.80E-05	6.80E-07	1.1-18	8760	2.50E-04	1.09E-03
Arsenic	7440-38-2	13,240	4.10E-04	1.55E-05	1.1-18	8760	5.69E-03	2.49E-02
Beryllium	7440-41-7	13,240	4.56E-05	1.72E-06	Note (j)	8760	6.33E-04	2.77E-03
Cadmium	7440-43-9	13,240	5.10E-05	1.93E-06	1.1-18	8760	7.08E-04	3.10E-03
Chromium	18540-29-9	13,240	2.60E-04	9.82E-06	1.1-18	8760	3.61E-03	1.58E-02
Cobalt	7440-48-4	13,240	1.00E-04	3.78E-06	1.1-18	8760	1.39E-03	6.08E-03
Lead	7439-92-1	13,240	1.80E-04	6.80E-06	Note (i)	8760	2.50E-03	1.09E-02
Manganese	7439-96-5	13,240	4.90E-04	1.85E-05	1.1-18	8760	6.80E-03	2.98E-02
Mercury	7439-97-6	13,240	9.00E-05	3.40E-06	Note (c)	8760	1.25E-03	5.47E-03
Nickel	7440-02-0	13,240	2.80E-04	1.06E-05	1.1-18	8760	3.89E-03	1.70E-02
Selenium	7782-49-2	13,240	1.30E-03	4.91E-05	1.1-18	8760	1.80E-02	7.90E-02
Total Inorganic HAPs				**1.22E-04**				**0.20**

APPENDIX C

Emissions Calculations --HAPs

Potential HAP Emissions from Lime Kilns (combined)

Hazardous Air Pollutant	CAS Number	Coal Heat Content (Btu/lb)	Emission Factor (EF)[a] (lb/ton)	Emission Factor (EF)[b] (lb/MMBtu)	EF Reference AP-42 Table	Annual Hours of Operation (hr/yr)	Emissions (lb/hr)	Emissions (tpy)
Acid Gases								
Hydrochloric acid	7647-01-0	13,240	--	--	Note (h)	8760	8.44	36.95
Hydrofluoric acid	7664-39-3	13,240	2.5E-02	9.54E-04	Note (d)	8760	0.351	1.54
Total Acid Gases				**0.0010**				**38.49**
Total Calculated Maximum Potential HAP Emissions							**8.96**	**39.24**

[a] AP-42 Chapter 1.1 Bituminous and Subbituminous Coal Combustion (09/98).

[b] Coal pound per million Btu EF is calculated as follows: (lb HAP/ton coal)*(ton coal/2000 lb coal)*(lb coal/13,000 Btu)* ($10^{\wedge 6}$Btu/MMBtu)= (lb HAP/MMBtu Coal).

[c] Potential emissions of mercury are calculated based on 0.06 ppmwd of Hg in coal and assuming 25% control from the kiln and baghouse. Also assumes 100% of Hg is emitted to the air.

[d] Potential emissions of HFare calculated based on 60 ppmwd of fluorine in coal and assuming 80% control from the kiln and baghouse. Also assumes 100% of F in coal is converted to HF.

[f] EF for total PCDD is the sum of total TCDD, total PeCDD, total HxCDD, total HpCDD, and total OCDD.

[g] EF for total PCDF is the sum of total TCDF, total PeCDF, total HxCDF, total HpCDF, and total OCDF.

[h] See subsequent sheet for calculation of HCl emissions.

[i] Potential emissions of lead are calculated based on 9.0 ppmwd of Pb in coal and assuming 99% control from the kiln and baghouse. Also assumes 100% of Pb is emitted to the air.

[j] Potential emissions of beryllium are calculated based on 2.28 ppmwd of Be in coal and assuming 99% control from the kiln and baghouse. Also assumes 100% of Be is emitted to the air.

APPENDIX C

Emissions Calculations --HCl

Synergy Management, LLC
Kiln HCl Emission Rate Calculation

The HCl emission rate is calculated from the "conservative default concentration" of 10 ppm applied to preheater kilns in the National Lime Association report "Final Report on Modeling of Lime Kiln HCl Emissions," From Arline Seeger, NLA & Alan Kao, ENVIRON to Joe Wood & Jim Crowder, USEPA; 2/13/2002.

The conversion from 10 ppm to a lb/hr emission rate follows a two step procedure. First the concentration is converted from units of ppm to mg/m^3 based on exhaust gas temperature. Then the concentration value is converted to an hourly mass flow rate.

1. Concentration Conversion

Conc (mg/m^3) = [Conc. (mg/kg) * P * MW] / [R * T]

Where:

Conc. =	10	mg/kg (ppmvd)
P =	1	atm, pressure
MW =	36.5	kg/kg-mol, molecular weight of HCl
R =	0.082057	m^3-atm/kgmol-K, gas constant
T =	463.7	K, (375 F) exhaust temperature

Result:

Conc = 9.593 mg/m^3

2. Mass Flow Rate Calculation

ER (lb/hr) = [Conc (mg/m^3)] * [FR] * cf1 * cf2

Where:

FR =	55.4	m^3/s, actual design exhaust flow rate for single kiln
cf1 =	0.001	g/mg, conversion factor
cf2 =	7.937	(lb/hr)/(g/s), conversion factor

Result:

ER = 4.218 lb/hr, HCl emission rate per kiln

APPENDIX C

Emissions Calculations --Wind Erosion - Piles

Synergy Management, LLC
Wind Erosion of Storage Piles

Material Constants

PM10 =	50% of TSP	Ref: EPA-450/3/88/008
Bulk Density :		
Limestone =	60.00 lbs/ft^3	Powder and Bulk.com website - Engineering Resources - Bulk Density Chart
Coal =	52.00 lbs/ft^3	ibid

Conversion Factors

1 kg =	2.2046 lbs
1 m^3 =	35.3147 ft^3
1 ton =	2000 lbs
1 acre =	43560 ft^2
1 year =	365 days

Wind Erosion of Storage Piles

$$E = 1.7\left(\frac{s}{1.5}\right)\left(\frac{365-p}{235}\right)\left(\frac{f}{15}\right)$$

Ref: EPA-450/3-88-008

$$V_{pile} = \frac{1}{3}\pi r^2 h$$

$$h = r \tan\alpha$$

$$r_{pile} = \sqrt[3]{\frac{3V_{pile}}{\pi \tan\alpha}}$$

$$SA_{pile} = \pi r\sqrt{\left(r^2 h^2\right)}$$

$$SA_{pile} = \pi r\sqrt{r^4 (\tan\alpha)^2}$$

silt content of crushed limestone, s =	1.6 %	Ref: AP-42 (1/1995), Table 13.2.4-1
silt content of flue dust, s =	13.0 %	Ref: AP-42 (1/1995), Table 13.2.4-1
silt content of coal, s =	2.2 %	Ref: AP-42 (1/1995), Table 13.2.4-1
# days >0.01" precip., p =	144 days	South Bend, IN climate station http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/prcpdays.html
% time wind > 5.4 m/s, f =	31.8 %	Ref: South Bend, IN wind rose, see "Wind Data" tab

APPENDIX C

Emissions Calculations --Wind Erosion - Piles

Pile Geometry

Pile Name	Mat'l	Angle of Repose	Radius of Pile	Height of Pile	Surface Area	
		(degree)	(ft)	(ft)	(ft^2)	(acre)
Kiln Feed Pile 1	limestone	35	65.0	45.5	16,204	0.37
Kiln Feed Pile 2	limestone	35	66.0	46.2	16,706	0.38
Kiln Feed Pile 3	limestone	35	67.0	46.9	17,216	0.40
Kiln Feed Pile 4	limestone	35	45.0	31.5	7,766	0.18
Kiln Feed Pile 5	limestone	35	70.0	49.0	18,792	0.43
Oversize Pile 6	limestone	35	20.0	14.0	1,534	0.04
Undersize Pile 7	limestone	35	20.0	14.0	1,534	0.04
BitStone Pile 8	limestone	35	49.0	34.3	9,208	0.21
BitStone Pile 9	limestone	35	49.0	34.3	9,208	0.21
BitStone Pile 10	limestone	35	49.0	34.3	9,208	0.21
BitStone Pile 11	limestone	35	49.0	34.3	9,208	0.21
Fuel pile	coal/coke	35	53.0	37.1	10,773	0.25

Pile Wind Erosion Emissions

Pile Name	Mat'l	Emission Factors TP	Emission Factors PM10	Emission Rate TP		Emission Rate PM10	
		(lb/d/acre)	(lb/d/acre)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Kiln Feed Pile 1	limestone	3.62	1.81	0.056	0.25	0.028	0.12
Kiln Feed Pile 2	limestone	3.62	1.81	0.058	0.25	0.029	0.13
Kiln Feed Pile 3	limestone	3.62	1.81	0.060	0.26	0.030	0.13
Kiln Feed Pile 4	limestone	3.62	1.81	0.027	0.12	0.013	0.06
Kiln Feed Pile 5	limestone	3.62	1.81	0.065	0.28	0.032	0.14
Oversize Pile 6	limestone	3.62	1.81	0.032	0.14	0.016	0.07
Undersize Pile 7	limestone	3.62	1.81	0.032	0.14	0.016	0.07
BitStone Pile 8	limestone	3.62	1.81	0.032	0.14	0.016	0.07
BitStone Pile 9	limestone	3.62	1.81	0.032	0.14	0.016	0.07
BitStone Pile 10	limestone	3.62	1.81	0.005	0.02	0.003	0.01
BitStone Pile 11	limestone	3.62	1.81	0.005	0.02	0.003	0.01
Fuel pile	coal/coke	4.97	2.49	0.051	0.22	0.026	0.11

APPENDIX C

Emissions Calculations --Quarry Operations

Synergy Management, LLC
Quarry Emissions

Input Values:

Lime production capacity	1,800	tpd
Stone-to-lime ratio	2	
Waste factor (assumed)	20%	
Annual stone throughput	1,576,800	tpy

	TP Em Fctr	PM10 Em Fctr	Units	Parameter	Units	# of Srcs	Cntrl	Cntrl Eff (%)	Em Rate, TP (tpy)	Em Rate, PM10 (tpy)	Notes
Ore removal	0.01	0.005	lb/ton	1576800	ton/yr	1	---	0	7.88	3.942	1
Ore dumping - FEL to truck	3.36E-05	1.60E-05	lb/ton	1576800	ton/yr	1	---	0	0.03	0.013	2
Ore dumping - Truck to Hopper	3.36E-05	1.60E-05	lb/ton	1576800	ton/yr	1	BOP	0	0.03	0.01	2
Drilling	1.3	0.16	lb/hole	1300	holes/yr	1	Cyclone	70	0.25	0.031	1,3
Blasting	58.6	29.3	lb/blast	260	blasts/yr	1	--	0	7.62	3.809	1,4
Hauling (FELs)	6	3	lb/VMT	2986	vmt/yr	1	Water Spray	85	1.34	0.672	1,5,6
Hauling (loadout trucks)	6	3	lb/VMT	29864	vmt/yr	1	Water Spray	85	13.44	6.72	1,6,7
Waste Loading/Dumping	0.0084	0.0084	lb/ton	315360	ton/yr	1	---	0	1.32	1.325	1
Disturbed Area: New	760	380	lb/acre	19	acre	1	---	0	7.22	3.610	1
								Total	**39.14**	**20.13**	
										4.597	lb/hr

Notes:

1. Emission factors used for annual emissions reporting and fee payment at limestone quarry in Montana.
2. PM10 factor from AP-42, Table 11.19.2-2 (8/04) for truck unloading, fragmented stone (uncontrolled). Assumed TP equals 2.1 times PM10.
3. Project owners project typical blasting schedule of five per week.
4. Assume five holes drilled per blast.
5. Assume FEL miles traveled equals 10% of haul truck miles traveled.
6. Montana annual emissions calculations for limestone quarry used 85% emissions reduction for fugitive road dust control.
7. Haul truck VMT calculated as follows:

ore processed	1,576,800	tons
truck capacity	20	tons, typical
trips req'd	78840	
length of haul road	1000	feet, estimate
VMT	29864	miles/yr

APPENDIX C

Emissions Calculations --Emergency Generator

Synergy Management, LLC
Emergency Generator Emissions

Input Values:

347	bhp, worst-case engine power output
14.8	gal/hr, worst-case diesel consumption rate
0.0015%	max. S content of ULS diesel
500	hr/yr, maximum annual operation
0.91	typical specific gravity of No. 4 diesel
7.594	lb/gal, density of No. 4 diesel (calculated)
64	MW of SO2
32	MW of S
0.0022	lb/g, conversion factor

SO2:

(14.8 gal diesel / hr)*(7.594 lb / gal)*(1.5E-05 lb S / lb diesel)*(64 lb SO2 / 32 lb S) =

0.0034	lb/hr SO2
0.0008	ton/yr SO2

PM10, CO, & NOx:

	Em. Fctr (g/HP-hr)	Em. Rate (lb/hr)	Em. Rate (ton/yr)
PM10	0.15	0.1145	0.0286
CO	2.60	1.985	0.4962
NOx/NMHC	3.00	2.290	0.5726

APPENDIX C

Emissions Calculations --Mobile Fugitive Sources

Synergy Management, LLC
Lime Plant Road Fugitive Particulate Emissions

Input Values:

26	tons, haul truck capacity
4.5	cu. yds, FEL bucket capacity (for CAT 950 front end loader)
52	lb/ft^3, coal bulk density (Powder and Bulk.com)
1.053	tons coal/trip, FEL haul rate (calculated)
23.2	tons, average FEL weight
33	tons, average haul truck weight
0.082	empirical constant 'k' for TSP (PM_{30})
0.016	empirical constant 'k' for PM10
8.2	g/m^2, silt loading ('sL'), ref. AP-42 Table 13.2.1-4, quarry roads
0.00047	Emission factor ('C') for 1980s vehicle fleet exhaust, brake wear, and tire wear for PM and PM_{10} (lb/VMT) - Table 13.2.1-2
144	number days with preciptation > 0.01 in ('P'), South Bend, IN climate station, http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/prcpdays.html
365	Number of days in the averaging period ('N')
3.98	lb/VMT, TSP emission factor for FEL (calculated)[a]
0.78	lb/VMT, PM10 emission factor for FEL (calculated)[a]
6.75	lb/VMT, TSP emission factor for haul trucks (calculated)[a]
1.32	lb/VMT, PM10 emission factor for haul trucks (calculated)[a]
92%	Fuel road watering control efficiency[b]
87%	Lime road watering control efficiency[b]
16.11	tph, design fuel feed rqmnt for 1800 tpd lime production
75	tph, design lime production rate (1800 tpd)
37.5	tph, design rail loadout rate for lime (900 tpd)

Road Segment	Material	Design TP Rate (tph)	Surge Factor	Short-Term TP Rate (tph)	Vehicle Capacity (tons/trip)	Travel Distance (mi)	Vehicle Miles per Hour	TSP Em. Rate (lb/hr)	TSP Em. Rate (tpy)	PM10 Em. Rate (lb/hr)	PM10 Em. Rate (tpy)
Fuel delivery	coal/coke	16.1	1.2	19.3	26	1	0.743538	0.401511	1.758617	0.078518	0.343907
Fuel FEL	coal/coke	16.1	1.2	19.3	1.053	0.04	0.734359	0.23382	1.024131	0.045824	0.200709
Lime	product lime	38	1.2	45	26	1.13	1.955769	1.716188	7.516901	0.33561	1.469972

APPENDIX C

Emissions Calculations --Mobile Fugitive Sources

Notes:
(a) Derived from AP-42 13.2.1 Eq (2) (11/06).
(b) EPA quidance, EPA-450/2-92-004, "Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures" (9/92) Table 3-1, equation for water flushing followed by sweeping. Assumes 24-hour flushing frequency at 0.48 gal/yd^2.

Tailpipe Emissions (Mobile6 EPA Model)
-Most conservative values are based on using January model output files.

Emission Factor VOC =	0.461	g/mi =	0.0010163	lb/mi
Emission Factor CO =	2.742	g/mi =	0.0060451	lb/mi
Emission Factor NOx =	9.080	g/mi =	0.0200181	lb/mi
Emission Factor SO_2 =	0.0132	g/mi =	2.91E-05	lb/mi
Emission Factor TSP =	0.3304	g/mi =	0.0007283	lb/mi
Emission Factor PM_{10} =	0.2753	g/mi =	0.0006069	lb/mi

	Fuel Trucks		FEL		Lime Trucks	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
VOC	0.0008	0.0033	0.0002	0.0010	0.0020	0.0087
CO	0.0045	0.0197	0.0014	0.0062	0.0118	0.0518
NOx	0.0149	0.0652	0.0047	0.0205	0.0392	0.1715
SO2	0.0000	0.0001	0.0000	0.0000	0.0001	0.0002
TSP	0.0005	0.0024	0.0002	0.0007	0.0014	0.0062
PM_{10}	0.0005	0.0020	0.0001	0.0006	0.0012	0.0052

Total Particulate (tailpipe + fugitive dust)

	Fuel Trucks		FEL		Lime Trucks	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP	0.4021	1.7610	0.2340	1.0249	1.7176	7.5231
PM_{10}	0.0790	0.3459	0.0460	0.2013	0.3368	1.4752

Indiana Department of Environmental Management
Office of Air Quality

Addendum to the Technical Support Document (TSD) for a Prevention of Significant Deterioration (PSD) and Part 70 Permit

Source Description and Location

Source Name:	Synergy Management, LLC
Source Location:	5600 N. US Highway 421, Monon, IN 47959
County:	White
SIC Code:	3274
Operation Permit No.:	T181-26877-00050
Permit Reviewer:	Madhurima D. Moulik

Public Notice Information

On November 5, 2009, the Office of Air Quality (OAQ) had a notice published in the Herald Journal in Monticello, Indiana, stating that Synergy Management, LLC, had applied for a Prevention of Significant Deterioration (PSD) and Part 70 Permit No. T181-26877-00050. The notice also stated that OAQ proposed to issue a Prevention of Significant Deterioration (PSD) and Part 70 Permit 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.

Due to several comments received by IDEM from interested parties, a public meeting was held on December 3, 2009, to discuss air permitting for Synergy Management, LLC. The public comment period was extended to Monday, December 7, 2009.

Comments Received

OAQ received comments from the following people:

- Linda Eckert and other residents (Linda Eckert), Monon, Indiana
- M. Clark, Monon, Indiana
- Frances K. Clark, Monon, Indiana
- Charlotte and Gene Austin, Monon, Indiana
- Keith Austin, Director of Operations/Media Buyer, Precision Media, Lafayette, Indiana
- U.S. Environmental Protection Agency, Region V

The comments have been summarized and the responses have been detailed below. The comments have been grouped and addressed in the following order - General Comments (non-technical), Technical Comments (submitted by the general public), and EPA comments (submitted by U.S. EPA). In addition, changes prompted by IDEM's internal review have been included below the responses to comments.

General Comments

General Comment No. 1 (Linda Eckert)

The Commenter expressed doubts about Synergy's intentions and/or ability to follow through with what the company is saying. While Synergy is a new company and has no history to support its claim of good faith, the primary partner of this company does have a company - Illini State Trucking. This company was cited for falsifying CRC certificates (text below):

In a federal civil suit filed November 17, the Chicago-based non-profit overseer of the ``CRC'' kosher symbol alleges that over the ``last several years or more'' it was ``common practice'' for Illini State Trucking Co. to scan the CRC certification into a computer and alter it for use on trucks that had not been certified for kosher use.

The lawsuit alleges fraud and violations of federal and state trademark law as well as the Illinois Deceptive Trade Practices Act. Illini, which lost its kosher certification from the council, has not filed a response to the suit yet.

The question is: Will this happen again, with the reporting of emission and compliance reports for the lime plant and air permits?

Response

IDEM has determined that the compliance requirements included in the proposed PSD/Part 70 permit No. T181-26877-00050 are adequate to demonstrate compliance with applicable state or federal requirements. The source is required to comply with the requirements specified in the permit. Non-compliance with the permit terms and conditions could result in penalties and potential criminal actions if the violations are substantial and intentional.

No change has been made as a result of this comment.

General Comment No. 2 (Linda Eckert, M. Clark)

Another area of concern is the company's ability to remain financially viable for the completion and operation of this plant or will the site become a major Super Fund cleanup site if the company were to go bankrupt? What assurances are there that funds will be available for environment recovery and clean up if something were to go amiss? Abandonment of the project could leave 245 acres of land scrapped down to limestone, 20 feet of land removed and no longer available for production or carbon absorption and a hole in the ground.

Does the state or county have a pull out plan on file from Rob Bult (Synergy Management, LLC's owner)? What is his cleanup plan if he decides to halt operations whether it is 1 year or 75 years from now?

Response

IDEM has determined that the proposed air permit adequately addresses requirements under air permitting rules and regulations. IDEM is obligated to issue an approval for an air permit application within a specified time period as detailed in 326 IAC 2-1.1-8, unless there are reasons for delays or for the denial of the application as included in the rule.

No change has been made as a result of this comment.

General Comment No. 3 (Linda Eckert)

One area of concern is the considerable Hispanic population in the area that has not been well educated on this issue. There has been no notifications/information brochures circulated to help this population understand what is happening. The area is low income, resources are scarce and many simply are in survival mode. The Hispanic population does not speak English and information has not been made available to them in their native language.

Response

IDEM 's Environmental Justice Policy seeks to treat all members of the public equally and fairly with meaningful involvement in the permitting process for all people, regardless of race, color, national origin, geographic location or income. OAQ notified the public that the draft permit was available for public comment in a public notice published in the Herald Journal in Monticello, Indiana, on November 5, 2009. IDEM is not aware of any Spanish language publication serving White County. The draft permit documents were made available for review at the Monon Public Library located at 427 N. Market Street, Monon, IN 47959, at IDEM's main office in Indianapolis and at http://www.in.gov/idem/ on the internet. On November 12, 2009, IDEM also issued a notice that it would conduct a public meeting regarding the draft permit on December 3, 2009, at the Monon Civic Center. The public meeting was attended by twenty-one local residents and lasted over two hours. IDEM made the decision to extend the public comment period to December 7, 2009, in order to give the public more time to comment.

IDEM did not receive any comment or any communication regarding the permit application in any language other than English. IDEM considers all written comments, whether they are submitted in hardcopy or electronically and will consider comments submitted in Spanish and provide responses in Spanish. Under Indiana's air permit rules, specifically 326 Indiana Administrative Code 2-7-17, OAQ gives the public at least 30 days to submit written comments. IDEM believes that the 33 day comment period for this permit, coupled with the public meeting, was sufficient and appropriate.

No change has been made as a result of this comment.

General Comment No. 4 (Charlotte and Gene Austin)

Another concern is allowing Synergy to destroy this area where there are many Indian artifacts. Is there not a law stating that this should be looked into before they can go any further?

Response

IDEM does not have the authority to consider Indian artifacts at the site of Synergy's proposed facility at Monon, Indiana. The only power and authority that IDEM has is given to it through the statutes enacted by the Indiana General Assembly and the rules passed by the Indiana Air Pollution Control Board. IDEM does not have the authority to direct where a plant may, or may not, be located. It is up to local authorities, such as area planning commissions and zoning boards, to determine where industry may locate. Information related to the State of Indiana's responsibilities and oversight issues may be found at http://www.in.gov/.

No change has been made as a result of this comment.

General Comment No. 5 (Linda Eckert, Keith Austin, Frances K. Clark)

It does not sound like the citizens are being given every opportunity to be heard and given complete details of what the emissions will mean for the air quality over time.

While there was a public meeting on December 3, 2009, I still believe that a formal public hearing should have been provided to provide documentation for the law judge on appeal (which will happen) of requests and denials of those requests. IDEM's air permit rules require an opportunity for a public hearing, but I have been told that IDEM has not held an air permit public hearing in years, regardless of the public interest in having one. It seems to me that there is in fact no opportunity for a public hearing if IDEM continually refuses to hold them.

The public notice was posted on November 5, 2009. The documents were not available at the public library for more than a week later. This gave the public less than 18 days to review taking Sundays into consideration. I believe a new public notice should be posted and the decision for the permit extended at least another 30 days to allow time for proper review of the air permit and the information found within. Additionally, the public file at the library did not contain the full file for the application, specifically responses by the applicant to IDEM's Notice of Deficiency, including Information that was submitted by Bison via mail on November 10, 2008, December 2, 2008, March 26, 2009, May 18, 2009, and July 21, 2009 and by email on October 2, 2009, October 7, 2009 (two emails), October 19, 2009, October 21, 2009, and October 26, 2009.

I fear this facility is going to be forced through before proper vetting and review by those most affected, the inhabitants of the local area. I truly do not believe there has been enough local educating of what this plant will do to the environment and the quality of life in Monon and the surrounding area. Especially since the public notice was not transparent or easily comprehended by lay persons. A formal hearing could have conveyed how seriously the public is taking this project. We not only want understandable and transparent information but we also would like to see due process implemented in this matter.

We local lay people have struggled with understanding over 200 pages of IDEM comments and many more pages of application. The public meeting provided some help, but led to more questions in my mind on the complex technical legal requirements that this permit is supposed to address. I was left with only a couple of days to further review and submit these comments. I don't believe that met the intent of IDEM's rules on public participation. A request was made to extend the public comment period as well, which was denied by IDEM.

Per the "public meeting", held on December 3, 2009, regarding the above permit number, I don't feel all questions were answered properly and completely to my satisfaction.

Response

IDEM and the applicant have made a great deal of information available about this permit application. In 2008, the applicant notified all adjacent land owners and residents, as well as local government officials, about its permit application. The applicant also placed a copy of the permit application at the Monon Public Library. IDEM also sent out its own notice to local government officials on August 15, 2008. Information about the permit application has been available on IDEM's searchable air permit database on the internet.

On November 2, 2009, IDEM began the public notice period for the draft air permit. OAQ notified the public that the draft permit was available for public comment in a public notice published in Herald Journal in Monticello, Indiana, on November 5, 2009. The draft permit documents include detailed emissions calculations, air quality modeling, applicable state and federal requirements, and compliance requirements applicable to this proposed plant. The draft permit documents were made available for review at Monon Public Library located at 427 N. Market Street, Monon, IN 47959, at IDEM's main office in Indianapolis and at http://www.in.gov/idem/ on the internet. On November 7, 2007, IDEM also issued a notice that it would conduct a public meeting regarding the draft permit on December 3, 2009, at the Monon Civic Center. IDEM made the decision to extend the public comment period to December 7, 2009, in order to give the public more time to comment.

The draft permit and accompanying Technical Support Document were available at the Monon Public Library and on IDEM's website. IDEM published a notice about the public review period in the Herald Journal newspaper. IDEM sent a copy of the notice to everyone on the mailing list, including local officials, and the Monon Public Library. IDEM's Notice of 30-Day Period for Public Comment gave clear information about the draft permit documents, the expected air emissions from the plant, where the documents could be viewed, how to get additional information, how to

request a public hearing and how to submit written comments. It also gave the e-mail address and telephone number for the permit reviewer, Madhurima Moulik.

IDEM makes every effort to issue readable and understandable permit documents. Title V permits are written so that source operators can understand what they need to do to comply with their regulatory requirements. IDEM includes the Technical Support Document to give background information, more detailed emissions information and to further explain regulatory determinations. The draft permit documents also include an air quality analysis and a risk assessment for hazardous air pollutants. All of the air quality modeling has shown that the controlled emissions from this plant will be well within all U.S. EPA established levels for good air quality.

Although IDEM did not hold a public hearing regarding the draft permit, staff did conduct a public meeting in Monon on December 3, 2009. IDEM published a notice regarding the public meeting in the Herald Journal newspaper. Information about the meeting was also available on IDEM's website. Twenty-one local residents were able to attend the meeting. IDEM staff at the meeting included the permit writer, Madhurima Moulik, section chief Chrystal Wagner and public meeting officer Doug Wagner. These IDEM representatives made extensive responses to the public's questions and comments during the two hour meeting. IDEM was also able to add five new households to the air permit mailing list during the meeting. Before and after the meeting IDEM received lengthy written comments regarding the draft permit from a total of sixteen local residents. This extensive public involvement indicates that IDEM has done a good job getting out information regarding the draft air permit.

IDEM considers all written comments, whether they are submitted in hardcopy or electronically. Under Indiana's air permit rules, specifically 326 Indiana Administrative Code 2-7-17, OAQ gives the public at least 30 days to submit written comments. IDEM believes that the length of the comment period was sufficient and appropriate.

No change has been made as a result of this comment.

General Comment No. 6

(a) (Keith Austin) I believe Indiana only has a couple of plants currently open. It doesn't seem like there is much of a demand for another plant anyway. Other than the fallback explanation of "It'll create jobs in Indiana", I haven't heard much about the great demand for lime these days.

(b) (Linda Eckert) This facility will degrade the air quality of the area. My property being downwind of this facility is in direct line of this pollution. We have several elderly in the area, not to mention some disabled population who will be adversely affected by this decrease in air quality.

How can the state justify a mega-polluter in the northern part of the county when the state is preaching green in the southern part of the county with the new wind farm? How can the State of Indiana justify permitting another mega-polluter in our state, besides money? How can you justify this as being harmonious to the surrounding area? After all, it will be hard to hear nature over the continuous roar and mega-production of pollution.

Why is it that this permit reached your desk when it is in violation of the written law (that is, it must be harmonious with the surrounding area)? How can you justify this as being harmonious to the surrounding area?

(c) (M. Clark) Do you feel you are qualified to be making such decisions that affect the entire state? For example, if you truly believe that lead in small amounts are OK for children

(that is what you said at the public meeting). Is it not your job to protect the citizens of Indiana?

Has any state employee researched what the effects of more blasting will have on the surrounding area considering current operating quarries and the fault line in Royal Center?

How many times a year is Rob Bult and Company allowed to blast? If he is allowed to blast more than twice a year, why is it that the quarries cannot do that?

What happens if he (Rob Bult) has a major explosion or spill? How and who is going to clean it up? Would residents need to be evacuated?

This is not an environmentally friendly operation and will not benefit our land or our population. I respectfully request that this permit not be granted as it will degrade the lives of the people in the area and not be an asset for future generations.

Response

The only power and authority that IDEM has is given to it through the statutes enacted by the State General Assembly and the rules passed by the Indiana Air Pollution Control Board. IDEM does not have the authority to direct where a plant may, or may not, be located. It is up to local authorities, such as area planning commissions and zoning boards, to determine where industry may locate.

IDEM does not have the authority to consider the business viability of Synergy's proposed project at Monon, Indiana. According to the application submitted by the Permittee and certified by the Responsible Official, all air emissions increases from the proposed project have been included in the emission calculations. IDEM has no knowledge of any air emissions unaccounted for in the application. The proposed air permit addresses requirements under air permitting rules and regulations only, and is not meant to address other concerns related to this project.

Responses to a fire or similar emergency situation are outside the air permit process. Any spill or other environmental emergency should be immediately reported to IDEM's Emergency Response Section at (888) 233-7745. The Emergency Response Section may coordinate with the U.S. EPA for an air release emergency. Emergency responders would determine if any evacuation is necessary. IDEM's emergency responders are located at IDEM offices in Indianapolis, Gary, Merrillville and Petersburg. IDEM's On Scene Coordinators oversee spill cleanup actions.

No change has been made as a result of this comment.

General Comment No. 7 (Linda Eckert)

In this case, the majority of the people in this town/area do not want this facility, is IDEM saying that this does not matter, the majority and voice of the people will not be considered in the final approval of this facility. Is that correct? This would be a yes or no answer.

Response

It is correct that the approval of this Title V Operating Permit is not based on the preferences of any member of the local community, whether for or against this project. The power and authority that IDEM has is given to it through the statutes enacted by the Indiana General Assembly and the rules passed by the Indiana Air Pollution Control Board. IDEM has a legal obligation to issue permits that are determined to be consistent with State and Federal regulation within a specific timeframe. IDEM does not have the authority to direct where a plant may, or may not, be located.

It is up to local authorities, such as area planning commissions and zoning boards, to determine where industry may locate.

General Comment No. 8 (Linda Eckert)

Please explain how this quantity of pollutants will not affect an aging population, and a population that is in the low socioeconomic sector, all sectors are very vulnerable to pollution and the effects of these pollutants. We believe the area has a much higher rate of vulnerable population sectors than across the state from which these "statistical averages" for safety have been drawn.

Response

The draft permit documents include an air quality analysis (see Appendix A to the Technical Support Document) and a risk assessment for all expected pollutants from this proposed facility, including hazardous air pollutants. IDEM's air quality modeling has shown that the controlled emissions of pollutants from this plant will be well within U.S. EPA's established level for maintaining good air quality.

The federal Clean Air Act requires the U.S. EPA to set National Ambient Air Quality Standards (NAAQS) for the six criteria pollutants. These standards are set at levels that protect human health, including the health of sensitive persons, such as asthmatics, children and the elderly. The NAAQS are often referred to as the federal health standards for outdoor air. IDEM determined this source will not adversely affect the National Ambient Air Quality Standards for the six criteria pollutants, particulate matter, ozone, carbon monoxide, nitrogen oxides, sulfur dioxide and lead.

More information about the criteria pollutants is available at http://www.epa.gov/air/airpollutants.html on U.S. EPA's website. The complete table of the NAAQS can be found at the http://www.epa.gov/air/criteria.html website.

IDEM also conducts sampling of the ambient air at monitoring stations around Indiana. This air monitoring is conducted to measure whether the NAAQS are being met. Information about Indiana's air monitoring system and monitoring results is available at http://www.in.gov/idem/4116.htm. Information about current and expected air pollution levels is on IDEM's SmogWatch site at http://www.in.gov/apps/idem/smog/ on the internet.

General Comment No. 9 (Linda Eckert)

Citizen enforceable - please explain the methods that can be implemented by the citizens to enforce this permit.

Response

Condition B.6 of the permit states the enforceability of the permit as follows:

B.6 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.

To report a possible violation of environmental laws or regulations, fill out the form at epa.gov/tips. If you do not have Internet access, call the EPA office in your area - Region 5 / Upper Midwest (IL, IN, MI, MN, OH, WI): 1-312-353-2000

Many issues are handled at the local level. You can find information about your local government in the blue pages of your telephone book or by contacting your public library.

For concerns that may not be handled at the local level, the next step is to contact the Indiana Department of Environmental Management, 100 N. Senate Avenue, Indianapolis, IN 46204. Citizens can file a complaint with IDEM three different ways (go to www.in.gov/idem/5274.htm):

1. Submit a complaint on-line at the above website
2. Call the Complaint Coordinator at (800) 451-6027 ext. 24464
3. Print, complete, and mail a paper-based Complaint Submission Form (now available on the IDEM Forms page)

In addition, possible violations may be reported to the White County inspector Lisa Hayhurst at (317) 232-8412.

General Comment No. 10 (M. Clark)

What protection do my family and neighbors have put in place by the state, to protect us from the pollutants emitted by Rob Bult and Company? What effect will all the said pollutants have on my farm ground and yield? If this causes me to lose yield on my farm ground, what right do I have to compensation? Would I be compensated, and if not, why not? What civil and state rights do I have to protect myself?

Response

The draft permit documents include an air quality analysis (see Appendix A to the Technical Support Document) and a risk assessment for all expected pollutants from this proposed facility, including hazardous air pollutants. All of IDEM's air quality modeling has shown that the controlled emissions from this plant will be well within all U.S. EPA established levels for good air quality.

The power and authority that IDEM has is given to it through the statutes enacted by the Indiana General Assembly and the rules passed by the Indiana Air Pollution Control Board. IDEM does not have the authority to determine any compensation for adverse impact on the commentator's property or to offer guidance on legal issues related to civil and state rights.

General Comment No. 11 (Linda Eckert)

To help create a more environmentally and community friendly project, the Commenter has the following suggestions:

1. Third party emissions monitoring be put in place to ensure all emission limitations.
2. Residents in the area are offered an environmental survey of their land/property each year to provide record of any accumulation of pollutants from the project, if accumulation is found appropriate action would be taken to immediately correct the situation. Environmental surveys should be completed before the project begins to set a baseline for future surveys.
3. Emissions alarm offsite for citizen monitoring.
4. Coal ash (fly) not be stored onsite but used as a byproduct (i.e. additive for cement etc.).
5. Railway transportation of lime and coal within five years.
6. Operational restrictions in adverse weather conditions.

Response

The power and authority that IDEM has is given to it through the statutes enacted by the Indiana General Assembly and the rules passed by the Indiana Air Pollution Control Board. IDEM does not have the authority to include any of the above requested requirements in the air permit, none of which are specifically required under any State or Federal regulations or statutes.

Technical Comments

Technical Comment No. 1 (Linda Eckert)

The increase in traffic from coal delivery from the south and lime delivery to the north will also increase the VOC from trucks and other transportation vehicles.

Response

According to the application submitted by the Permittee and certified by the Responsible Official, all fugitive emissions increases from the proposed project have been included in the emission calculations. IDEM has no knowledge of any fugitive emissions unaccounted for in the application. Pursuant to 326 IAC 1-2-73, a source does not include mobile sources, nonroad engines, or nonroad vehicles. In regards to emissions from truck or other vehicle engines, IDEM is not empowered by any rule to include emissions from mobile sources. U.S. EPA has exclusive authority to regulate mobile source emissions in Indiana. Therefore, emissions from trucks and transportation vehicles used for coal and lime delivery to and from the site are not included in the air permitting review process.

No change has been made as a result of this comment.

Technical Comment No. 2 (Linda Eckert)

In addition this plant will add emissions of over 500,000 tons of CO2 to the environment. While I know this is not a pollutant that is recognized nor regulated by our state, it is by Federal standards.

In the case of CO2, will the plant be grandfathered or fall under the new EPA regulations when they are on record. The real question is, is there anything in this permit that will exempt this company from complying with the EPA standards when finalized. This would also be a yes-no answer.

EPA recently finalized a rule requiring lime plants to report their greenhouse gas emissions. The permit should contain these requirements. Greenhouse gases should be subject to the same best available control technology limitations as the other pollutants that will be emitted from the plant. CO2 should be sequestered within a 5-8 year period of time, which would eliminate over 500,000 tons of CO2 from the carbon footprint of this project.

An environmental plan should be implemented to offset all emissions from the plant. How many trees does it take to neutralize 500,000 tons of CO2? Pound for pound all emissions should be absorbed.

Response

Regulation of the six greenhouse gases, including carbon dioxide, will begin on January 2, 2011. U.S. EPA published the Final Greenhouse Gas Tailoring Rule on June 3, 2010 (75 Federal Register 31514). Through this rulemaking EPA is tailoring the applicability criteria that determine which stationary sources and modification projects become subject to permitting requirements for

greenhouse gas (GHG) emissions under the Prevention of Significant Deterioration (PSD) and Title V programs of the federal Clean Air Act. U.S. EPA is also phasing in the applicability of these programs to GHG sources starting with the largest GHG emitters. The rule is at http://www.epa.gov/NSR/documents/20100413final.pdf on the internet.

The Indiana Air Pollution Control Board has begun a rulemaking process to revise Indiana's PSD and Title V rules to be consistent with GHG applicability thresholds and definitions in the federal rule. The notice of rulemaking is available at http://www.in.gov/legislative/iac/20100901-IR-326100505FDA.xml.pdf and more information about it is available on IDEM's website. Since Synergy's permit will be issued prior to January 2, 2011, no GHG regulations will apply and analysis is not required with respect to the GHG emissions from Synergy's proposed facility.

On October 30, 2009, U.S. EPA published a rule on the Mandatory Reporting of Greenhouse Gases (74 Federal Register 56260). U.S. EPA has stated that the Mandatory Reporting of Greenhouse Gases rule is a monitoring rule under Section 114 of the federal Clean Air Act and none of its requirements is an "applicable requirement" under the Title V operating permit program (see 74 Federal Register 56287-56288). Permit terms and conditions must be related to an applicable requirement (see 326 IAC 2-7-5). Therefore, Synergy's permit does not contain any requirements from this rule. The reporting rule is available at http://www.epa.gov/climatechange/emissions/downloads09/GHG-MRR-Full%20Version.pdf on U.S. EPA's website.

No change has been made as a result of this comment.

Technical Comment No. 3 (Linda Eckert)

We have the issue of using coal as a fuel source for the kilns and the ever growing coal ash that will need be disposed of in the proper manner. The coal ash will have an effect on the land and future wildlife.

Response

The proposed air permit addresses requirements under air permitting rules and regulations only, and is not meant to address other concerns related to this project. According to the application submitted by the Permittee and certified by the Responsible Official, all air emissions increases from the proposed project have been included in the emission calculations.

No change has been made as a result of this comment.

Technical Comment No. 4 (Linda Eckert)

(a) If IDEM cannot dictate the type of fuel (coal versus natural gas), why was natural gas specifically mentioned as "not technically feasible" in this project?

(b) Please describe the pollutants if this plant were set up to be fueled by natural gas.

Response

The statement mentioned by the Commenter was included in the SO2 BACT analysis. The proposed project is designed as a coal-fired, preheater rotary kiln operation, and using natural gas as the primary fuel is not a technically feasible option under the design constraints of this project.. The application submitted by Synergy Management, Inc. was for two (2) coal-fired kilns. The emissions calculations are based on this and other design aspects of the project. IDEM has no means of reliably estimating emissions from a different project based on a different fuel type. Best Available Control Technology requirements under 326 IAC 2-2 authorize IDEM to impose control technologies for the proposed process units, but does not authorize IDEM to

fundementally change the design features of the process units, such as imposing the use of fuels deemed technically infeasible for the process unit.

Technical Comment No. 5 (Linda Eckert)

Explain what best practices (combustion and operating practices) are, where they are written in the permit, and if they are enforceable, how are they enforced?

Response

Best combustion or best operating practices are standard operating conditions which minimize emissions of regulated pollutants. The emission units for which best combustion or operating practice was determined to be BACT are also subject to emissions limitations that IDEM has determined to be most stringent for similar operations. It is the Permittee's responsibility to utilize specific best combustion practices for the emission unit to minimize emissions in order to meet the BACT limitations, which are state and federally enforceable. IDEM has determined that it is not necessary to enforce the procedures involved in combustion practices, as long as the emissions limitations are met.

Technical Comment No. 6 (Linda Eckert)

How many baghouses are there going to be and how many can fail and for how long?

Response

There are ten (10) proposed baghouses (DC1 through DC10). The requirements related to baghouse operations are included in Condition D.1.9 of the draft permit, which requires the continuous operation of the control device when the emission unit is in operation. The notification requirements in case of bag failure is also included in this condition as follows:

D.1.9	Operating Requirement
(a)	In order to demonstrate compliance with Condition D.1.3, baghouses DC1 and DC2 for the control of particulate matter emissions from Kiln 1 and Kiln 2 shall be in operation at all times when the associated kiln is 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.

Conditions C.16 - Response to Excursions or Exceedances, and C.17 - Actions Related to Noncompliance Demonstrated by a Stack Test detail the requirements related to the corrective actions that must be taken in case of malfunction or exceedances of emissions limitations.

Technical Comment No. 7 (Linda Eckert)

The technical basis for the Synergy draft operating permit is seriously flawed. Specifically, Synergy has (1) proposed a SO_2 control strategy that will not provide for compliance with the SO_2 BACT limit, (2) included an incorrect statement concerning wet scrubbers in the SO_2 BACT evaluation, (3) proposed a CO control strategy that will not provide for compliance with the CO BACT limit, (4) failed to clarify the relationship between the quarry/stone processing facility and the lime producing facility, (5) underestimated PM_{10} fugitive emissions from numerous sources, and (6) failed to consider start-up/shutdown emissions in the ambient air quality analyses. As a consequence of these errors, the Synergy Plant will not achieve the SO_2 and CO emissions limit, will not comply with the Subpart AAAAA NESHAP standard, and will have PM_{10} ambient air quality levels well above the predicted levels. Revised ambient air quality modeling is needed to

determine if the proposed Synergy Plant will comply with NAAQS standards and PSD increment limits during both routine operation and start-up/shutdown conditions.

Synergy has made the following incorrect statement on page 12 of the BACT evaluation:

"The fuel used to fire the kiln is the primary source of sulfur dioxide emissions from kilns." Synergy BACT Evaluation, page 12 of 42 (Draft Permit Document Page 182).

This statement suggests that Synergy does not fully understand the sources of sulfur entering the kiln and the levels of SO2 that can form and requires further evaluation by IDEM. Pyritic sulfur in most limestone can be an important, and sometimes dominant, source of SO2 forming in the kiln effluent gas stream. For example, at Monon, pyritic sulfur levels ranging from 0.05 to 0.15% by weight will form 38% to 65% of the total sulfur entering the kiln when the kiln burner is fired exclusively with the 0.76% sulfur coal described in the Synergy permit. Based on this simple example, pyritic sulfur in the limestone is the major source of SO2 when the pyritic sulfur content is 0.10 to 0.15% by weight—very common levels. Perhaps Synergy has not provided any data concerning the limestone pyritic sulfur level and has not fully evaluated sulfur input to the kiln.

The draft operating permit for Synergy specifies an emission limit of 2.0 pounds of SO2 per ton of lime produced. This is equivalent to 657 tons of SO2 per year and 75 pounds of SO2 per hour per kiln. For reasons stated below, it is highly unlikely that Synergy can achieve this emission limit.

On page 12 of their BACT evaluation, Synergy states that the efficiency of SO2 control by scrubbing with dolomitic material is not well understood.

"While SO2 scrubbing with high-calcium lime and limestone is widely applied, very little is known about scrubbing with dolime or dolomitic limestone, which has about 20 to 40% magnesium replacing the calcium. Although magnesium also reacts with SO2, the SO2 removal efficiency is largely unknown. Based on industry experience, the removal efficiency of SO2 is higher for kilns processing quicklime as compared to those processing dolime." Synergy BACT Evaluation, page 12 of 42 (Draft Permit Document Page 182).

This is a surprising statement considering that the low SO2 removal efficiency achieved by dolomitic kilns is well known in the Lime Industry, and information is readily available on the internet. The Graymont Dolomitic Lime Plant in Pleasant Gap, Pennsylvania installed a spray dryer absorber significantly improving SO2 reduction at the kiln.

Despite the fact that the proposed Synergy Plant will be processing dolomitic limestone, Synergy concluded that inherent scrubbing was the most efficient technique for SO2 control. Synergy stated the following.

"As determined in Step 3, the most effective SO2 control option is proper kiln design and operation (inherent scrubbing)." Synergy BACT Evaluation, page 15 of 42 (Draft Permit Document Page 186).

This conclusion on page 15 of the BACT evaluation is inconsistent with their statement on page 12 concerning the lack of SO2 removal efficiency data and ignores the well-published information concerning low efficiency “inherent scrubbing” by dolomitic material and the SO2 control approaches adopted by Graymont at Pleasant Gap. Synergy chose not to include a SO2 scrubber despite the well-documented efficiency problems of their “inherent scrubbing” strategy.

The necessary “inherent scrubbing efficiency” of the Synergy Monon kiln fabric filter has been evaluated based on their stated kiln feed rates. The calculations are based on a range of pyritic sulfur levels in the limestone of 0.05% to 0.15%. We have assumed that the product lime has a maximum sulfur content of 0.05% considering that Synergy has announced their intention to produce metallurgical-grade lime having low sulfur levels. A variety of coal/coke fuel mixes have been applied. The resulted “inherent efficiency” requirements needed to achieve the Synergy proposed 2.0 lbs SO2/ton of lime produced emission limit is summarized in Table 1.

Table 1. Required "Inherent Scrubbing" SO2 Removal Efficiencies at Monon

Fuel	Pyritic Sulfur Levels		
	0.05% by weight	0.10% by weight	0.15% by weight
Coal, 0.76% S by wt.	76.4	84.0	87.9
Coke, 5.3% S by wt.	87.5	90.0	91.7
Coal/Coke Blend[1]	95.7	96.0	96.3

[1] Coal having 0.76% sulfur supplies 80% of the input energy; coke having 5.3% sulfur supplies 20% of the energy.

The simple material calculations indicate that the required SO2 "inherent scrubbing" efficiency in the Synergy kiln fabric filter must exceed 76.4% regardless of the type of kiln fuel. This value has not been achieved when processing a similar type of limestone with a similar fabric filter.

The SO2 removal in the preheater will not be sufficient to achieve the Synergy proposed BACT limit of 2.0 pounds of SO2 per ton of lime produced.

Response

IDEM conducted a SO2 BACT analysis in accordance with the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, which outlines the steps for conducting a top-down BACT analysis. The BACT limitations in units of pounds per hour and tons per year at other lime kilns have not been considered in the SO2 BACT analysis, as these limitations are dependent on the production rate (throughput) of the kilns, which varies from one source to another. IDEM has determined that the SO2 BACT emission limitation proposed by Synergy in pounds per ton unit is more stringent than comparable BACT determinations at other kilns, including the lime kiln at Vulcan Materials in Illinois, which is equipped with a wet scrubber.

The permit limit of 2.0 lb SO2 /ton of lime is determined to be stringent but achievable. The projected ability to meet this limit was largely based on test results from an operating preheater lime kiln that exclusively produces dolomitic lime. The Graymont kiln referenced in this comment as using an SO2 scrubber is a long, straight kiln. It produces quicklime, not dolomitic lime. The long, straight kiln design provides lower inherent SO2 reduction than a preheater design, thus the need for additional control. The same facility added a second new kiln close to the time of adding the referenced kiln. This second kiln used a preheater design and did not include add-on SO2 control.

The Commenter's analysis of the source of SO2 emissions from these kilns and the likelihood of future non-compliance with the proposed SO2 emissions limitation does not have any impact on the BACT determination, which is still the most stringent of all comparable SO2 BACT limitations at other lime kilns.

No change has been made as a result of this comment.

Technical Comment No. 8 (Linda Eckert)

Adequacy of the SO_2 BACT Evaluation

Synergy has made the following surprising statement regarding the use of wet scrubbers in the Lime Industry.

"A wet scrubber is not in operation at any lime kilns currently in the U.S." Synergy BACT Evaluation page 12 (Draft Permit Document page 183).

This statement suggests a lack of understanding of the Lime Industry. In fact, the Lime Industry NESHAP regulation reproduced in the Draft Permit Document as a thirty-eight page insert (Draft Permit Document, pages 74 to 111) has numerous references and specific requirements pertaining to wet scrubbers used on lime kilns. These requirements exist because wet scrubbers are common in the Lime Industry.

Response

The wet scrubbers referenced in the NESHAP regulations for Lime Manufacturing (40 CFR 63, Subpart AAAAA) are control devices only for particulate matter and opacity, as can be clearly seen in Tables 1 and 2 of this NESHAP. The NESHAP requirements referenced by the Commenter address water scrubbers that do not include a sulfur absorbing component such as CaO. These scrubbers generally use only water as a reagent and are used to reduce particulate emissions, not SO2 emissions. Their SO2 control efficiencies are quite low, as are their particulate control efficiencies compared to fabric filter baghouses.

IDEM acknowledges the fact that the SO2 BACT analysis should have clarified that no add-on wet scrubbers for SO2 control are used at other lime kilns (with a lime based reagent), while scrubbers for PM and opacity control may very well be used at several lime kilns. This, however, does not have any impact on the BACT determination, which is still the most stringent of all comparable SO2 BACT limitations at other lime kilns. Therefore, no change has been made to the SO2 BACT determination.

No change has been made as a result of this comment.

Technical Comment No. 9 (Linda Eckert)

Compliance with the CO and NOx BACT Limit

Synergy has adopted stringent BACT emission limits for CO and NOx. As Synergy correctly states on page 20 of the BACT evaluation (Draft Permit Document page 191), kiln firing conditions that decrease NOx simultaneously increase CO and vice versa. Achieving the proper balance between these two pollutants is especially difficult for kilns designed to produce metallurgical grade lime having a low sulfur content of approximately 0.05% sulfur by weight. The oxygen concentration of the kiln gas stream must be minimized to prevent excessive capture of SO_2 in the lime product and thereby exceed the lime sulfur content limits important in metallurgical applications. Due to the low oxygen levels that will probably be used at Monon, compliance with the CO emission limit will be unlikely.

The CO BACT evaluation includes an incorrect statement concerning the presumed beneficial impact of a preheater tower on CO emissions. Synergy has stated on page 18 of the BACT evaluation (Draft Permit Document page 189) that, “A preheater kiln design increases fuel efficiency, which serves to reduce CO emissions as well.” The preheater decreases the quantity of fuel consumed and the quantity of effluent gas exiting the kiln—it does not necessarily reduce the mass emission rate of CO. The emissions of CO are dependent on 1.) the level of excess oxygen throughout the kiln gas stream, 2.) the gas stream residence time in the burner end of the kiln, and 3.) the adequacy of fuel-air mixing in the burner flame. CO emissions vary substantially from kiln-to-kiln and over short time frames in any specific kiln.

The Draft Permit Document should include a required lower oxygen concentration. If the oxygen levels in the kiln gas stream decrease below 1% oxygen, and especially below 0.5%, the CO concentrations increase to very high levels. If the oxygen concentrations decrease to zero (low or no excess air) CO and unburned fuel concentrations can approach unsafe levels. There should be a lower limit to the oxygen concentration in the kiln effluent gas stream in order to prevent excessive emissions of CO and unburned organic compounds from the fuel.

Response

IDEM conducted the CO BACT analysis in accordance with the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, which outlines the steps for conducting a top-down BACT analysis. Of all the facilities listed in RBLC, the only facility that has a more stringent BACT limit for CO emissions from lime kilns as well as a more stringent (or equally stringent) BACT limit for NOx are located at the Chemical Lime Company of Alabama, Inc. - O'Neal. According to the Alabama Department of Environmental Management (ADEM), Air Division, Industrial Minerals Section, the lime kilns at Chemical Lime Company of Alabama, Inc. - O'Neal has not been able to meet the NOx limits in the old kiln (Kiln No. 1) consistently. These limits were also applied to the kiln during the Kiln No. 2 PSD project. The kilns are still having problems due to kiln variability over short time periods. In addition, the facility was not able to meet the CO limits in the old kiln (Kiln No. 1) and the new kiln (Kiln No. 2) consistently. In PSD permit number 411-0039-X028 issued on March 23, 2005, the CO limits for the lime kilns at the O'Neal plant were increased to 2.5 pounds per ton of lime produced.

Due to the compliance issues involved as explained above, and the relaxation of the CO limits for the lime kilns in 2005, the more stringent CO BACT listed in RBLC for the lime kilns at the Chemical Lime Company of Alabama, Inc. - O'Neal was not considered as CO BACT.

The Commenter's analysis of the mechanism of CO formation at the kilns, and the likelihood of future non-compliance with the proposed CO emissions limitation does not have any impact on the BACT determination, which is still the most stringent of all comparable CO BACT limitations at other lime kilns. Therefore, no change has been made to the CO BACT determination.

It is true that multiple factors can affect NOx and CO formation. However, the permit limits are considered to be achievable based on experience at other lime manufacturing facilities and the fact that the Synergy facility will have new kilns designed to minimize air emissions. If one or more limits are determined to be inappropriate after operation commences, IDEM will re-evaluate BACT at that time.

No change has been made as a result of this comment.

Technical Comment No. 10 (Linda Eckert)

PM-10 BACT Limits

On page 6 of Appendix C, emission rates are estimated for baghouse/filter emissions. All emission estimates are based on an outlet grain loading of 0.01 grains per dry standard cubic foot. Baghouses can do much better than this. A quick review of EPA's RACT/BACT/LAER Clearinghouse shows two recent cases for lime/limestone handling where the baghouse limits were set lower. These are shown below.

OH-0321 Martin Marietta 11/13/2008
Lime loadout, screening, transfer storage
PM-10 baghouse 0.005 gr/dscf

OH-0315 New Steel International 5/6/2008
Alloys, flux, carbon, limestone, coke handling
PM baghouse 0.0022 gr/dscf

Response

The draft permit limit for PM_{10} emissions from material handling operations controlled by baghouses is 0.005 gr/dscf. This is BACT for baghouse-controlled material handling operations at lime manufacturing facilities.

According to information posted at EPA's RBLC website, the BACT determination for New Steel International (OH-0315) has not been finalized, the facility has not been constructed, and the emissions limitations have not been verified. Therefore, the BACT emission limit of 0.0022 gr/dscf has not been considered as a comparable BACT by IDEM. The more recent BACT determination cited by the Commenter (OH-0321), which is less stringent than that for New Steel International, illustrates that the BACT determination of 0.0022 gr/dscf was similarly not considered as comparable by the Ohio Environmental Protection Agency.

Technical Comment No.11 (Linda Eckert)

Unclear Relationship between the Quarry/Stone Processing Plant and the Lime Plant

The Draft Permit Document is unclear regarding the relationship between the limestone quarry/stone processing plant and the lime plant. On page 5 of the fugitive dust control plan (Draft Permit Document page 141), Synergy describes the Quarry/Stone Processing plant as an "independently owned quarry and rock crushing plant adjacent to the facility." However, the Draft Permit Document Source Summary and IDEM Technical Support Documents in the Draft Permit Document clearly list the stone crushing, screening, and conveying operations as part of the Synergy permit. Appendix C of the Draft Permit Document includes emissions from the limestone crushing, screening, and conveying operations. It is not possible to adequately review the draft permit and support materials due to the lack of clarity with respect to the relationship between the quarry/stone crushing plant and the lime plant. For the purposes of this evaluation, we have assumed that the quarry/stone processing plant is part of the Synergy facility.

Response

For purposes of the application, it was assumed that all emissions from the limestone quarry, limestone processing and handling, and lime manufacturing come from a single source.

Technical Comment No. 12 (Linda Eckert)

Underestimated PM_{10} Emissions

The Synergy air quality impact analyses are significantly flawed due to underestimated PM_{10} emissions from numerous fugitive dust emission sources in the quarry and limestone processing area. The estimated PM_{10} emissions stated in Appendix C of the Draft Permit Document (pages 214 to 220) are biased low by more than 11 tons per year.

1. Screen Emission Control Efficiency

Synergy has significantly underestimated particulate matter emissions by applying a 90% control efficiency factor to the screening operation controlled emission factor listed in AP-42. There is no basis for this additional "efficiency" factor applied to the already controlled-condition emission factor in AP42. This inappropriate calculation affects six screens and improperly reduces the estimated PM_{10} emissions by approximately 5 tons per year.

Response

A control efficiency of 90% was applied to account for enclosures around the screening operations as described in the emissions inventory and BACT analyses. The controlled emission factors listed in AP-42 Tables 11.19.2-2 are related to control achieved through wet suppression, and not due to enclosures around the screening area (see footnote b to Table 11.19.2-2).

No change has been made as a result of this comment.

Technical Comment No. 13 (Linda Eckert)

Crusher Emission Control Efficiency

Synergy has significantly underestimated PM_{10} particulate matter emissions from the crushers by applying a 50% control efficiency factor to the controlled emission factor listed in AP42. There is no basis for this additional "efficiency" factor applied to the already controlled-condition emission factor in AP42. This inappropriate calculation affects all three crushers and reduces the estimated PM_{10} emissions by 1.27 tons of PM_{10} per year.

Response

A control efficiency of 50% was applied to account for partial enclosures around some of the crushing operations as described in the emissions inventory and BACT analyses. The controlled emission factors listed in AP-42 Tables 11.19.2-2 are related to control achieved through wet suppression, and not due to enclosures around the screening area (see footnote b to Table 11.19.2-2).

No change has been made as a result of this comment.

Technical Comment No. 14 (Linda Eckert)

Screen and Crusher Throughput Rates

Synergy has significantly underestimated particulate matter emissions from the screens and crushers by using throughput rates that are well below the values listed in numerous locations in the draft permit. The inappropriate throughput rates affect all six screens. The impact of this error on the estimated PM_{10} concentrations is approximately 3 tons per year.

Response

Synergy has updated the list of emission units used in the limestone processing system. Changes include a reduction in the number of conveyors and the removal of the sizing equipment, conveyors and piles related to the sizing of limestone contaminated with bitumen. In addition, the emissions calculations and air quality modeling have been revised based on all material transfer emission points operating at full design capacity. The revised emissions calculations have been attached as Appendix Aa to this Addendum.

PM_{10} Emissions Changes – Emitting Units were updated to reflect the current limestone processing system. Changes in the limestone processing system include a reduction in the number of conveyors and the removal of sizing equipment, conveyors and piles related to the sizing of limestone contaminated with bitumen.

In addition to system design changes, methods used to calculate system-wide emissions were modified. Previously, the emission points included in the inventory and in the dispersion modeling analyses were based on a worst-case pathway of stone progressing through the system. Potential emissions are now based on the assumption that all material transfer emission points operate simultaneously at full design capacity. The transfer rate for each material transfer point is limited only by the lower of the capacities of the contributing and receiving equipment.

$PM_{2.5}$ Emissions Addition – $PM_{2.5}$ emissions were calculated for all material transfer sources in the same manner that PM_{10} emissions were calculated. Emission factors for both PM_{10} and $PM_{2.5}$ were derived using AP-42 13.2.4 Equation (1) and the appropriate size multiplier.

PM_{10} Emissions Changes – Screens five and six (S5 and S6) were removed from the emissions inventory to reflect the limestone system design changes noted above.

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

(a) - (c)

....

Loadout, storage silos and piles, drop points, and material transfer processes, identified as transfer points 1 through 153, including the following:

(d) Two (2) coal mills, permitted in 2010, each with a maximum capacity of 240 tons per day, identified as Coal Mill #1 and Coal Mill #2.

(e) ~~Six (6)~~ **Four (4)** limestone screens, permitted in 2010, maximum capacities ranging from 500 tons per hour to 1000 tons per hour, identified as emission units S1 through ~~S6~~ **S4**.

(f) Two (2) lime screens, permitted in 2010, each with a maximum capacity of 50 tons per hour, identified as emission units S7 and S8, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

(g) Two (2) lime screens, permitted in 2010, each with a maximum capacity of 50 tons per hour, identified as emission units S9 and S10, with baghouse DC8 for PM control, exhausting to Stack #8.

(h) Sixty-two (62) conveyors, permitted in 2010, identified as C1 through C57 and CC1 through CC5.

SECTION D.2 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

Loadout, storage silos and piles, drop points, and material transfer processes, identified as transfer points 1 through 153, including the following:

(d) Two (2) coal mills, permitted in 2010, each with a maximum capacity of 240 tons per day, identified as Coal Mill #1 and Coal Mill #2.

(e) ~~Six (6)~~ **Four (4)** limestone screens, permitted in 2010, maximum capacities ranging from 500 tons per hour to 1000 tons per hour, identified as emission units S1 through **S4** ~~S6~~.

(f) Two (2) lime screens, permitted in 2010, each with a maximum capacity of 50 tons per hour, identified as emission units S7 and S8, with baghouses DC5 and DC6 for PM control, exhausting to Stacks #5 and 6.

.....

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

$PM_{2.5}$ Emissions Addition – $PM_{2.5}$ emissions calculations were performed for the stone process sources using the emissions factors in AP-42 Table 11.19.2-2. This was the same source of emissions factors used to calculate PM_{10} emissions. The same control efficiencies that were assumed for PM_{10} were used for $PM_{2.5}$.

$PM_{2.5}$ Emissions Addition – $PM_{2.5}$ emissions calculations were based on two sources of emissions factor data. Lime kiln $PM_{2.5}$ emissions were calculated using particle size distribution reported in AP-42 Table 11.17-7 for rotary kilns with baghouse control.

$PM_{2.5}$ emissions from product handling baghouses were calculated using the particle size distribution and control efficiency percentages found in EPA's PM Calculator database. PM_{10} uncontrolled emissions were back-calculated based on the available data for lime handling operations, after which the $PM_{2.5}$ speciation and control factors were applied to determine the $PM_{2.5}$ emissions rates. The calculation is demonstrated below.

$$\left(\frac{E_{PM10}}{1-CE_{PM10}}\right)\times SD_{2.5}\times CE_{PM2.5}=E_{PM2.5}$$

Where:

E_{PM10} = Emission rate of PM_{10} emissions (lb/hr)

CE_{PM10} = Control efficiency of PM_{10} emissions using a baghouse (99.32%)

$SD_{2.5}$ = Proportion of $PM_{2.5}$ in PM_{10} (35.3%)

$CE_{PM2.5}$ = Control efficiency of $PM_{2.5}$ emissions using a baghouse (99%)

$E_{PM2.5}$ = Emission rate of $PM_{2.5}$ emissions (lb/hr)

- ***Wind Erosion***

PM_{10} Emissions Changes

Wind erosion pile emissions were calculated using methodology outlined in the EPA document EPA-450/3/88/008. This methodology conservatively assumes continuous disturbance.

Wind erosion emissions were recalculated based on AP-42 Chapter 13.2.5-3, Industrial Wind Erosion (11/06). The AP-42 method is a complex method based on the observation that erosion of a disturbed surface will only occur after the wind reaches or exceeds a threshold velocity. Once that happens, material at the surface is removed leaving a surface immune to further erosion until it is once again disturbed. The general estimation procedure begins by evaluating a threshold velocity for each period of interest. The threshold velocities are then entered into an equation, along with the prevailing wind speed for that period, and produce an emission factor in units of g/m2/erosion event. If the prevailing wind speed is less than the threshold velocity, the emission factor equals zero. This procedure is repeated for each period of interest throughout the entire year to derive an annual emission factor. The factor is then multiplied by the area of a surface to yield an annual emission rate for that surface.

This procedure was followed for the facility storage piles using daily fastest five-second average wind speeds recorded for 2009 at the South Bend, Indiana, National Weather Service station. The results depend on the presumed shape of the piles. The analysis included several estimation assumptions that would over-estimate wind erosion emissions. For example, it was assumed that the entire surface area would be disturbed 12 times every day of the year and that the maximum daily wind speed would occur 12 times per day between each disturbance.

Two of the four pile shapes characterized in the AP-42 chapter yield zero particulate emissions. This means that surface wind speeds would not be expected to exceed the threshold velocity required to produce erosion. The other two shapes result in maximum annual PM10 emissions of 0.07 tons per year. This is much lower than the 1.00 ton per year estimated using the EPA-450/3/88/008 method.

A spreadsheet containing the above analysis is included in Appendix Aa to this TSD Addendum. The spreadsheet is designed to produce results based on a selected pile shape.

$PM_{2.5}$ Emissions Addition – $PM_{2.5}$ emissions were calculated using AP-42 Chapter 13.2.5-3—the same methodology that was used for the PM_{10} emissions calculation. The emissions factor was calculated with the $PM_{2.5}$ particle size multiplier.

- ***Quarry Emissions***

$PM_{2.5}$ Emissions Addition – $PM_{2.5}$ emissions for the quarry were calculated by applying a factor of 10 percent to the previously calculated PM_{10} emissions. This factor is provided in AP-42 Table 13.2.2-2 for calculating particulate emissions from unpaved roads. A ten percent (10%) proportionality constant was applied for all quarry sources.

- ***Emergency Generator Emissions***

$PM_{2.5}$ Emissions Addition – $PM_{2.5}$ emissions were calculated using the same emission factor used to calculate PM_{10} emissions. Although AP-42 Table 3.3-1 provides only a PM_{10} emission factor, a footnote to the table states that "all particulate is assumed to be ≤ 1 μ-m in size."

- ***Mobile Fugitive Sources***

PM_{10} Emissions Changes – An additional road was added in the emissions inventory and the modeling analyses for hauling away bitumen-contaminated limestone. Road dust emissions from this road were calculated in the same manner as for the facility's other paved roads. In addition, tailpipe emissions associated with hauling bitumen-contaminated limestone were calculated using emission factors from the EPA Mobile6 model, the same model that was used for previous tailpipe emissions calculations.

$PM_{2.5}$ Emissions Addition – $PM_{2.5}$ emissions from paved roadways were calculated using particulate-size-appropriate factors and equations from AP-42 Chapter 13.2.1. $PM_{2.5}$ tailpipe emissions were assumed to equal PM_{10} emissions.

- ***Revised Particulate Emissions Summary***

The following table shows potential total facility particulate emissions included in the permit application compared with totals resulting from the above system design and emissions calculation changes.

	Total Facility PTE (tons/yr)	
	Permit Application	**Revised**
Filterable PM	78.6	140
Total PM_{10}	190	219
$PM_{2.5}$	n/a	95.3

The potential to emit all other pollutants is unchanged from the permit application.

PM_{10} Ambient Concentration Impacts Review

The effect of these emissions calculation and system design changes on dispersion modeling demonstrations was established by incorporating them into the model prepared for the August 2008 application and repeating the analyses. Besides the changes described above, the only other change to the model was an increase in stack heights for baghouses DC8 and DC10 from 12.2 and 6.1 meters to 18.0 and 16.7 meters, respectively. The results presented below demonstrate continued compliance with PM_{10} NAAQS and PSD Class II Increments. Copies of electronic model input and output files are included with this letter for your reference.

NAAQS Compliance Demonstration

Averaging Period	**Modeled Peak Impact ($\mu g/m^3$)**	**Background Concentration ($\mu g/m^3$)**	**Peak Modeled + Background ($\mu g/m^3$)**	**NAAQS ($\mu g/m^3$)**
24-hour	19.2	35.3	54.5	150
Annual	4.9	22	26.9	50

PSD Class II Increment Compliance Demonstration

Averaging Period	**Modeled Peak Impact ($\mu g/m^3$)**	**Class II Increment ($\mu g/m^3$)**
24-hour	20.6	30
Annual	4.7	17

Technical Comment No. 15 (Linda Eckert)

Screen Discharge Emissions

Synergy has incorrectly assumed that particulate matter emissions due to discharge of stone from screens onto conveyors is included in the AP42 emission factor. That is incorrect. The controlled emission factor applicable to screening systems presented in Section 11.19.2 of AP-42 includes only the surface of the screen and the discharge of stone to the top of the screen. These AP42 emission factors do not include the discharge of stone from the various decks of the screen to conveyors or feeds. Synergy has incorrectly omitted 11 separate transfer points listed on pages 2 and 3 of Appendix C (Draft Permit Document pages 215-216). The impact of this error on the estimated annual emissions of PM_{10} cannot be adequately calculated based on the information provided in the Draft Permit Document.

Response

After further review, IDEM has not found any evidence that particulate emissions from any transfer points have been excluded from the emissions calculations (see Appendix Aa to the Addendum to the Technical Support Document). The emissions of particulate matter included in this permit application include emissions from screening operations as well as material transfers from the crushing and screening operations to conveyors. The background document for AP-42 Chapter 11.19.2, dated May 12, 2003, describes the test from which the reported emission factors were derived. These descriptions do not indicate that emissions from unloading screens were isolated from emissions associated with loading and with screening.

No change has been made as a result of this comment.

Technical Comment No. 16 (Linda Eckert)

Feeder Discharge Emissions

Synergy has failed to calculate fugitive particulate matter emissions resulting from the discharge of feeders onto conveyors. They have incorrectly omitted 8 separate transfer points listed on pages 2 and 3 of Appendix C (Draft Permit Document pages 215-216). The impact of this error on the estimated annual emissions of PM_{10} cannot be adequately calculated based on the information provided in the Draft Permit Document.

Response

IDEM has determined that fugitive emissions from all material transfer processes have been accounted for. IDEM was unable to locate the missing transfer points on pages 2 and 3 of the emissions calculations (Appendix C). Updated emissions calculations included in Appendix Aa to this Addendum to the Technical Support Document accurately reflect the design and description included in the application and permit.

No change has been made as a result of this comment.

Technical Comment No. 17 (Linda Eckert)

Limestone and Fuel Conveyor Transfer Point Emission Control Efficiencies
Synergy has improperly applied an additional 50% control efficiency factor to the controlled emission factors listed in AP-42, Section 11.19.2. They claim that the conveyor transfer point emissions are mitigated by a partial enclosure. They fail to realize that the AP-42 emission factors were developed based on tests of conveyor transfer points with partial enclosures. Furthermore, the information provided by Synergy on pages 1-4 of the PI-18 form in the Permit Application Document (pages 227-230) explicitly states that all but one of the conveyor transfer points will have no enclosure, partial or otherwise. The incorrect use of the 50% factor affects 25 conveyor transfer points listed in Appendix C and results in an underestimation of at least 0.35 tons per year of PM10.

Response

The referenced form PI-18 indicates that the listed conveyors will not be enclosed, but the transfer points will be enclosed. Pages 73 through 75 of the application report clearly indicate that stone and fuel conveyor transfer points will be enclosed. Table 11.19.2-2 from which the referenced factor was selected describes the factor as applying to controlled conveyor transfer points. A footnote to the table explains that controlled sources are those that employ moisture content similar to that exhibited in the study group, from 0.55 to 2.88 percent.

Technical Comment No. 18 (Linda Eckert)

Conveyor Transfer Point Throughput Rates
Synergy has underestimated emissions from conveyor transfer points C2 to C3, C7 to C9, C8 to C9, and C9 to C5. The throughput rates listed in the Appendix C emission calculations are lower than the permitted throughput rates listed throughout the draft permit. This impact of this error is less than 0.20 tons of PM10 per year.

Response

Throughput rates for conveyor transfers are not limited in the permit. Synergy has recalculated particulate emissions (see Response to Technical Comment No. 14).

Technical Comment No. 19 (Linda Eckert)

Customer Truck Traffic
Synergy has calculated the customer truck traffic particulate matter emissions based on 50% shipment by rail. However, there is no permit condition that requires Synergy to ship lime by rail. Accordingly, they could operate with twice the customer truck traffic emissions. Shipment of 100% of the lime product by trucks would increase PM10 emissions by 1.47 tons per year based on their emission factor calculations.

Response

It is IDEM's belief that the submitted emissions calculations account for maximum emissions as defined under Potential to Emit (PTE). The transfer to trucks and to railcars will be controlled by separate baghouses. Emissions from both baghouses were included in the Potential to Emission calculations and the air quality modeling included emissions from both baghouses operated simultaneously at full design capacity.

Technical Comment No. 20 (Linda Eckert)

Fuel Unloading Emissions
Synergy has underestimated coal unloading emissions by assuming a coal moisture content of 15%. This level of coal surface moisture cannot be maintained. The PM10 emissions calculated based on a more reasonable 5% surface moisture level in coal increases the estimated PM10 emissions by 0.15 tons per year.

Response

It is IDEM's belief that the submitted estimation of fugitive emissions is based on a reasonable anticipation of typical operating conditions. Condition D.2.6 - Particulate Matter, has been added requiring a minimum moisture content of 15% for coal and coke used at this facility as follows:

D.2.6 Particulate Matter

The Permittee shall use inherent moisture to control emissions of PM and PM10 from the coal/coke and lime transfer and handling processes to ensure that the coke processed has a moisture content of at least fifteen (15) percent for coal and coke and at least seven (7) percent for lime. The Permittee shall perform a moisture content analysis to ensure that the moisture content is equal to or greater than fifteen (15) percent for coal and coke and seven (7) percent for lime. The method for the moisture content analysis shall be approved by IDEM, OAQ.

Technical Comment No. 21 (Linda Eckert)

Fugitive Dust Capture Efficiency
Throughout Appendix C of the Draft Permit Document, Synergy has assumed that any source in the lime processing area controlled by a fabric filter has 100% capture efficiency for the fugitive PM10 emissions. This is unrealistic.

Response

Appendix Aa to this Addendum to the Technical Support Document includes updated emissions calculations from lime processing operations. The Permittee has used 90% capture efficiency for all processes that are enclosed or in tunnels, with 50% capture for partial enclosures. In addition, visible emission notation has been added for all material transfer points as follows:

D.2.8 Visible Emissions Notations

(a) Visible emission notations shall be performed once per day for baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 during normal daylight operations when exhausting to the atmosphere. **Visible emission notations shall be performed once per day for all material transfer points.** A trained employee shall record whether emissions are normal or abnormal.

(b) 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.

(c) 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.

(d) 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.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances.

Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

Technical Comment No. 22 (Linda Eckert)

Rail Load-Out Facility
As discussed later in these notes, there is inconsistent information regarding the presence or absence of a rail load-out facility. If present, Synergy has not included any fugitive PM10 control techniques, nor have they calculated any emissions from a facility supposedly designed to handle 50% of the lime product.

Response

Fugitive emissions from product off-loading will be controlled by fabric filter baghouses sized for the facility's full production capacity. Emissions from load-out to trucks were accounted for in the emissions inventory. Additional accounting for rail loadout is unnecessary since such emissions would be offset by reduced truck load-out emissions.

The facility will include equipment for offloading product to trucks and to railcars. Table 5-6 on page 57 of the permits application lists the following lime transfer points:

Transfer #	Transfer Description	Material Processed
120	S9 to Truck	lime
121	S10 to Truck	lime
122	PN1 to Rail	lime

Table 5-9 on page 62 of the permit application indicates that the transfers to truck and to railcars will be controlled by separate baghouses. The emissions inventory submitted as Appendix C of the application report describes Baghouse DC8 as a "lime loadout" baghouse and Baghouse DC10 as a "lime rail loadout" baghouse. Emissions from both baghouses were included in the facility's potential to emit and modeled impacts included emissions from both baghouses operating simultaneously at full design capacity.

Technical Comment No. 23 (Linda Eckert)

Zero Throughput Process Equipment
The Appendix C emission inventory data provided in the Draft Permit Application includes numerous process sources shown with zero material throughput. Accordingly, the estimated PM10 emissions from these sources are also zero. There is no clear explanation for these zero throughput sources.

Response

See Response to Technical Comment No. 14.

Technical Comment No. 24 (Linda Eckert)

Estimation of Wind Erosion from Storage Piles
Wind erosion from storage piles are typically made using procedures outlined in Chapter 13.2.5 of AP-42. The emission rates are partially based upon how often the surface of the pile is disturbed. No information has been provided on how often the piles will be disturbed. If piles are disturbed daily, emissions could be significantly higher than the estimates made by Bison. What is the basis of the approach provided by Bison and why is it more appropriate than the AP-42 approach described above?

Response

See Response to Technical Comment No. 14.

Technical Comment No. 25 (Linda Eckert)

Quarry Operations
The majority of the emission factors used to estimate quarry emissions are for limestone quarries in Montana. There is no documentation for the original source of the emission factors or discussion of why these factors are applicable to limestone quarries in Indiana. Many of these activities have emission factors in AP-42 (unpaved roads, blasting and dumping). Is there any justification as to why the AP-42 emission factors should not be used for these activities?

Response

IDEM is not aware of any reasons that would indicate significant differences between the underlying conditions and processes affecting air emissions in Montana or Indiana limestone quarries. The present analysis used a factor of 3 pounds of PM10 emissions per vehicle mile traveled (lb/VMT) for both front-end loader and haul truck emissions within the quarry. Elsewhere in the emissions inventory, PM10 emission factors were calculated for these types of vehicles based on AP-42 methodology; the results were 0.78 lb/VMT for loaders and 1.32 lb/VMT for haul trucks. This comparison indicates that the application's estimate of road dust emissions in the quarry is conservatively high.

The application did use factors from AP-42, Chapter 11.19.2 to estimate particulate emissions from ore dumping.

IDEM is not aware of an applicable AP-42 emission factor for blasting. AP-42, Chapter 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing, states, "Emission factor estimates for stone quarry blasting operations are not presented because of the sparsity and unreliability of available tests. While a procedure for estimating blasting emissions is presented in Section 11.9, Western Surface Coal Mining, that procedure should not be applied to stone quarries because of dissimilarities in blasting techniques, material blasted, and size of blast areas."

Technical Comment No. 26 (Linda Eckert)

Many values are based on typical or estimated information. For example the truck capacity is assumed to be 20 tons. The permit should state that the truck capacity must be 20 tons since this is the basis of the emission calculation. Use of another capacity impacts both the emission factor (if AP-42 is used) and the vehicle miles traveled.

Response

The application's emissions inventory assumed an average quarry haul truck capacity of 20 tons. Updated information provided by the project owner indicates that quarry haul truck capacity will instead be approximately 65 tons. The reduced number of trips required by the larger trucks would result in a decrease in PM_{10} emissions of over 2.5 tons per year. Since the more conservative estimates have been used, changes are not necessary.

Technical Comment No. 27 (Linda Eckert)

The length of the haul road is assumed to be 1000 feet. This is an important parameter in estimating hauling emissions via truck (the largest category of quarry emissions). The applicant should determine the haul distance year by year of mine operation to estimate emissions year by year as the pit location moves.

Response

IDEM has determined that it is appropriate for the Permittee to use an average length of travel for estimating fugitive emissions from trucks. 1000 feet has been determined by the Permittee to be a reasonably representative haul road distance for the purpose of estimating fugitive road dust emissions.

Technical Comment No. 28 (Linda Eckert)

It is not clear whether the emission calculations include any waste rock (overburden) hauling. Typically there is topsoil and waste rock above the limestone that needs to be removed and hauled to an area within the pit where it can be disposed of. The hauling of this material can have significantly different hauling distances than those for the limestone.

Response

Road dust emissions resulting from topsoil and overburden movement are represented within the level of precision available and required for regulatory analysis by road dust emissions resulting from stone hauling. Topsoil and overburden movement will occur in place of, not concurrent with, stone hauling. Furthermore, operations throughout the facility related to stone and lime processing would diminish during periods of intensive topsoil and overburden removal. The result would be an overall reduction in plant-wide particulate emissions.

Technical Comment No. 29 (Linda Eckert)

The use of water sprays to achieve 85% control on active roads in a pit need much more documentation. It is unlikely that such high control efficiencies can be achieved or maintained with the use of only water. EPA states in a document entitled "Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures (page 3-17) "The control efficiency of unpaved road watering depends upon (a) the amount of water applied per unit area of road surface, (b) the time between reapplications, (c) traffic volume during that period, and (d) prevailing meteorological conditions during the period. All of these factors affect the road surface moisture content. The control efficiency relationship shown in Figure 3-1 is buried in field tests conducted at a coal-fired power plant. Surface moisture grab samples over the daily watering cycle along with the daily traffic flow cycle are needed to determine an average control efficiency using this figure. The low control efficiency for watering of unpaved roads and the need for frequent (almost daily) reapplication preclude the use of watering as possible BACM (best available control measure)."

Response

Synergy has revised the particulate emissions calculations using a control efficiency of 70%. According to the Fugitive Dust Control Plan submitted by the Permittee (Attachment E to the permit), the plant will have a water truck permanently located at the site for use in cleaning plant roadways. The plant supervisor will ensure that the housekeeping procedures are followed. In addition, the plant speed limit will be 8 mph and will be strictly enforced both for safety and for fugitive dust control. According to AP-42 Section 13.2.2, watering unpaved roads and restricting the speed of vehicles are both viable control strategies for fugitive dust emissions from unpaved roads.

AP-42 Figure 13.2.2-2 presents a simple bilinear relationship between the instantaneous control efficiency due to watering and the resulting increase in surface moisture. The moisture ratio is found by dividing the surface moisture content of the watered road by the surface moisture content of the uncontrolled road. As the watered road surface dries, both the ratio M and the predicted instantaneous control efficiency decrease. The figure shows that between the uncontrolled value and for an M value of 2, a small increase in moisture content results in a large increase in control efficiency. The control efficiency increases from 0% to 75% for this range. (Beyond that, control efficiency grows slowly with increased moisture content).

Based on the above analysis, IDEM has determined that a control efficiency of 70% is reasonable for estimating the mitigation effect of water sprays on unpaved roads.

Technical Comment No. 30 (Linda Eckert)

If the control efficiency for water application is less than the stated 85%, this could result in significantly higher PM emissions. Listed below are estimates for a few lower control efficiencies more likely to be maintained with the use of only water.

Haul Road Emissions Based upon Varying Control Efficiencies

Control Efficiency	PM Emissions (TPY)	PM-10 Emissions (TPY)
85	13.44	6.72
80	17.92	8.96
75	22.40	11.20
70	26.88	13.44
65	31.36	15.68
60	35.84	17.92
55	40.32	20.16

Control Efficiency	PM Emissions (TPY)	PM-10 Emissions (TPY)
50	44.80	22.40

These emission estimates utilize the same emission factors as those used by Bison Engineering, but vary the control efficiency. Unpaved road emissions based upon AP-42 may give very different results. However, there is not sufficient data to estimate the emission rates based upon AP-42.

Response

Synergy has revised the particulate emissions based on a control efficiency of 70%. Other factors have been updated as well (see Response to Technical Comment No. 14).

Technical Comment No. 31 (Linda Eckert)

Start-Up/Shutdown Emissions
The Draft Permit Document does not have stipulations that require Synergy to shutdown the kiln in the event of a significant malfunction. The permit only requires notification of malfunctions lasting more than one hour (see Section B.13 of the General Conditions Draft Permit Document page 15). The ambient air quality impact analyses conducted for the Synergy Plant did not take into account the significantly elevated emissions that can occur during start-up and shutdown. The Draft Permit Document does not include any required start-up or shutdown procedures. The Draft Permit is silent regarding the types of fuels that must be used to preheat the kiln or the procedures that must be used to bring the kiln fabric filter on-line.

Response

The startup procedure begins with introducing natural gas or diesel into the discharge end of the kiln. This will last 4 to 12 hours depending on the ambient temperature and moisture of the materials in the kiln. As the temperature of the feed end of the kiln approaches 500°F, coal or a coal/coke mixture from the bowl mill will be slowly introduced into the kiln. The fuel feed rate from the bowl mill will be gradually increased to the normal operational rate, at which time startup fuel feed will be discontinued. During this process the kiln must be turned several times to avoid damaging the refractory or kiln shell. The kiln baghouses will have been started and fully operational before beginning startup.

To shut down the kiln, fuel feed from the bowl mill will be turned off and the kiln speed reduced to 5 to 10% of normal until the feed end of the kiln temperature is below 500°F. Then kiln rotation will be stopped except for periodic rotations to avoid warping or damaging the refractory.
Kiln emissions during startup and shutdown are not expected to be higher than those reported for normal operations. Because the kiln baghouses will operate during startup and shutdown, and because baghouse potential emissions are typically calculated independent of process parameters, particulate emissions will be identical in either case. Sulfur emissions would be lower during startup and shutdown because both natural gas and diesel typically contain less sulfur than both coal and coke. Emissions of other pollutants are expected to be very similar during startup, shutdown, and normal operations.

In accordance with 40 CFR 63 Subpart AAAAA, Synergy will be required to develop and follow a startup, shutdown, and malfunction plan prior to operating. Synergy will operate the kiln baghouses at all times from commencement of startup to completion of shutdown.

The emissions calculations were submitted as part of Synergy's air permit application and certified by the Responsible Official. These calculations include emissions from fuels used to preheat the kilns. The Permittee is required to demonstrate compliance with the emissions limitations, through performance tests. IDEM believes that the monitoring and recordkeeping requirements in the permit are adequate for demonstrating compliance with the emission

limitations in the permit. IDEM believes that the requirements under Condition B.13 - Emergency Provisions is sufficient to deal with emergency situations, including significant malfunctions. IDEM does not believe it is necessary to specify start-up and shutdown procedures for every emissions unit and control device.

Technical Comment No. 32 (Linda Eckert)

HAPS Emissions
The metal HAPs from the lime kilns are estimated on page 10 in Appendix C. For most metals the emissions are based upon emission factors from AP-42 for bituminous coal combustion. There are several problems with these estimates.

The AP-42 emission factors are for a compilation of sources based on 11 facilities firing bituminous coal, 15 facilities firing sub-bituminous coal and 2 facilities burning lignite. Although these factors have a rating of A, the metals in coal can vary significantly depending upon the source of the coal. (see EPCRA Section 313 guidance – Electricity Generating Facilities (Table 3-5)). The applicant claims Synergy will burn low sulfur coal, but the specific origin of the coal is unknown.

Section D.1 of the proposed permit states "Two (2) rotary lime kilns, permitted in 2009, each with a maximum capacity of 900 tons per day of lime produced, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using baghouse DC1 and baghouse DC2, respectively for PM controls and exhausting to Stack #1 and Stack # 2 respectively." Since these kilns will be allowed to burn petroleum coke, the HAPs emission calculations should also be based on petroleum coke. Unless the permit limits the amount of petroleum coke that can be burned, which it does not appear to, emission estimates should be based upon 100% usage of petroleum coke. Otherwise the permit needs to limit the amount of petroleum coke that can be burned. Modeling needs to be redone using the revised emission estimates.

In comparison with coal, petroleum coke would contain higher concentrations of some HAPs but lower concentrations of others. Most significantly, coke would be expected to contain much less chlorine than coal (HCl was determined to be the most predominant HAP by a large margin). Overall HAP emissions from increased coke usage would be further reduced due to the relative increase in fuel heat content from coke.

As the commenter has previously noted, the permit limit for SO2 emissions is quite stringent. As petroleum coke contains significantly more sulfur than most coals, the SO2 limit will effectively limit the amount of coke to a level far below the 100 percent value suggested in this comment. The fraction of coke in the kiln fuel mix is further limited by the typically low volatiles content of coke. Volatile compounds are required to be present in the fuel at a level that will sustain stable combustion; a high coke fuel mix would be incompatible with stable combustion.

Some of the HAPs emission estimates assume control efficiencies without providing any documentation for the control levels assumed. For example, 25% control is assumed for mercury and 80% for hydrogen fluoride. What is the basis for these control estimates?

Limestone contains metals, some of which may be released during processing. Table 3-12 of EPCRA Section 313 guidance document – Electricity Generating Facilities lists the following metal concentrations for limestone:

Metal	Concentration (ppm)
Arsenic	2.5
Cadmium	2
Chromium	500

Cobalt	5
Lead	100
Manganese	1100
Mercury	1
Nickel	20
Selenium	0.08

The applicant should determine the amount of metal HAPs that will be released from the processing of limestone.

Response

It is common practice to use general factors such as those provided by the US EPA in AP-42 when more specific factors are not reasonably available. Further, it would be inappropriate and unprecedented to limit an owner or operator to a single supplier of a process input. As a practical matter, the only regulatory effect of these emission factors is to determine NESHAP applicability based on the facility's status as a major or area source of HAP emissions. In this case, the facility has been determined to be a major HAPs source and therefore subject to 40 CFR Subparts A and AAAAA. Different metal emission factors could prove that the facility is not subject to these regulations, but they could not result in more stringent regulation.

According to an EPA 2005 report, "Control of Mercury Emissions From Coal-Fired Electric Utility Boilers", average mercury capture for pulverized coal-fired boilers with spray dryer absorber and fabric filter control technologies is 98% for bituminous coal and 24% for sub-bituminous coal. The lower of these values was selected as a reasonable indicator of minimum expected mercury control performance from the lime kilns and their baghouses.

A control efficiency of approximately 90% was used to calculate potential emissions of sulfuric acid mist emissions. This value was calculated based on a 2.5% design fuel sulfur content (as received) and the 2.0 lb SO2 per ton of lime BACT limit. A similar control efficiency would be expected for hydrofluoric acid (HF) since it is an acid gas like sulfuric acid. The HAP emissions inventory conservatively assumes 80% control efficiency for HF emissions.
Control efficiencies of 99% are assumed for emissions of lead and beryllium because these constituents will be emitted as particulate and will be controlled by the kiln baghouses. Baghouses are known to routinely provide over 99% control efficiency.

Although no limit is specified in the draft permit for a maximum coke fraction in the coal/coke fuel mixture, coke feed rate is effectively limited by the kilns' output-based SO_2 limits. In order to estimate the maximum amount of coke that could be combusted, three separate scenarios with varying coke sulfur contents were modeled. In all three, the following factors were held constant:

- 92% SO_2 removal rate by the lime and limestone in the kilns
- 2.5% coal sulfur content on an as-received basis (~14% moisture)
- 11,402 Btu/lb coal (as received)
- 13,981 Btu/lb coke (as received)
- 4.9 MMBtu/ton lime heat input requirement
- 75 tons/hr lime production (design capacity for both kilns combined)

The following table shows the maximum fraction of coke in the fuel that would allow compliance with the 2.0 lb/ton lime SO_2 emission limit:

%S in coke	Coke wt%
5.5	17.4
6.0	14.4
6.5	12.2

This analysis demonstrates that coke will be limited to no more than approximately 20% of the fuel mixture.

An updated human health risk screening analysis indicates cancer risk associated with combustion of coal in the kilns is less than 7.3% of IDEM's threshold of concern. Similarly, the resultant hazard index – the sum of individual compound non-cancer hazard quotients – is less than 0.1% of the threshold that would indicate the potential for health concerns. The updated analysis is included with this letter. Although HAP emission factors for coke combustion are not readily available, it is reasonable to assume they would not vary drastically from factors reported for coal. Both materials are carbon-based fossil fuels. In any case, it is extremely unlikely that combusting less than 20% coke in the fuel mixture would increase risk factors from the low values demonstrated for coal combustion to anywhere near levels of concern.

Since the permit application and draft permit already assume the facility will be a major source of HAP emissions, the only impact additional HAP emissions would have on the permitting process would be to increase the screening level health effects analysis. Accordingly, the health risks determined in the draft permit analysis have been adjusted for the presence of the metals in limestone at the levels suggested by the EPCRA guidance. Following is a detailed description, using manganese (Mn), of the analysis method, assumptions, and results.

Step 1: Estimate the makeup of filterable particulate emissions from the kilns. Particulate emissions from the kilns will contain fly ash from coal combustion and crushed lime and unreacted limestone. For this analysis, it is assumed that the proportion of unreacted limestone compared to lime in the exhaust gas is zero. The average fly ash particle would generally be much smaller and lighter than the average crushed lime particle. Therefore, fly ash would be less likely than lime particles to settle out of the exhaust or to be captured in the baghouse before venting to the atmosphere. Conversely, there is much more lime in the system than coal ash. Considering these two balancing factors, it is assumed that <u>lime particles make up 70% of filterable particulate emissions</u>, and ash particles make up the remaining 30%.

Step 2: Calculate the amount of Mn in a pound of lime. It is a generally accepted rule of thumb that two pounds of limestone are required to create one pound of lime. So the concentration of Mn in lime is calculated as follows:

(1100 lb Mn / 10^6 lb limestone)*(2 lb limestone / lb lime) = <u>2.2E-03 lb Mn / lb lime</u>

Step 3: Calculate the rate of filterable particulate emissions from the kilns at maximum capacity. Filterable PM emissions from the kilns will be limited to 0.15 lb / ton of lime produced. The maximum production capacity of both kilns will be 1800 tons per day. The maximum filterable particulate emission rate is then:

(0.15 lb / ton lime)*(1800 tons lime / day)*(1 day / 24 hr) = <u>11.25 lb filterable PM / hr</u>

Step 4: Calculate the rate of Mn emissions from lime. Combining the results of the first three steps yields:

(11.25 lb filterable PM / hr)*(70%)*(2.2E-03 lb Mn / lb lime) = 0.017 lb Mn / hr

Step 5: Calculate the combined rate of Mn emissions from coal combustion and from lime. According to the HAPs inventory provided in the application, coal combustion in the two lime kilns will result in a maximum hourly Mn emission rate of 1.73E-02 lb / hr. Multiplying this value by 1.5 as was done in the initial analysis yields 1.02E-02 lb/hr. Adding this to the Mn emission rate from lime from Step 4 yields 2.75E-02 lb Mn / hr from coal combustion and lime particulate.

Step 6: Determine a relationship between modeled concentration and emission rate. A modeled annual average Mn concentration of 6.39E-05 $\mu g/m^3$ was used to conduct the risk analysis. This was based on a Mn emission rate of 1.02E-02 lb/hr. (The emission rate reported in the application was 6.8E-03 lb/hr, but this value was multiplied by 1.5 for the risk assessment.) The relationship between modeled concentration and emission rate is therefore:

(6.39E-05 $\mu g/m^3$)/(1.02E-02 lb/hr) = 0.0063 ($\mu g/m^3$)/(lb/hr)

Step 7: Calculate an adjusted modeled Mn concentration. Using the expanded Mn emission rate calculated in Step 5 and the Step 6 ratio between modeled concentration and emission rate, the expanded concentration would be:

(2.75E-02 lb Mn / hr)*[0.0063 ($\mu g/m^3$)/(lb/hr)] = 1.73E-04 $\mu g/m^3$

Step 8: Calculate an adjusted hazard quotient for Mn and compare against guideline threshold. The reference concentration (RfC) for Mn is 0.05 $\mu g/m^3$. The adjusted HQ is then:

(1.73E-04 $\mu g/m^3$)/(0.05 $\mu g/m^3$) = 3.47E-03

An HQ of one or more is considered to represent a potential for adverse health effects.

The following table presents intermediate and final results of the preceding calculations for each of the metals reported to be present in limestone. The effect on cumulative non-cancer risk (Hazard Index) of including these limestone metals in the kiln exhaust is an increase from 0.013 to 0.016. This cumulative risk value is well below the threshold of concern of 1.0.

Non-Cancer Risk Adjustment for Metals in Limestone

Metal	LS Conc. (ppm)	Lime Conc.(lb/lb lime)	Em Rate from Lime (lb/hr)	Em Rate from CC (lb/hr)	Em Rate Combined (lb/hr)	Expanded Conc. (□g/m^3)	CfR (□g/m)	Expanded HQ	Initial HQ
Arsenic	2.5	5.00E-06	3.94E-05	8.54E-03	8.57E-03	5.40E-05	0.03	1.80E-03	1.77E-03
Cadmium	2	4.00E-06	3.15E-05	1.06E-03	1.09E-03	6.89E-06	0.02	3.44E-04	3.35E-04
Chromium	500	1.00E-03	7.88E-03	5.41E-03	1.33E-02	8.37E-05	0.1	8.37E-04	3.35E-04
Cobalt	5	1.00E-05	7.88E-05	2.08E-03	2.16E-03	1.36E-05	0.1	1.36E-04	1.29E-04
Lead	100	2.00E-04	1.58E-03	3.75E-03	5.32E-03	3.35E-05	1.5	2.24E-05	1.52E-05
Manganese	1100	2.20E-03	1.73E-02	1.02E-02	2.75E-02	1.73E-04	0.05	3.47E-03	1.28E-03
Mercury	1	2.00E-06	1.58E-05	1.87E-03	1.89E-03	1.19E-05	0.3	3.97E-05	3.80E-05
Nickel	20	4.00E-05	3.15E-04	5.83E-03	6.14E-03	3.87E-05	0.2	1.94E-04	1.83E-04
Selenium	0.08	1.60E-07	1.26E-06	2.71E-02	2.71E-02	1.71E-04	20	8.53E-06	8.37E-06
							Total -->	6.85E-03	4.09E-03

The following table shows the results of using the above method to adjust individual and cumulative cancer risks. The effect on cumulative cancer risk of including limestone metals in the kiln exhaust is an increase from 8.8 in ten million (8.8E-07) to 1.5 in one million (1.5E-06). This cumulative risk value is well below the EPA threshold of concern of 1.0 in ten thousand (1.0E-04).

Cancer Risk Adjustment for Metals in Limestone

Metal	LS Conc. (ppm)	Em Rate Combined (lb/hr)	Expanded Conc. (□g/m^3)	Cancer URF (□g/m^{-3})$^{-1}$	Expanded Cancer Risk	Initial Cancer Risk
Arsenic	2.5	8.57E-03	5.40E-05	4.30E-03	2.32E-07	2.29E-07
Cadmium	2	1.09E-03	6.89E-06	1.80E-03	1.24E-08	1.20E-08
Chromium	500	1.33E-02	8.37E-05	1.20E-02	1.00E-06	4.02E-07
Cobalt	5	2.16E-03	1.36E-05	n/a	n/a	n/a
Lead	100	5.32E-03	3.35E-05	n/a	n/a	n/a
Manganese	1100	2.75E-02	1.73E-04	n/a	n/a	n/a
Mercury	1	1.89E-03	1.19E-05	n/a	n/a	n/a
Nickel	20	6.14E-03	3.87E-05	2.40E-04	9.29E-09	8.76E-09
Selenium	0.08	2.71E-02	1.71E-04	4.30E-03	8.53E-06	8.37E-06
				Total -->	6.85E-03	4.09E-03

Technical Comment No. 33 (Linda Eckert)

The sulfuric acid mist emission calculations in Appendix C are based on coal, what are the emission estimates when burning petroleum coke? What is the basis for the 90.68% scrubbing efficiency (inherent) claimed by Synergy?

Response

The SO2 emission limit of 2.0 lb/ton of lime effectively limits the sulfur content in all fuels used at the kilns and requires a minimum scrubbing efficiency of the kiln and baghouse system. The SO2 emission limit has been determined as required under 326 IAC 2-2 and is enforceable. The Best Available Control Technology establishes the emission limitation that the Permittee is required to meet for all fuels used, including petroleum coke. IDEM has determined that it is not necessary to enforce a minimum control efficiency to achieve this limit, since the minimum control efficiency required is variable and depends on the input sulfur content of the fuel.

Technical Comment No. 34 (Linda Eckert)

The HCl emission calculations in Appendix C assume 10 ppm of chlorine in the coal. The EPCRA 313 guidance document – Electricity Generating Facilities (Table 3-5) shows the chlorine content for Wyoming sub-bituminous coal to be 118.3 ppm. Montana sub-bituminous coal has a chlorine content of 80 ppm. Can Synergy provide some basis or guarantee for the 10 ppm value? What will the chlorine content of petroleum coke be? Emissions using petroleum coke must be shown so it can be determined which is the worst case scenario (coal only or coal/petroleum mixture).

Response

The HCl emission calculations in Appendix C assume 10 ppm of chlorine in the exhaust gas, not the coal. As reported in Appendix A, this value is a “conservative default concentration” selected to represent lime kilns for which measured concentrations were unavailable in the National Lime Association report "Final Report on Modeling of Lime Kiln HCl Emissions". This report was used as a reference for creation of the Lime MACT (40 CFR 63, Subpart AAAAA).

Technical Comment No. 35 (Linda Eckert)

Hydrogen fluoride emission calculations in Appendix C are based on the AP-42 emission factor for coal combustion. The fluoride value in coal can vary widely depending upon the source of the coal. The EPCRA 313 guidance document – Electricity Generating Facilities (Table 3-5) shows fluorine concentrations for Wyoming sub-bituminous coal of 43.7 ppm. For Montana sub-bituminous coal the fluorine content is 104 ppm. These values will give HF emission rates much higher than use of the AP-42 average factor. Without knowing the source of the coal for the Synergy project it is impossible to accurately estimate HAP emissions. What will the fluorine content of petroleum coke be? Once again HF emissions from petroleum coke need to be estimated to determine whether they will be higher than those from coal and constitute the worst case emissions needed for modeling.

Response

The estimation of HF emissions provided in Appendix C of the application assumed 60 ppm of fluorine in coal. This was based on a representative coal analysis showing 50 ppm fluorine in the sample. The sample value was multiplied by a factor of 1.2 to account for batch variability. Using this value, the risk screening analysis showed a hazard quotient for hydrofluoric acid of 2.46E-04 compared to a threshold of concern of 1.0.

IDEM has determined that the use of AP-42 emission factors is appropriate for baseline emissions calculations in situations where site-specific emission factors are not available. U.S. EPA allows the use of AP-42 emission factors as one of the calculation methods for the determination of baseline emissions.

Technical Comment No. 36 (Linda Eckert)

The Synergy draft permit has numerous inconsistencies and errors that preclude an adequate review of the permit requirements. Specifically, the draft permit 1.) has incomplete information concerning the ambient air quality impact analyses, 2.) has incomplete data concerning the preprocessing of meteorological data used in the air quality modeling, 3.) lacks a plant layout drawing or sketch, 4.) lacks information concerning the elevations of the emissions, 5.) has inconsistent information concerning the presence of a rail load-out facility and lacks information concerning the possible emissions from the rail load-out facility, 6.) lacks information concerning the locations of plant fence lines or other natural barriers to public entry, 7.) lacks information concerning the locations of the quarry and stone processing equipment, 8.) has inconsistent stone throughput data in the permit requirements and the emission inventory calculations, 9.) lacks a flowchart of plant equipment in the stone crushing/screening/storage area and in the lime processing areas of the plant, 10.) lacks information concerning the Bitumen plant, 11.) has illogical filterable PM_{10} and total PM emission limits, and 12.) has inconsistent data concerning the condensable particulate matter emission limit. In addition, the flowchart in the Permit Application Document has an error and inconsistent notation. As a consequence of the incomplete and inconsistent information, it is impossible to adequately review emissions from this proposed facility and the ambient air quality impact of the proposed facility.

Ambient Air Quality Monitoring Information

Appendix A of the Synergy draft permit has an eleven page section (Draft Permit Document pages 161-171) describing the AERMOD dispersion modeling analyses conducted as required by PSD regulations. This brief document does not provide the information needed to evaluate the adequacy of the dispersion modeling analyses and to evaluate the ambient air quality impact of the proposed facility. Specifically, Appendix A does not provide information concerning the receptor locations having maximum PM_{10}, SO_2, NOx, and CO impact. Synergy does not state if PM_{10} plume particulate matter depletion was applied or if PM_{10} was treated as a gas. Appendix A does not provide information concerning the assumptions applied in pre-processing the meteorological data such as 1.) the land use characteristics around the meteorological monitoring station, 2.) the use of a 1-kilometer or 3-kilometer radius for evaluating land use, 3.) the use of multiple sectors when evaluating land use, and 4.) the use of annual average or seasonal average data. Appendix A does not describe the significance areas for each pollutant modeled. Some of this information is provided in a slightly more detailed description of dispersion modeling in the draft permit application. However, this is not referenced in Appendix A of the Draft Permit Document, and there are no indications that the discussion in the draft permit application concerns the most recent version of the dispersion model.

Source of Meteorological Data

There is an important inconsistency in the discussion of the source of the meteorological data in the Draft Permit Document and in the Permit Application. In the Draft Permit Document, Synergy states the following.

The meteorological data used in AERMOD consisted of 1988 through 1992 surface data from the South Bend, Indiana and upper air measurements taken at Peoria, Illinois. The meteorological data was downloaded from Lakes Environmental and preprocessed using AERMET. Draft Permit Document, Appendix A page 3 (Draft Permit Document page 163)

The statement reproduced above from the Draft Permit Document contradicts the following statement concerning the source of meteorological data presented in the Permit Application Document.

"Preprocessed met data for this project were provided by IDEM in AERMOD surface and profile format (Version 06431)." Synergy page 89, Permit Application Document page 131.

The assumptions used in preprocessing the meteorological data are important. Information concerning this step in the dispersion modeling analyses is needed to determine if the predicted ambient air concentrations are reasonably representative of conditions at Monon.

Response

The hourly observation surface data and the twice daily upper air data obtained from the National Weather Service (NWS) sites are preprocessed into a format that can be used by the air quality model, AERMOD, to calculate hourly and annual pollutant concentrations. AERMET is the name of the Environmental Protection Agency (EPA) approved meteorological preprocessor program required by AERMOD for regulatory modeling.

AERMET generates two output files, a surface file and a profile file which are read as inputs files by AERMOD. The following meteorological parameters are included in the AERMET output surface file.

Sensible heat flux, H (watts/meters^2)
Surface friction velocity, u (meters/second)
Convective velocity scale, w (meters/second)
Vertical potential temperature gradient above the boundary layer (K/meter) where K is in degrees Kelvin
Convective mixing height, z (meters)
Mechanical mixing height, z (meters)
Monin-Obukhov length, L (meters)
Surface roughness length, z_o (meters)
Bowen ratio, B
Albedo, r
Wind speed (meters/second) used in estimating the boundary layer
Wind direction (degrees) direction wind is blowing from
Height of wind speed and direction measurement (meters)
Temperature (K) used in estimating the boundary layer parameters
Height at which temperature above was measured (meters)

The following meteorological parameters are used in AERMET:

Direction the wind is blowing from (degrees)
Wind speed (meters/second)
Temperature in degrees Celsius.

The surface roughness length, Bowen ratio, and albedo are the parameters which are used by AERMET to describe the surface characteristics of the site to AERMOD. The site location of the surface meteorological data, South Bend NWS, was used as the location for selecting the surface characteristics for the Synergy PSD modeling. The surface meteorological location is the EPA recommended site location for determining the surface characteristics. The surface characteristics are determined from a land use category based on the type of vegetation and topography of the land in the immediate vicinity, 1 kilometer, of the meteorological instrument tower. The land use category – cultivated land was used for determining the surface roughness, Bowen ratio, and albedo when preprocessing of the South Bend NWS surface data. The surface characteristics of surface roughness, Bowen ratio, and albedo were further broken down by seasonal values for spring, summer, fall, and winter.

An additional option in AERMET for variation of surface characteristics by direction sectors around the site is available. A total of up to 12 sectors can be selected by the user. The South Bend NWS meteorology was preprocessed using one sector since it was determined the land use category does not vary within the immediate vicinity of this site location. Additionally, the distance of a one kilometer radius from the meteorological site was used to determine the land use

category of cultivated land. This is the EPA recommended distance for determining the site characteristics from the land use category.

The EPA program AERSURFACE is now the current approved method for the selection of site characteristics for input into AERMOD. AERSURFACE actually uses a land use category map for determining the site characteristics. At the time of the Synergy application, AERSURFACE had not been approved for regulatory use. Therefore, the surface characteristics were selected from the method described in the EPA User's Guide for the AERMOD Meteorological Preprocessor (AERMET) dated November 2004. This was the current EPA approved guidance document at the time of the Synergy PSD application. The next AERMOD EPA User's Guide update was an addendum to the original guidance document and is dated October 2009.

The remaining meteorological parameters listed above except for wind speed, wind direction, temperature, and measurement heights are calculated by equations within AERMET.

OAQ uses 5 years of metrological data as required by U.S. EPA. The model is run for each hour of each day for an entire year. The model processes 43,800 hours of various metrological conditions in this 5 year time span. This information is correlated with the emissions being released at each stack. Ground level concentrations are calculated based on the meteorology, physical stack parameters, emissions, and the geometry of nearby buildings. Concentrations for the property line and for all areas adjacent to the facility were calculated. Areas beyond that are also examined for possible air quality violations.

Technical Comment No. 37 (Linda Eckert)

Revised Version of AERMOD
Appendix A, Section B indicates that the modeling for the permit used AERMOD Version 07026. An updated version of AERMOD was released by EPA on October 19, 2009 (Version 09292) that corrected numerous errors in the previous version of AERMOD. The modeling should be redone with the updated version of AERMOD.

On an EPA website called "scram", it was found that AERMOD was recently modified to fix 24 bugs, 13 enhancements, and 31 miscellaneous changes. It seems that the computer program that was used for Synergy was very flawed and a new study is needed.

Response

On October 21, 2005, U.S. EPA signed the new AERMOD rule replacing the Industrial Source Complex (ISC) Model. The rule was promulgated in the Federal Register on November 9, 2005, (40 CFR Part 51) which revised the Guideline on Air Quality Models. EPA's Guideline on Air Quality Models (''Guideline'') addresses the regulatory application of air quality models for assessing criteria pollutants under the Clean Air Act. The Guideline is used by EPA, States, and industry to prepare and review new source permits and State Implementation Plan revisions. The Guideline is intended to ensure consistent air quality analyses are conducted.

The Federal Register goes on to state that as of December 9, 2005, AERMOD should be used for air dispersion modeling evaluations of criteria air pollutants from industrial facilities. The model was designed by AERMIC (American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee).

All states are required to use the most current AERMOD version available at the time the permit is reviewed. In this case AERMOD version 07026 was used for Synergy. Since December of 2005, three versions of the model have been published. They are versions dated: 06341, 07026, and 09292. Modeling for Synergy used version 07026 since the application was received in 2008. The modeling review was also completed the same year. AERMOD version 09292 came

out in October 2009, nearly a year after the modeling was completed. The Office of Air Quality (OAQ) participated in a conference call with other states and U.S. EPA Region 5 on October 2009 concerning the latest version (09292) of AERMOD. U.S. EPA stated in the call that the AERMOD changes were cosmetic in nature and not significant to affecting predicted concentrations.

Technical Comment No. 38 (Linda Eckert)

Other Sources Included in Modeling
While Table 2 in Appendix A indicates that the modeling for NO2, PM-10 and SO2 had significant impact areas, it does not state how large these areas are. This is important because in Section D of Appendix A it states "OAQ supplied emission inventories of all point sources within a 50-kilometer radius of Synergy." Per US EPA guidance, the screening analysis of additional sources must include sources within 50 kilometers plus the significant impact area. So if the significant impact area for NO2 were 10 kilometers, the sources within 60 kilometers of Synergy should have been included in the screening analysis. Nothing in Appendix A indicates what other sources were screened and determined to be large enough to include in the final modeling.

Response

The air quality modeling analysis encompassed sources that are required to be included per modeling requirement. The proposed project's impact area is the geographical area for which the required air quality analyses for the NAAQS and PSD increments are carried out. This area includes all locations where the significant increase in the potential emissions of a pollutant from a new source will cause a significant ambient impact. The impact area is a circular area where the radius extending from the source to the (1) the most distant point where approved dispersion modeling predicts a significant ambient impact will occur, or (2) a modeling receptor distance of 50 km, whichever is less. Modeling was performed using the modeling methodology included in 40 CFR 51, Appendix W, using the appropriate Significant Impact Area (SIA). See additional details on the modeling analysis in the Response to Technical Comment No. 58.

Technical Comment No. 39 (Linda Eckert)

Plant Layout Drawing
The Draft Permit Document does not include plant layout drawings or sketches. Based on the limited information available in this document, it is not possible to determine where the emission sources are located relative to the property boundary line and plant fence line. The dispersion modeling data cannot be adequately evaluated without this basic information.

Response

As noted in the permit application, modeling was performed in accordance with IDEM modeling guidance, using methods and procedures detailed in 40 CFR 51, Appendix W. The submitted application had adequate information for performing the modeling analysis, as included in Appendix G of the permit application. See Response to Technical Comment No. 58 for additional details on the modeling analysis.

Technical Comment No. 40 (Linda Eckert)

Plant Elevations
The Draft Permit Document does not include a description of the plant terrain and the quarry pit. There is no information available concerning the presence or absence of plant processing equipment included in the quarry pit or the elevations of any of the processing equipment in plant areas outside of the quarry pit. The dispersion modeling data cannot be adequately evaluated without this basic information.

Response

Synergy provided a plant layout in Appendix B in its Air Quality Permit Application. The property boundary is also shown on the drawing. Synergy provided all the elevations of the emission points and all equipment locations are given in Appendix G.

Technical Comment No. 41 (Linda Eckert)

Plant Fence lines
U.S. EPA modeling guidance clearly specifies that ambient air receptor locations should be along the plant fence lines or any natural boundaries that provide reasonable barriers to public entry to the facility. The fence lines are not necessarily the same as the plant legal boundaries as determined by surveyors and maintained in tax maps. The fence lines are usually inside (closer to process equipment and roads) the plant boundaries.

In order to evaluate the adequacy of the AERMOD dispersion modeling, the locations of the plant fence lines must be known. These fence lines are not shown in the plant layout sketch provided on page 292 of the Permit Application Document.

Response

Synergy provided a plant layout in Appendix B in its Air Quality Permit Application. The property boundary is also shown on the drawing. Further details of the receptor locations and the Significant Impact Analysis (SIA) are provided below.

SIA Modeling

Pollutant	Averaging Period	Peak Impact (ug/m3)	Location Easting (x) (meters)	Location Northing (Y) (meters)	SIA Radius of Impact (km)
PM_{10}	Annual	4.4	511212.19	4519979.50	1.8
	24-Hour	22.1	511212.19	4519979.50	3.2
CO	1-Hour	82.0	510734.81	4520133.00	0
	8-Hour	53.4	511200.00	4520500.00	0
SO_2	3-Hour	52.5	511100.00	4520500.00	1.6
	24-Hour	19.2	511592.41	4519995.00	4.0
	Annual	1.5	511842.59	4520668.50	1.4
NO_2	Annual	2.6	511842.59	4520668.50	2.4

NAAQS Analysis

Pollutant	**Avg. Period**	**Year**	**Location Easting (x) (meters**	**Location Northing (Y) (meters)**	**Max Predicated Conc. (ug/m3)**	**Background Conc. (ug/m3)**	**Total Conc. (ug/m3)**	**NAAQS (ug/m3)**
PM_{10}	24-hr	1988	511212.19	4519979.50	20.2	38.3	58.5	150
	Annual	1989	511307.31	4519983.50	4.5	19.3	23.8	50
SO_2	3-hr	1989	511250.00	4524000.00	61.7	104.8	166.5	1300

	24-hr	1992	511200.00	4519600.00	16.7	35.9	52.6	365
	Annual	1991	511842.59	4520668.50	2.5	15.9	18.4	80
NO_2	Annual	1991	511842.59	4520668.50	3.1	34.4	37.5	100

PSD Increment Analysis

Pollutant	Avg. Period	Year	Location Easting (x) (meters	Location Northing (Y) (meters)	Max Predicated Conc. (ug/m3)	Class II PSD Increment. (ug/m3)	Percent Impact on PSD Increment
PM_{10}	24-hr	1988	511212.19	4519979.50	20.0	30	66.6%
	Annual	1989	511212.19	4519979.50	4.0	17	23.5%
SO_2	3-hr	1989	508500.00	4524000.00	192.3	512	37.7%
	24-hr	1992	507000.00	4523500.00	42.8	91	47%
	Annual	1992	511800.00	4520700.00	3.5	20	17.5%
NO_2	Annual	1988	510500.00	4524000.00	5.1	25	20.4%

The farthest significant receptor is established by federal significant impact levels for each pollutant which ranged in distance from 1.4 kilometers to 4 kilometers. The largest significant impact area (SIA) in this case was the 4 kilometer SIA associated with SO_2.

The inventories are supplied on a county basis which includes all those sources for that county. This goes well beyond the 50 kilometer radius plus the significant impact area of 4 kilometers. The list of modeling NAAQS inventory sources has been provided below in another response. These sources are within the 54-kilometer radius and include industrial areas such as Lafayette and Logansport.

In order to be included in the inventory, sources within the 54 kilometer radius either have to intersect Synergy's 4-kilometer significant impact area with their SIA or be inside Synergy's SIA. A background concentration is utilized for all sources that do not have an impact on the SIA of Synergy.

Technical Comment No. 42 (Linda Eckert)

In order to evaluate the adequacy of the AERMOD dispersion model analyses, it is important to have information concerning the location of the quarry and crushing/screening plant. As indicated in the Draft Permit Document Appendix C emission inventory, the quarry and crushing/screening plant are important sources of fugitive PM_{10} emissions. Surprisingly, the Draft Permit Document is silent concerning the locations of the quarry and the crushing/screening plant. Clearly, these sources should be included in the Synergy plant considering that the crushing and screening equipment are listed by IDEM in the Technical Support Document included in the Draft Permit Document (pages 149-150). It is also surprising that the crushing and screening plant is shown as being outside of the plant boundary in the plant layout sketch shown on page 292 of the Permit Application Document. The quarry is not shown in the plant layout sketch.

It is not possible to review the ambient air quality evaluation conducted to satisfy PSD requirements without basic information concerning the locations of the quarry and the crushing/screening operations. It is not even clear if these sources were included in the dispersion modeling or if the quarry/stone processing plant equipment is part of the Synergy facility (see earlier notes).

Response

According to the Permittee, all emissions from the limestone quarry, limestone processing and handling, and lime manufacturing have been included in the application. Quarry operations, which are onsite, have been included in the emissions calculations (see Appendix Aa to this Addendum to the Technical Support Document).

Technical Comment No. 43 (Linda Eckert)

In Appendix C (pages 2 and 5) of the Draft Permit Document (pages 215 and 218), Synergy uses low product throughput rates for screens, crushers, and conveyors serving screens and crushers. The values used in the Appendix C PM_{10} emission calculations are well below the throughput levels specified by IDEM in its technical support document (pages 2 through 4, Draft Permit Document pages 149 to 151) and below the values specified in the IDEM source summary presented on pages 6 and 7 (Draft Permit Document pages 8 and 9). Due to the low product throughput rates, the estimated emissions are lower than the levels at the maximum permitted operating rates.

Response

The particulate emissions have been recalculated based on the maximum throughput capacities of all equipment, as included in Appendix Aa of this Addendum.

No change has been made to the permit as a result of this comment.

Technical Comment No. 44 (Linda Eckert)

The Draft Permit Document does not include any process flowcharts for the quarry, limestone crushing and screening, kilns and lime coolers, lime screening, lime storage, and lime load-out. Accordingly, it is impossible to evaluate the completeness and accuracy of the emission inventory data that serve as the foundation for the required ambient air modeling analyses.

Response

The process flowcharts were included in the permit application. A copy of the permit application is available at the Monon Public Library.

Technical Comment No. 45 (Linda Eckert)

Bitumen Plant

The flowchart shown on page 294 of the Permit Application Document shows a set of conveyors and storage piles in a bitumen plant. This is not adequately described in the Draft Permit Document.

Response

All of the relevant components of the bitumen plant were included in the BACT analyses, the emissions inventory, and in the modeling analysis. However, the Permittee has decided that the bitumen-contaminated limestone is not going to be processed at this facility, but will be hauled away offsite. See Response to Technical Comment No. 14 for details of emissions calculations related to handling of the bitumen-contaminated limestone. Appendix Aa to this Addendum to the Technical Support Document includes the updated calculations.

Technical Comment No. 46 (Linda Eckert)

Incorrect PM and PM_{10} emissions data are provided in the IDEM Technical Support Document (page 5 and Draft Permit Document page 152). The PM emissions of 60.2 tons per year cannot be less than the 185.0 tons per year of PM_{10} emissions from the lime processing sources. PM_{10} is a subset of PM. This same error is shown in Appendix C of the Draft Permit Document (Appendix C page 1, Draft Permit Document page 214).

Response

PM10 is not necessarily a subset of PM. PM10 includes condensable particulate, whereas PM, by definition, does not. The lime processing sources listed in the Technical Support Document include the two (2) lime kilns. PM10 emissions from the lime kilns include condensable particulate matter, whereas the PM emissions are filterable particulate emissions only.

Technical Comment No. 47 (Linda Eckert)

The Draft Permit Document does not consistently describe or limit condensable particulate matter emissions from the proposed Synergy Plant. The PM_{10} emission summary provided on page 7 of the Appendix C emission inventory (Draft Permit Document page 220) suggests that PM_{10} filterable particulate matter emissions will be 0.15 pounds per ton of lime produced, and the PM_{10} total particulate matter emissions will be 0.53 pounds per ton of lime produced. These data suggest that the condensable particulate matter concentration limit is 0.38 lbs per ton of lime produced. This calculated condensable particulate matter emission rate is inconsistent with the total PM_{10} (filterable and condensable particulate matter limit of 0.20 pounds per ton of lime produced stated in the Section D.13 Emission Unit Operation Condition stated on page 31 of the Draft Permit Document.

The proposed source will be a major source for both SO2 and NO2 which convert to form ammonium nitrate and ammonium sulfate, contributing to PM2.5 levels. Has the impact on PM2.5 levels been modeled as part of the permitting exercise? It does not appear that PM2.5 emission rates have even been estimated as part of this permit, let alone any modeling done to demonstrate the impact on primary or secondary PM2.5 levels.

Response

Please refer to Response to EPA Comment 1 for information related to PM2.5.

Technical Comment No. 48 (Linda Eckert)

Several flowcharts are included in the permit application. There is no clear indication that these flowcharts provide an up-to-date summary of the operations to be conducted at the proposed facility. Furthermore, the flowcharts are incomplete and in error. For example, the crushing/screening operations flowchart presented on page 294 of the Permit Application Document indicates that 110 tons of limestone per hour are discharged to a dead end pile (Pile 5 in the flowchart). There are no load-out operations shown for this pile. The lime processing plant flowchart on page 296 of the Permit Application Document does not clearly show which fabric filters control which process operations.

Dotted lines in the crushing/screening operation flowchart appear to have a quite different meaning than dotted lines on the adjacent flowchart for the lime processing operations. The Permit Application Document does not include a legend to clarify flowchart symbols and lines.

Response

The emissions calculations included as Apendix Aa to this Addendum to the Technical Support Document detail the emission points and control devices.

Technical Comment No. 49 (Linda Eckert)

The draft permit for the proposed Synergy Plant does not include a continuous emissions monitor. This is surprising considering that Synergy has chosen a low-cost, low-efficiency SO_2 control strategy that defies present-day industry practice for dolomitic limestone processing lime kilns. Without a continuous monitor for SO_2, the citizens of Monon, and citizens in many communities downwind, will have no way to determine if the community is being subjected to excessive SO_2 emissions from the Synergy Plant. A continuous monitor should be required at the facility.

Response

The testing requirements included in the permit are adequate for demonstrating compliance with the SO2 emission limitation. Synergy will be required to perform periodic testing to confirm ongoing compliance. The SO2 control strategy determined to be BACT for this facility is the same strategy currently applied to all preheater lime kilns in the nation. An SO2 CEMS is required for only four of 14 lime manufacturing facilities surveyed for this application. The decision to not require SO2 CEMS was based partially on this precedence and partially on the level of modeled potential ambient concentration impacts.

Technical Comment No. 50 (Linda Eckert)

The draft permit does not include requirements for NOx and CO emissions monitoring. Considering that Synergy will probably experience difficulty achieving both the NOx and CO emission limits simultaneously, it is important to have NOx and CO continuous emissions monitors to protect residents in Monon and in downwind communities; therefore, these monitoring requirements should be added.

Response

The testing requirements included in the permit are adequate for demonstrating compliance with the NOx and CO emissions limitations. Synergy will be required to perform periodic testing to confirm ongoing compliance. NOx and CO CEMS are required for only four and five, respectively, of 14 lime manufacturing facilities surveyed for this application. The decision to not require NOx and CO CEMS was based partially on this precedence and partially on the level of modeled potential ambient concentration impacts.

Technical Comment No. 51 (Linda Eckert)

The Draft Permit Document has limited malfunction and emergency procedures that do not adequately protect the public. For example on page 9 of the IDEM Technical Support Document, Synergy is only required to notify IDEM of a bag failure problem if a malfunction will continue for a period exceeding 10 days.

"(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." Technical Support Document page 9 (Draft Permit Document page 156)

A similar allowance is provided for the fabric filters serving the lime load-out operations (Technical Support Document page 10, Draft Permit Document page 157). Considering that all modern kiln fabric filters have multiple compartments to facilitate response to bag failures, this provision is unnecessary and unprotective.

Response

IDEM has determined that the requirement to notify IDEM for bag failure in a multi-compartment baghouse is necessary for ensuring that bag failure is addressed in a prompt manner, in order to ensure continued compliance with PM emissions limitations. The referenced condition is standard for these types of sources within the state. Synergy will be required to prepare and follow a startup, shutdown, and malfunction plan in accordance with 40 CFR 63 Subpart A [§63.6(e)(3)]. Further, Section C.16 of the draft permit describes a required procedure for responding to excursions or exceedances. The Permittee is required to take corrective actions when malfunction is detected, and return any malfunctioning unit to normal operations expeditiously. The Permittee is also required to keep records of all corrective actions taken. Failure to take reasonable response steps when a malfunction occurs is considered to be a deviation of the permit.

No change has been made as a result of this comment.

Technical Comment No. 52 (Linda Eckert)

Opacity Limit

The NESHAP standards impose a limit of 7% opacity for new kilns, clinker coolers, and other stack-vented gas streams. All fugitive emission sources are subject to a 10% opacity limit. Conversely, Synergy has indicated that the kiln stack opacity limit will be 15% (BACT Evaluation, page 27 (Draft Permit page 198). Synergy has not included any opacity limits in its BACT evaluation for other lime plant equipment subject to the NESHAP standard.

Response

The 7% opacity limit to which this comment refers, from 40 CFR 63 Subpart AAAAA, applies to stack emissions from process stone handling (PSH) operations. PSH operations begin at the processed stone storage bin(s) or open storage pile(s) and end where the processed stone is fed into the kiln. They include “man-made processed stone storage bins (but not open processed stone storage piles), conveying system transfer points, bulk loading or unloading systems, screening operations, surge bins, bucket elevators, and belt conveyors.” This subpart does not limit opacity from lime kilns and associated coolers. NSPS Subpart HH, which also applies to the lime kilns, limits opacity from kilns controlled by a dry emission control device to no more than 15%.

Processed stone at the facility will be conveyed directly from a tunnel beneath the kiln feed piles via conveyor to the preheaters. The transfers to the preheaters will be under negative pressure and so should not result in emissions. Transfers from the storage piles to the underground conveyor qualify as PSH and will be required to comply with the 10% opacity limit for fugitive emissions from PSH operations per Table 1 to Subpart AAAAA.

Technical Comment No. 53 (Linda Eckert)

Bag Break Detectors

The NESHAP standard (Subpart AAAAA) clearly requires the use of bag leak detectors (BLDs) on all fabric filters used on affected facilities. Synergy has not included any BLDs for the kiln fabric filters and the other fabric filters in the proposed facility.

Response

40 CFR 63 Subpart AAAAA provides two options for continuous compliance monitoring of particulate emissions from lime kilns and associated lime coolers that are controlled by a fabric filter baghouse. Compliance may be monitored using either a PM detector (including a BLDS) or using a continuous opacity monitoring system (COMS). Synergy will be required by permit to install and operate a COMS for each kiln (see Condition D.1.3 of the permit), thus satisfying the

compliance monitoring requirement of Subpart AAAAA. Additionally, Synergy will be required to monitor and maintain baghouse pressure drop within a specified range to ensure proper operation.

Technical Comment No. 54 (Linda Eckert)

IDEM has explicitly exempted Synergy from some of the requirements of 40 CFR Part 63, Subpart AAAAA. In the IDEM Technical Support Document (Draft Permit pages 148 to 160), IDEM eliminates 63.7111 (subsequent performance tests), 63.1113 (emission monitoring), and 63.7143 (definitions). IDEM also eliminates items 5 and 6 on Table 2, and all of Tables 3, 4, 5, and 6. This substantially weakens the applicable requirements, especially in the areas of recordkeeping, emission monitoring, and testing.

Response

The lime manufacturing facility must comply with all applicable portions of 40 CFR Part 63, Subpart AAAAA regardless of what has been cited in the permit. For consistency, some of the applicable subsections mentioned by the commenter that were inadvertently not cited in Section E.3 of the draft permit have been added as follows. The Tables 2, 3, 4, 5, and 6 were already included in their entirety in the draft permit.

E.3.2 Lime Manufacturing Plant NESHAP [40 CFR Part 63, Subpart AAAAA]

The Permittee, which uses lime kilns, coolers, and lime screens S1 through S6, shall comply with the following provisions of 40 CFR Part 63, Subpart AAAAA (included as Attachment C of this permit), upon startup:

(1)	40 CFR 63.7080
(2)	40 CFR 63.7081
(3)	40 CFR 63.7082
(4)	40 CFR 63.7083(a)
(5)	40 CFR 63.7090(a), (b), Table 1, Table 2(Item 1)
(6)	40 CFR 63.7100(d)
(7)	40 CFR 63.7120
(8)	40 CFR 63.7121
(9)	40 CFR 63.7114
(10)	40 CFR 63.7110
(11)	**40 CFR 63.7111**
~~(11)~~ **(12)**	40 CFR 63.7112
(13)	**40 CFR 63.7113**
~~(12)~~ **(14)**	40 CFR 63.7132
~~(13)~~ **(15)**	40 CFR 63.7130
~~(14)~~ **(16)**	40 CFR 63.7131
(17)	**40 CFR 63.7143**

Technical Comment No. 55 (Linda Eckert)

Kiln Fuels

Synergy is proposing to use low sulfur fuel averaging 0.76% by weight as the primary kiln burner fuel (80% of total energy input). Petroleum coke with an average sulfur content of 5.3% is the secondary fuel (20% of total energy input). There are no permit stipulations concerning the fuel mix at any one time or over a long averaging time. Synergy could operate with 100% low sulfur coal, 100% coke, or any combination of the two. Emissions of SO_2 will be substantially higher during coke firing.

Response

IDEM has determined that Synergy may use any combination of coal and coke to fire the kilns provided it complies with all applicable emission limitations. See Response to Technical Comment No. 32 for additional details related to the fuel mix used at this facility and the associated impact on the emissions of regulated pollutants.

Technical Comment No. 56 (Linda Eckert)

Fugitive Dust Control Monitoring

Synergy has included an eleven-page fugitive dust control plan in the Draft Permit Document (pages 137-147). This plan does not include requirements for routine sampling and analysis of the material moisture contents or silt contents to confirm values stated in the plan and used in the PM_{10} emission factor calculations. Furthermore, there are no permit stipulations in the Draft Permit Document that address sampling of the limestone and fuel material streams. Residents of Monon and other communities downwind of the plant could be subject to elevated PM_{10} levels due to intermittent problems caused by reduced material moisture levels and/or increased material silt levels.

Response

Condition D.2.6 has been added as follows:

D.2.6 Particulate Matter

The Permittee shall use inherent moisture to control emissions of PM and PM10 from the coal/coke and lime transfer and handling processes to ensure that the coke processed has a moisture content of at least fifteen (15) percent for coal and coke and at least seven (7) percent for lime. The Permittee shall perform a moisture content analysis to ensure that the moisture content is equal to or greater than fifteen (15) percent for coal and coke and seven (7) percent for lime. The method for the moisture content analysis shall be approved by IDEM, OAQ.

Technical Comment No. 57 (Linda Eckert)

Wheel Wash

The Draft Permit Document and the Permit Application Document are both silent concerning the presence of a wheel wash at the exit road from the facility. The use of a wheel wash is a necessity to minimize high track-out related PM_{10} concentrations on public roads. This is a basic element of the fugitive dust control approach used at essentially all stone crushing plant and lime plants. It is surprising that Synergy has omitted this low cost, highly important fugitive dust control unit.

Response

The Fugitive Dust Plan (Attachment E to the permit) includes the following:

Cleaning of the wheels and bodies of the trucks will be the responsibility of each truck operator. It will also be the responsibility of the truck operator to maintain the body of the truck in good condition to ensure that material does not leak out during shipment. Truck wheel and body cleaning takes place at the load-out areas.

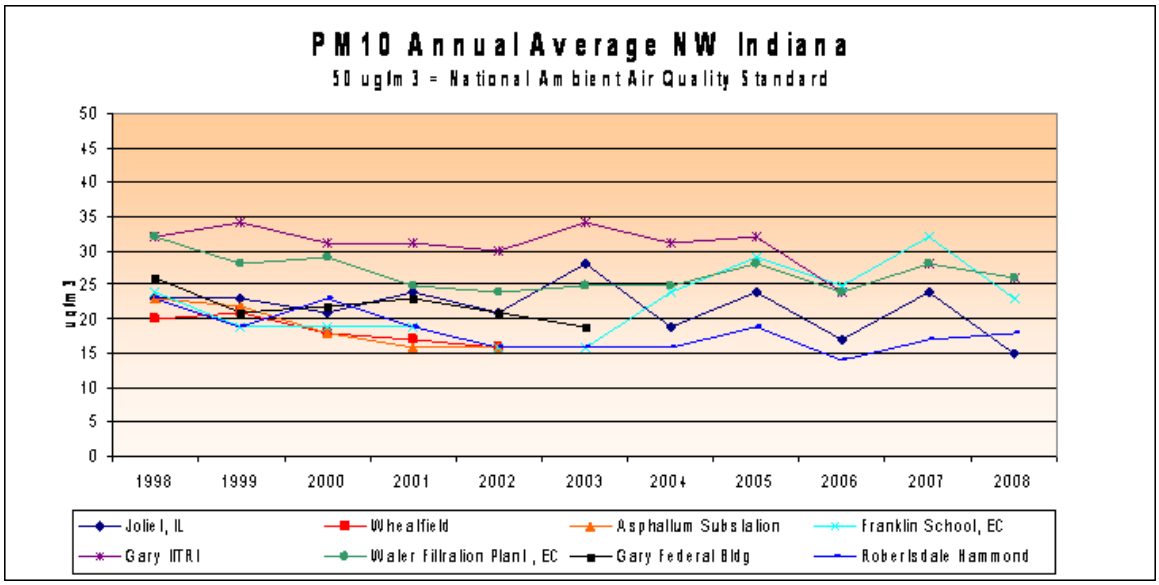
Technical Comment No. 58 (Linda Eckert)

Please explain if the surrounding pollutants were considered in this “air model”, especially in the light that the air model is based on Lake and Jasper counties, not White County and the Monon area specifically. Those pollutants being emitted from: Rose Acres Egg Farm, Two other stone quarries, Trailer Corporation, traffic on Highway 43, Ball Industries, Monticello, the proposed

Ethanol Plant (knowing this is not yet built, it still has a Title V permit approved (I believe) and you cannot say it is not yet built….it is approved and therefore exists as a source of pollutants.), and the PM10 from seasonal farming Spring/Fall for 250,000 acres (White County Farming acreage for corn, wheat and soy beans). Pollutants are not the same from region to region; they have a different chemical composition and very different chemical reactions when mixed.

Response

Background concentrations are added to the predicted plant-wide concentrations from Synergy. The total concentration is then compared to the federal National Ambient Air Quality Standards (NAAQS). The background concentrations chosen for the analysis were taken from monitoring stations located in Jasper County for SO2. For PM10 and NO2, monitoring stations were selected in Lake County. Background levels such as agricultural activities, local and distant point sources, and highway traffic are captured in monitoring samples at all locations and are therefore factored into the modeling. Years of PM10 monitoring have shown that industrial areas have higher levels than rural areas. Data taken from monitors in Lake County would be more conservative than any in the state. The following chart shows PM10 annual averages recorded at monitoring sites in northwest Indiana (and one in Joliet, IL) to show trends and how monitored values compare to one another. Note that there were two sites located near White County. These were industrial sites, but were discontinued after several years showed values well below one-half the standard. Also note that, generally, monitors in this region trend together. It would be expected that during this time, White County air quality would also fall into this range, most likely close to values monitored in Jasper County. Industrial emissions in the White County / Monon area, proposed and existing, would be substantially lower than in Lake County.



Using the above monitoring stations assumes a worst case scenario or a conservative approach for the NAAQS air quality analysis. Using higher background values from industrialized areas in the analysis puts more restrictions on the source by making them come in with lower plant-wide concentrations.

Seventeen inventory sources were included in the analysis and their emissions were added to Synergy's in the modeling. The following sources were modeled with Synergy in 2008. They are: Globe Valve Corporation, Logansport State Hospital, Essroc Cement Corporation, Logansport Municipal Light & Power, Cole Hardwood, Central Paving, Saint Josephs College, Nipsco - R.M. Schahfer, Solae L.L.C.- Remington Indiana, G-P Gypsum - Wheatfield Indiana, Newton County Landfill, Alcoa - Lafayette Division, A.E. Staley Sagamore Operation, Eli Lilly & Company-

Tippecanoe Labs, Purdue University - Wade Utility Plant, Cargill, Inc. – Lafayette, and Liberty Landfill Inc.

The sources mentioned above such as Rose Acres Egg Farm were either too small or were not permitted and did not get into the NAAQS inventory. The NAAQS inventories are generated from the Emission Inventory Tracking System (EMITS) in accordance with 326 IAC 2-6. EMITS was developed as a tool for reporting point source emission data.

EPA regulates pollutants with atmospheric interaction for ground level ozone (smog) and PM2.5. Synergy would not be a major contributor of ozone in rural White county.

Technical Comment No. 59 (Linda Eckert)

What is the chemical reaction (lack of better word) of the above pollutants when mixed together?

Response

Sulfur dioxide, oxides of nitrogen and organic compounds will combine to form fine particles, monitored as particles under 2.5 microns in diameter (PM2.5). These chemical reactions take place on a regional basis - tens or hundreds of miles in scale. PM2.5 is primarily an urban problem; monitoring has shown that regionally transported pollutants when combined with high local emissions can result in values above the national ambient air quality standards.

Technical Comment No. 60 (Linda Eckert)

Please elaborate on the air current and weather in relation to the stack height. What is the stack height in relation to the terrain? At what level is the facility to be placed in the pit? How will this affect the disbursement of pollutants in the air and specifically to the areas adjacent to this facility?

Response

IDEM uses five years of metrological data as required by U.S. EPA. The model is run for each of those five years. The metrological data contains winds speeds, wind directions, temperatures, and other variables for each hour of the day. Approximately 15 to 20 metrological parameters are collected for each hour. Each hour of each day is modeled for each year. This information is correlated with the emissions being released at each stack. Ground level concentrations are calculated based on the meteorology, physical stack parameters, emissions, and the geometry of nearby buildings. Concentrations for the property line and for all areas adjacent to the facility are calculated. Areas beyond that are also examined for possible air quality violations.

Stacks varied in height from 6.1 meters to 41.1 meters above the base height of the terrain at the facility. All terrain heights are taken into account out to 10,000 kilometers for the significant impact modeling. Terrain is either flat or gently rolling.

Based on what Synergy submitted, operations that are carried on in the pit or below grade level are accounted for in the modeling. There are approximately 18 to 37 meters difference in height between operations carried on at ground level and certain processes done below grade.

AERMAP processes terrain elevation data available from the U.S. Geological Survey (USGS). The Digital Elevation Model (DEM) format follows the old USGS standard. The DEM files are derived from USGS 7.5-minute topographic maps based on the 1927 North American Datum (NAD27). The DEM terrain files processed for the area were Brookston NW, Buffalo, Francesville, Gifford, Idaville, McCoysburg, Monon, Monon NE, Monticello North, Templeton NE, Wolcott, Yeoman, and Monticello South.

Technical Comment No. 61 (M. Clark)

How can the State of Indiana justify any amount of lead as being safe for any child?

Response

The draft permit documents include an air quality analysis (see Appendix A to the Technical Support Document) and a risk assessment for all expected pollutants from this proposed facility, including hazardous air pollutants. IDEM's air quality modeling has shown that the controlled emissions of lead and other pollutants from this plant will be well within U.S. EPA's established levels for maintaining good air quality.

Technical Comment No. 62 (Linda Eckert)

The permit does not mention fuels to be used by the kilns. The only mention of fuel is low sulfur diesel, which is for the emergency generators. This leads one to believe that the kiln fuel is diesel, whereas the fuel to be used in the kilns is coal.

Response

The permit clearly identifies the fuels to be used in the kilns. The descriptions of the kilns in Sections A.2 and D.1 are as follows:

Two (2) rotary lime kilns, permitted in 2009, each with a maximum capacity of 900 tons per day of lime produced, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using baghouse DC1 and baghouse DC2, respectively for PM control, and exhausting to Stack #1 and Stack #2, respectively.

EPA Comments

EPA Comment 1

The draft permit does not contain an adequate rationale to support the use of the PM10 surrogate approach to satisfy the PSD permit requirements for PM2.5, e.g., Best Available Control Technology (BACT) and National Ambient Air Quality Standards (NAAQS) compliance, for this project. In order to use a PM10 analysis to satisfy PM2.5 requirements, the permit should contain an analysis to show that PM10 is a reasonable surrogate for PM2.5 under the facts and circumstances of the specific project at issue. Hence, the permit should not proceed with the general presumption that PM10 is always a reasonable surrogate for PM2.5. In addition, in accordance with limits within EPA's PM10 Surrogate Policy, the permit should demonstrate that it is not technically feasible at this time to complete a PM2.5 analysis for the proposed project. In the absence of showing that PM10 is an adequate surrogate for PM2.5, and that a PM2.5 analysis is not technically feasible, we recommend that IDEM require the proposed source to satisfy the PM2.5 requirements using PM2.5 emissions and air quality data.

Response

IDEM has already conducted a top-down BACT analysis for PM and PM-10 as included in Appendix B of the Technical Support Document. The BACT analysis for filterable PM2.5 is almost identical to that for filterable PM-10. A summary of the filterable $PM_{2.5}$ control technologies for the kilns has been included as follows:

Electrostatic Precipitator (ESP)

ESPs use an electrostatic field to charge particulate matter contained in the gas stream and then attract and collect the particles on a collection surface of opposite charge.

Cyclones

Particulate removal in cyclone collectors is achieved through the action of inertial forces, especially centrifugal. As the gas stream enters the top of the cyclone, a vortex is induced as it is forced to travel a circular path. Centrifugal forces cause the heavier particles to concentrate near the outer wall of the cyclone and particle of lesser mass to remain closer to the center of the vortex. Frictional and gravitational forces then act on the particles closest to the wall, causing them to fall toward the bottom of the cyclone, where they are collected in a hopper. Within the lower segment of the cyclone, the direction of the gas-flow vortex is reversed, and an inner ascending vortex is formed. The inner vortex consists of comparatively particulate-free air, which is collected through an outlet duct at the top of the cyclone.

Cartridge Collectors

While baghouses rely on dust cake on the bags for particle filtration, cartridge collectors rely on filter media. They are preferred over baghouses where the particulate matter is dry, free-flowing, and non-sticky in a low humidity environment.

Dust Suppression

Water spray adds water with or without surfactant to material being transported or stored. Emissions are prevented through agglomerate formation by combining small dust particles with larger aggregate or with liquid droplets. Water retained by sprayed material prevents emissions of PM2.5.

Enclosure

Enclosure technology employs structures or underground placement to shelter material from wind entrainment. Enclosures can either fully or partially surround the source.

Scrubbers

A scrubber is a pollution control device that uses a liquid (usually water) to wash pollutants such a particulate matter out of exhaust streams. Removal efficiency of pollutants is improved by increasing residence time in the scrubber or by the increase of surface area of the scrubber solution by the use of a spray nozzle, packed towers or an aspirator. Scrubbers can achieve a high particulate collection efficiency (90% or better), but at the expense of a punitive pressure drop (ranging from 6 - 20 inches of water), higher operational utilities, generation of large quantities of sludge along with the associated problem of sludge handling, de-watering, and disposal.

Fabric Filters/Baghouses

The exhaust air flows through tightly woven or felted fabric, causing PM2.5 to be collected on the fabric. As PM2.5 collects on the filter, collection efficiency increases while pressure drop through the system also increases. Bags are intermittently cleaned by shaking the bag, pulsing air through the bag, or temporarily reversing the airflow.

The fabric filter control devices determined to be BACT for PM_{10} will also provide the highest effective control for filterable $PM_{2.5}$. BACT analyses for the two PM species would differ only if

another control technology offered improved control efficiency for $PM_{2.5}$ as compared to PM_{10}, or if a particular control technology could be omitted based on economics of the control cost for one PM fraction versus the other PM fraction. There is no indication of any such potential grounds for differing BACT results for PM_{10} and $PM_{2.5}$. AP-42 provides information on relative control efficiencies of different control technologies for various PM species in Table 1.1-6 in the Chapter titled "Bituminous and Sub-bituminous Coal Combustion". The table shows that baghouse technology has the highest efficiency for $PM_{2.5}$ as it does for PM_{10}.

AP-42 Table 1.1-6

Particle Size[b] (μm)	Uncontrolled	Cumulative Mass % ≥ Stated Size			
		Controlled			
		Multiple Cyclones	Scrubber	ESP	Baghouse
15	32	54	81	79	97
10	23	29	71	67	92
6	17	14	62	50	77
2.5	6	3	51	29	53
1.25	2	1	35	17	31
1.00	2	1	31	14	25
0.625	1	1	20	12	14
Total	100	100	100	100	100

b: Expressed as aerodynamic equivalent diameter

Fabric filters or baghouses are considered as the most effective control option for the control of filterable PM2.5 emissions from lime kilns.

For condensable PM2.5, IDEM has determined that BACT-level controls for SO2 and NOx, which are precursor compounds for PM2.5, will result in BACT for condensable PM2.5.

The RACT, BACT, LAER Clearinghouse (RBLC) was reviewed to obtain recent determinations for PM2.5 emissions from similar processes. The search criteria used was “Lime/Limestone Handling/Kilns/Storage/Manufacturing (90.019)" and "kiln" with PM2.5 as the pollutant. There was no BACT determination for this category listed for the time period between 01/01/2000 and 9/17/2010.

The following has been determined to be BACT for PM2.5 emissions from Kiln #1 and Kiln #2:

(a) The emissions of PM2.5 (filterable) shall be controlled by baghouses DC1 and DC2 at all times that the associated kiln or preheater is in operation.

(b) The emissions of PM and PM-10 (filterable) from the baghouses DC1 and DC2 shall not exceed 0.01 gr/dscf.

(c) The emissions of PM and PM-10 (filterable) from Kiln #1 and Kiln #2 shall not exceed 0.15 lb/ton, for a 3-hour averaging period. The emissions of PM-10 (filterable and condensable) shall not exceed 0.20 lb/ton of lime produced, for a 3-hour averaging period.

(d) The opacity at the stacks #1 and 2 shall not exceed 15%, with compliance determined by a continuous opacity monitoring system.

(e) The emissions of SO2 from the kilns shall not exceed 2.0 pounds per ton of lime produced, for a 3-hour averaging period.

(f) The NOx emissions from Kiln #1 and Kiln #2 shall not exceed 3.5 pounds per ton of lime produced, for a 3-hour averaging period.

Condition D.1.3.1 has been added to the permit:

D.1.3.1 PM2.5 (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following are applicable to Kiln #1 and Kiln #2:

(a) The emissions of PM2.5 (filterable) shall be controlled by baghouses DC1 and DC2 at all times that the associated kiln or preheater is in operation.

(b) The emissions of PM and PM2.5/PM-10 (filterable) from the baghouses DC1 and DC2 shall not exceed 0.01 gr/dscf.

(c) The emissions of PM and PM2.5/PM-10 (filterable) from Kiln #1 and Kiln #2 shall not exceed 0.15 lb/ton, for a 3-hour averaging period. The emissions of PM2.5/PM-10 (filterable and condensable) shall not exceed 0.20 lb/ton of lime produced, for a 3-hour averaging period.

(d) The opacity at the stacks #1 and 2 shall not exceed 15%, with compliance determined by a continuous opacity monitoring system.

(e) The emissions of SO2 from the kilns shall not exceed 2.0 pounds per ton of lime produced, for a 3-hour averaging period.

(f) The NOx emissions from Kiln #1 and Kiln #2 shall not exceed 3.5 pounds per ton of lime produced, for a 3-hour averaging period.

BACT: Loadout Operations, Lime Kiln Dust Bins, Lime Processing, Material Handling Systems, Limestone and Fuel Storage Piles, Emergency Generator

IDEM has determined that PM_{10} is a reasonable surrogate for $PM_{2.5}$ for all non-kiln sources of particulate matter at this facility. The non-kiln emission units are used for handling, transporting and storing coal, lime and other material, resulting only in filterable PM emissions. Since there are no condensable emissions associated with these emission sources, it is reasonable to conclude that the filterable $PM_{2.5}$ would be equal to or less than the filterable PM_{10} emissions and that PM_{10} BACT analysis implicitly includes the consideration of reductions in $PM_{2.5}$.

The fabric filter control devices determined to be BACT for PM_{10} will also provide the highest effective control for filterable $PM_{2.5}$. BACT analyses for the two PM species would differ only if another control technology offered improved control efficiency for $PM_{2.5}$ as compared to PM_{10}, or if a particular control technology could be omitted based on economics of the control cost for one PM fraction versus the other PM fraction. There is no indication of any such potential grounds for differing BACT results for PM_{10} and $PM_{2.5}$. A fabric filter control device will the most effective control of filterable $PM_{2.5}$ compared to all the other control technologies.

For these emission sources, baghouse control is the best control technology for filterable PM2.5, as it is for PM and PM-10. The detailed BACT analysis for PM-10 is already included in the Technical Support Document - Appendix B. For some of these processes, baghouses were determined to be economically feasible, and IDEM has determined that BACT for PM2.5 is identical to BACT for PM-10. For emission points for which baghouses were deemed to be economically infeasible, add-on control is economically infeasible as well, since the cost per unit of PM2.5 controlled will be higher than the cost for PM-10 controlled.

Conditions D.2.2 and D.2.3 have been modified as follows:

D.2.2 Particulate Matter and Beryllium Best Available Control Technology (BACT) Limitations - Storage Piles [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following requirement is applicable to limestone and fuel storage piles:

(a) Fugitive PM and **PM2.5/**PM-10 emissions from limestone and fuel storage piles shall be minimized through best operating practices in accordance with the Fugitive Dust Control plan submitted on August 15, 2008 (included as Attachment E of the permit) or an approved equivalent plan.

D.2.3 Particulate Matter and Beryllium Best Available Control Technology (BACT) Limitations [326 IAC 2-2-3(a)(3)]

Pursuant to 326 IAC 2-2-3(a)(3), the following requirements are applicable:

(a) The emissions of PM, PM-10**, PM2.5** and beryllium from lime handling and storage processes shall be controlled by baghouses DC1, DC2, DC3, DC4, DC5, DC6, DC7, DC8, DC9, and DC10 at all times that the associated process is in operation.

(b) The emissions of PM and **PM2.5/**PM-10 (filterable) from the baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9 and DC10 shall not exceed 0.005 gr/dscf, and the emissions of PM and **PM2.5/**PM-10 (filterable) from the baghouses DC1 and DC2 shall not exceed 0.01 gr/dscf.

(c) The following BACT requirements apply to material transfer processes, including material handling systems and drop points, at this facility:

Transfer No.	PM (filerable) Limit	Control
79, 81 through 140 (stone/lime/flue dust)	0.005 gr/dscf for baghouses DC3, DC4, DC5, DC6, DC7, DC8, DC9, DC10 0.01 gr/dscf for DC1, DC2	Baghouse
1, 141, 142 (fuel)	-	Inherent Moisture Control, Best Operating Practice
2 through 78, 80, 143 through 153	-	Moisture Control, Enclosure

(d) The Permittee shall use inherent moisture to control PM/PM10**/PM2.5** emissions from transfer points 1 through 153. The Permittee shall measure moisture content as directed by the Commissioner using an analysis method or methods jointly agreed upon by the Permittee and IDEM, OAQ.

EPA Comment 2

The SO2 BACT analysis for the lime kilns in Appendix B of the technical support document states that "a wet scrubber is not in operation at any lime kilns currently in the U.S." (page 12). However, Table 3 in the BACT analysis (page 14 of Appendix B) lists some BACT determinations from the RACT/BACT/LAER Clearinghouse with "wet scrubber" as part of the source's control requirements. The BACT analysis should clarify this apparent discrepancy regarding the use of a wet scrubber at other lime kilns.

Response

IDEM acknowledges the fact that the SO2 BACT analysis should have clarified that no add-on wet scrubbers for SO2 control are used at other lime kilns (with a lime based reagent), while scrubbers for PM and opacity control may very well be used at several lime kilns. This, however, does not have any impact on the BACT determination, which is still the most stringent of all comparable SO2 BACT limitations at other lime kilns.

No change has been made as a result of this comment.

EPA Comment 3

Permit conditions D.1.5 and D.1.11 establish production limits and testing requirements for kiln #1 and #2 to limit volatile organic compound (VOC) emissions below the PSD significance threshold. According to D.1.11, performance tests shall be repeated on one of the two kilns every 2.5 years. This condition does not state that both kiln 1 and kiln 2 must undergo period performance tests. Therefore, the source could potentially test the same kiln every 2.5 years without ever testing the other kiln. In order to demonstrate that VOC production limits are sufficient to avoid PSD, the permit language must be revised to assure period testing of both kilns.

Response

Condition D.1.11 - Testing Requirements has been modified as follows:

D.1.11 Testing Requirements [326 IAC 2-1.1-11]

(a) Within sixty (60) days after achieving maximum capacity but no later than one hundred eighty (180) days after initial startup of Kiln #1 or Kiln #2, whichever occurs first, the Permittee shall conduct initial performance tests on Kiln #1 or Kiln #2, to determine compliance with the limits on NOx, CO, SO2 and VOC, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every two and one-half (2.5) years from the date of the most recent valid compliance demonstration. **Testing shall be performed such that the same kiln is not tested twice in a five (5) year cycle.**

(b) Within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of Kiln #1 and Kiln #2, whichever occurs first, in order to demonstrate compliance with Condition D.1.3(c), the Permittee shall perform PM testing on Kiln #1 or Kiln #2, utilizing methods as approved by the Commissioner.

(c) In order to demonstrate compliance with Condition D.1.3(c), the Permittee shall perform PM10 testing on Kiln #1 or Kiln #2 within 60 days of achieving the maximum capacity, but no later than 180 days after start-up of Kiln #1 and Kiln #2, or within 180 days of publication of the new or revised condensable PM test method(s) referenced in the U. S. EPA's Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5), signed on May 8, 2008, whichever occurs later. This testing shall be conducted utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C - Performance Testing. PM10 includes filterable and condensable PM.

EPA Comment 4

Prior to the first performance test, permit condition D.1.5 allows an average emission factor of 0.2 lb/ton of lime produced to be used to establish the production limits necessary to satisfy the VOC emission limits. The permit does not clearly explain the basis for using the 0.2 lb/ton emission factor.

Response

IDEM has determined from RBLC listings that the most stringent VOC emissions limitation at other comparable lime kilns is 0.118 pound per ton of lime produced. The Permittee proposed that, until an emission factor was established through a stack test, a conservative emission factor of 0.2 pound per ton be used to calculate VOC emissions for the PSD synthetic minor limit.

Other Changes

IDEM/OAQ Change 1

Table 1 (Significant Emission Rates for PSD) in Appendix A to the Technical Support Document (Air Quality Analysis) had a typographical error. The emissions of PM10 listed was incorrect, it should have been listed as 210.6 tons per year. This error had no impact on the air quality modeling and analysis.

TABLE 1 (Updated)

Significant Emission Rates for PSD

POLLUTANT	SOURCE EMISSION RATE (Facility totals in tons/year)	SIGNIFICANT EMISSION RATE (tons/year)	PRELIMINARY AQ ANALYSIS REQUIRED
VOC	66.3	40	No[1]
PM_{10}	210.6	15	Yes
NO_2	1151	40	Yes
SO_2	657	40	Yes
CO	822	100	Yes
Pb	.01	.06	No
Sulfuric Acid Mist	6.04	7	No
Beryllium	.003	.0004	Yes
Mercury	.005	.1	No
Flourides	1.54	3	No

IDEM/OAQ Change 2

The Part 70 Quarterly Reports in the draft permit included the wrong source name and address. These errors have been corrected.

IDEM/OAQ Change 3

NO2 One-hour Ambient Air Standard Compliance Demonstration
Synergy has rerun the model submitted with the application in order to demonstrate compliance with the recently promulgated National Ambient Air Quality Standard for one-hour average NO2 concentrations. The results of that demonstration indicate a peak impact of 77.9 ppb (including a background value of 32 ppb as observed near South Bend, IN for 2009) for comparison with the standard of 100 ppb. The updated air quality modeling analysis for the NO2 one-hour standard is included as Attachment Bb to the Addendum to the Technical Support Document. The modeling showed no violation of the NO2 one-hour standard.

IDEM/OAQ Change 4

The descriptions of the emissions units have been modified to include the correct year that the units were permitted, as shown in the example below:

Two (2) rotary lime kilns, permitted in ~~2009~~ **2010**, each with a maximum capacity of 900 tons per day of lime produced, identified as Kiln #1 and Kiln #2, combusting coal or a mixture of coal and petroleum coke, using baghouse DC1 and baghouse DC2, respectively for PM control, and exhausting to Stack #1 and Stack #2, respectively.

IDEM/OAQ Change 5

EPA promulgated a new one-hour average NAAQS for SO2 on June 22, 2010. The standard became effective on August 22, 2010.

Modeling has been conducted to demonstrate compliance with this new SO2 ambient standard. The updated air quality modeling analysis for the SO2 one-hour standard is included as Attachment Bb to the Addendum to the Technical Support Document. The modeling showed no violation of the SO2 one-hour standard.

APPENDIX Aa - Addendum to Technical Support Document

Emissions Calculations

T181-26877-00050 Date: November 10, 2010

Synergy Management, LLC
Emissions Summary

Source Group	Total $PM_{2.5}$ (tpy)	Total PM_{10} (tpy)	PM (tpy)	SO_2 (tpy)	NOX (tpy)	CO (tpy)	VOC (tpy)	H_2SO_4 (tpy)	Pb (tpy)
Transfer Emissions	0.39	1.41	6.71	---	---	---	---	---	---
Lime Process Emissions	91	185	60.2	657	1150	821	65.7	6.04	0.01
Stone Process Emissions	0.43	3.24	8.27	---	---	---	---	---	---
Vehicle & Emergency Generator Emissions	0.54	2.05	10.34	---	0.83	0.57	0.59	---	---
Quarry Operations	2.75	27.52	53.92	---	---	---	---	---	---
Pile Fugitives	0.01	0.07	0.14	---	---	---	---	---	---
TOTAL	**95**	**219**	**139.6**	**657**	**1151**	**822**	**66.3**	**6.04**	**0.01**
Significant Emission Rate	15	15	25	40	40	100	40	7.0	0.6
Significant (PSD)?	YES	YES	YES	YES	YES	YES	YES	NO	NO

Appendix Aa - Addendum to Technical Support Document
Transfer Emissions
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Synergy Management, LLC
Transfer Emissions (Limestone, Lime, LKD & Fuel)

Transfer From	Transfer To	Max Material Process Rate[1] (ton/hr)	Emission Factor, TP[2] (lb/ton)	Emission Factor, PM10[2] (lb/ton)	Emission Factor, PM2.5[2] (lb/ton)	Additional Control		PTE						Notes
						Control[3]	Control Efficiency	Emission Rate, TP (lb/hr)	Emission Rate, PM10 (lb/hr)	Emission Rate, PM2.5 (lb/hr)	Emission Rate, TP (ton/yr)	Emission Rate, PM10 (ton/yr)	Emission Rate, PM2.5 (ton/yr)	
LIMESTONE														
C01	C02	1000	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.070	0.02300	0.00650	0.31	0.1007	0.0285	
C02	C03	1000	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.070	0.02300	0.00650	0.31	0.1007	0.0285	
C07	C09	600	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.042	0.0138	0.00390	0.184	0.0604	0.0171	
C08	C09	350	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.025	0.0081	0.00228	0.107	0.0353	0.0100	
C09	C05	950	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.067	0.0219	0.00618	0.291	0.0957	0.0270	
C11	C12	600	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.042	0.01380	0.00390	0.18	0.0604	0.0171	
C15	C16	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.077	0.0252	0.0071	
CR1	C01	600	---	---	---	---	---	---	---	---	---	---	---	6
CR2	C07	600	---	---	---	---	---	---	---	---	---	---	---	6
CR3	C08	350	---	---	---	---	---	---	---	---	---	---	---	6
C12	S3	600	---	---	---	---	---	---	---	---	---	---	---	6
C03	S1	1000	---	---	---	---	---	---	---	---	---	---	---	6
C04	F2	600	---	---	---	---	---	---	---	---	---	---	---	7
C05	S2	1250	---	---	---	---	---	---	---	---	---	---	---	6
C06	F3	250	---	---	---	---	---	---	---	---	---	---	---	7
F1	C01	1000	---	---	---	---	---	---	---	---	---	---	---	7
F1	CR1	1000	---	---	---	---	---	---	---	---	---	---	---	7
F2	CR2	600	---	---	---	---	---	---	---	---	---	---	---	7
F3	CR3	350	---	---	---	---	---	---	---	---	---	---	---	7
S1	C04	1000	---	---	---	---	---	---	---	---	---	---	---	6
S1	C05	1000	---	---	---	---	---	---	---	---	---	---	---	6
S2	C10	1000	---	---	---	---	---	---	---	---	---	---	---	6
S2	C11	1000	---	---	---	---	---	---	---	---	---	---	---	6
S2	C06	1000	---	---	---	---	---	---	---	---	---	---	---	6
S3	C13	600	---	---	---	---	---	---	---	---	---	---	---	6
S3	C14	600	---	---	---	---	---	---	---	---	---	---	---	6
S3	C15	600	---	---	---	---	---	---	---	---	---	---	---	6
S4	C42	750	---	---	---	---	---	---	---	---	---	---	---	6
C13	C18	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.08	0.0252	0.0071	
C14	C19	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.077	0.0252	0.0071	
C10	C17	350	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.025	0.0081	0.00228	0.107	0.0353	0.0100	
C12	S3	600	---	---	---	---	---	---	---	---	---	---	---	6
C16	C20	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.08	0.0252	0.0071	
C16	C21	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.077	0.0252	0.0071	
C17	P1	350	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.025	0.0081	0.00228	0.107	0.0353	0.0100	
C18	P2	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.077	0.0252	0.0071	

Appendix Aa - Addendum to Technical Support Document
Transfer Emissions
T181-26877-00050 Date: November 10, 2010

Transfer From	Transfer To	Max Material Process Rate[1] (ton/hr)	Emission Factor, TP[2] (lb/ton)	Emission Factor, PM10[2] (lb/ton)	Emission Factor, PM2.5[2] (lb/ton)	Additional Control		PTE						Notes
						Control[3]	Control Efficiency	Emission Rate, TP (lb/hr)	Emission Rate, PM10 (lb/hr)	Emission Rate, PM2.5 (lb/hr)	Emission Rate, TP (ton/yr)	Emission Rate, PM10 (ton/yr)	Emission Rate, PM2.5 (ton/yr)	
C19	P3	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.08	0.0252	0.0071	
C20	P5	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.077	0.0252	0.0071	
C21	P4	250	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.018	0.0058	0.00163	0.08	0.0252	0.0071	
C22	C23	1500	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.105	0.0345	0.00975	0.460	0.1511	0.0427	
C22	S4	1500	---	---	---	---	---	---	---	---	---	---	---	6
C23	P6	1500	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.105	0.0345	0.00975	0.46	0.1511	0.0427	
C24	P7	50	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.004	0.0012	0.00033	0.015	0.0050	0.0014	
C25	C26	300	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.021	0.0069	0.00195	0.09	0.0302	0.0085	
C26	P8	300	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.021	0.0069	0.00195	0.092	0.0302	0.0085	
P1	C22	1500	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.105	0.0345	0.00975	0.460	0.1511	0.0427	
C42	C43	750	1.4E-04	4.6E-05	1.3E-05	M, PE	50%	0.053	0.0173	0.00488	0.230	0.0756	0.0214	
F4	C22	750	---	---	---	---	---	---	---	---	---	---	---	7
F5	C22	750	---	---	---	---	---	---	---	---	---	---	---	7
F6	C22	750	---	---	---	---	---	---	---	---	---	---	---	7
F7	C22	750	---	---	---	---	---	---	---	---	---	---	---	7
S4	C24	750	---	---	---	---	---	---	---	---	---	---	---	6
S4	C25	750	---	---	---	---	---	---	---	---	---	---	---	6
TRK	F1	1000	---	---	---	---	---	---	---	---	---	---	---	6
P1	F7	750	---	---	---	---	---	---	---	---	---	---	---	7
P2	F6	750	---	---	---	---	---	---	---	---	---	---	---	7
P3	F5	750	---	---	---	---	---	---	---	---	---	---	---	7
P4	F4	750	---	---	---	---	---	---	---	---	---	---	---	7
P6	FE Loader	24	1.4E-04	4.6E-05	1.3E-05	M	0%	0.003	0.0011	0.00031	0.015	0.0048	0.0014	12
FE Loader	Truck	24	1.4E-04	4.6E-05	1.3E-05	M	0%	0.003	0.0011	0.00031	0.015	0.0048	0.0014	12
PEBBLE LIME														
Kiln 1	Cooler 1	400	0.0014	----	----	baghouse (DC1)	----	----	----	----	2.43	----	----	5,11
Cooler 1	Feeders	400	----	----	----	baghouse (DC1)	----	----	----	----	----	----	----	5
Kiln 2	Cooler 2	400	----	----	----	baghouse (DC2)	----	----	----	----	----	----	----	5
Cooler 2	LF1 - 8	400	----	----	----	baghouse (DC2)	----	----	----	----	----	----	----	5
LF1 - 8	LC1	100	----	----	----	baghouse (DC1)	----	----	----	----	----	----	----	5
LC1	LBE1	100	----	----	----	baghouse (DC3)	----	----	----	----	----	----	----	5
LBE1	LS1	100	----	----	----	baghouse (DC3)	----	----	----	----	----	----	----	5
LF1 - 8	LC2	100	----	----	----	baghouse (DC2)	----	----	----	----	----	----	----	5
LC2	LBE2	100	----	----	----	baghouse (DC4)	----	----	----	----	----	----	----	5
LBE2	LS2	100	----	----	----	baghouse (DC4)	----	----	----	----	----	----	----	5
LS1	LC5	100	----	----	----	baghouse (DC3)	----	----	----	----	----	----	----	5
LC5	LB1	100	----	----	----	baghouse (DC3)	----	----	----	----	----	----	----	5
LS1	LB2	100	----	----	----	baghouse (DC3)	----	----	----	----	----	----	----	5
LS2	LC4	100	----	----	----	baghouse (DC4)	----	----	----	----	----	----	----	5
LC4	LB3	100	----	----	----	baghouse (DC4)	----	----	----	----	----	----	----	5
LS2	LB4	100	----	----	----	baghouse (DC4)	----	----	----	----	----	----	----	5
LS1 or LS2	LC3	20	----	----	----	baghouse (DC3)	----	----	----	----	----	----	----	5

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Transfer Emissions
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Transfer From	Transfer To	Max Material Process Rate[1] (ton/hr)	Emission Factor, TP[2] (lb/ton)	Emission Factor, PM10[2] (lb/ton)	Emission Factor, PM2.5[2] (lb/ton)	Additional Control		PTE						Notes
						Control[3]	Control Efficiency	Emission Rate, TP (lb/hr)	Emission Rate, PM10 (lb/hr)	Emission Rate, PM2.5 (lb/hr)	Emission Rate, TP (ton/yr)	Emission Rate, PM10 (ton/yr)	Emission Rate, PM2.5 (ton/yr)	
LC3	B4	20	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
LB1	QSC1	200	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
QSC1	Truck	200	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
LB2	QSC2	200	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
QSC2	Truck	200	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
LB3	QSC3	200	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
QSC3	Truck	200	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
LB4	QSC4	200	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
QSC4	Truck	200	----	----	----	baghouse (DC8)	----	----	----	----	----	----	----	5
LC1 or LC2	WBL1	100	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
WBL1	B9	100	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
B9	Truck	200	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
B9	LF9	100	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
LF9	LC2	100	----	----	----	baghouse (DC1)	----	----	----	----	----	----	----	5
LIME FINES														
QSC1 - 4	X8	20	---	---		baghouse (DC8)	----	----	----	----	----	----	----	5
X8	B4	20	----	----		baghouse (DC8)	----	----	----	----	----	----	----	5

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Transfer Emissions
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Transfer From	Transfer To	Max Material Process Rate[1] (ton/hr)	Emission Factor, TP[2] (lb/ton)	Emission Factor, PM10[2] (lb/ton)	Emission Factor, PM2.5[2] (lb/ton)	Additional Control: Control[3]	Additional Control: Control Efficiency	PTE: Emission Rate, TP (lb/hr)	PTE: Emission Rate, PM10 (lb/hr)	PTE: Emission Rate, PM2.5 (lb/hr)	PTE: Emission Rate, TP (ton/yr)	PTE: Emission Rate, PM10 (ton/yr)	PTE: Emission Rate, PM2.5 (ton/yr)	Notes
B4	BQ1	20	----	----		baghouse (DC8)	----	----	----	----	----	----	----	5
BQ1	B5	20	----	----		baghouse (DC8)	----	----	----	----	----	----	----	5
B5	LC6	20	----	----		baghouse (DC8)	----	----	----	----	----	----	----	5
LC6	QSC2	20	----	----		baghouse (DC8)	----	----	----	----	----	----	----	5
FLUE DUST (LKD)														
DC6	X1	10	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
DC7	X2	10	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
DC10	X5	10	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
X1	X3	10	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
X2	X3	10	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
X3	L1/X4	20	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
L1	B7	20	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
B7	Truck	200	----	----	----	baghouse (DC5)	----	----	----	----	----	----	----	5
FUEL														
Fuel Truck	Ground	20	4.8E-04	1.7E-04	2.5E-05	----	0%	0.0095	0.003	0.001	0.042	0.015	0.002	
FE Loader	Fuel Pile	20	4.8E-04	1.7E-04	2.5E-05	----	0%	0.0095	0.003	0.001	0.042	0.015	0.002	
FE Loader	CC1	20	4.8E-04	1.7E-04	2.5E-05	PE	50%	0.0048	0.002	0.000	0.021	0.007	0.001	
CC1	CC2	20	4.8E-04	1.7E-04	2.5E-05	PE	50%	0.0048	0.002	0.000	0.021	0.007	0.001	
CC2	CC3	10	4.8E-04	1.7E-04	2.5E-05	PE	50%	0.0024	0.001	0.000	0.010	0.004	0.001	
CC3	FB1	10	4.8E-04	1.7E-04	2.5E-05	PE	50%	0.0024	0.001	0.000	0.010	0.004	0.001	
FB1	CC4	10	4.8E-04	1.7E-04	2.5E-05	BE	90%	0.0005	0.000	0.000	0.002	0.001	0.000	9
CC2	FB2	10	4.8E-04	1.7E-04	2.5E-05	PE	50%	0.0024	0.001	0.000	0.010	0.004	0.001	
FB2	CC5	10	4.8E-04	1.7E-04	2.5E-05	BE	90%	0.0005	0.000	0.000	0.002	0.001	0.000	9
CC4	CM1	0	4.8E-04	1.7E-04	2.5E-05	PE	50%	0.0000	0.000	0.000	0.000	0.000	0.000	10
CC5	CM2	0	4.8E-04	1.7E-04	2.5E-05	PE	50%	0.0000	0.000	0.000	0.000	0.000	0.000	10

1. System-wide transfer emissions are calculated here for the purposes of dispersion modeling and for calculating facility emissions. Transfer throughput rates represent the lower design capacity of the contributing and receiving equipment. This methodology significantly overstates potential emissions because it would be impossible for all equipment and transfer points to experience full capacity throughput simultantaneously.

2. Stone transfer emission factors are from AP-42 Table 11.19.2-2 (Crushed Stone Processing and Pulverized Mineral Processing) for conveyor transfer point controlled by water sprays, retained moisture, or inherent moisture content. Limestone for this project will typically contain at least 2% moisture. See Note 4 for an explanation of fuel transfer emission factors.

3. A 90% control is assumed for transfers occurring in enclosures/tunnels. Enclosures provide a physical barrier to particulate emissions and block wind. Comparing emission factors derived from AP-42 Chapter 13.2.4, Equation 1 at different wind speeds helps quantify enclosure efficiency. Reducing mean wind speeds from the local average (10.13 mi/hr) to the minimum wind speed for which the equation is valid (1.3 mi/hr) yields a 93% reduction in the emission factor. A control efficiency of 50% is assumed for partial enclosure.

PE = Partial enclosure UE = Underground enclosure
BE = Bin/Bldg enclosure M = Moisture

4. Particulate emission factors for fuel transfers are calculated using AP-42 13.2.4 Eqn (1)

k =	1	---	Particle Size Multiplier, Total Particulate
	0.35	---	Particle Size Multiplier, PM10

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Transfer Emissions
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Transfer From	Transfer To	Max Material Process Rate[1] (ton/hr)	Emission Factor, TP[2] (lb/ton)	Emission Factor, PM10[2] (lb/ton)	Emission Factor, PM2.5[2] (lb/ton)	Additional Control		PTE						Notes
						Control[3]	Control Efficiency	Emission Rate, TP (lb/hr)	Emission Rate, PM10 (lb/hr)	Emission Rate, PM2.5 (lb/hr)	Emission Rate, TP (ton/yr)	Emission Rate, PM10 (ton/yr)	Emission Rate, PM2.5 (ton/yr)	
	0.053	---	Particle Size Multiplier, PM2.5											
M =	15.00	---	% Moisture Content (Coal/Coke), design value											
	7.00	---	% Lime Moisture Content (from AP-42 Table 13.2.4-1, for Iron and Steel Production, Flue Dust											
U =	8.8	knots	Outdoor average wind speed, NOAA NCDC, South Bend, IN Station											
	10.13	MPH												

5. Transfer point is controlled by baghouse. See "Lime Process Source" sheet for emission calculations.
6. Emissions resulting from transfers to and from screens and crushers are include in the emission factor for the screens and crushers themselves.
7. Feeders act as a funnel to direct material from one source to another. Since they do not stop the material, material is not actually transferred to them and so no emissions are assigned to them.
8. Emissions resulting from transfers to the preheaters are controlled by the kiln baghouses.
9. These fuel transfers occur inside the combustion building.
10. Emissions resulting from transfers to the coal mills are entrained with the combustion air supplied to the kiln burners.
11. Uncontrolled potential emission rate calculated to determine CAM applicability. This is the maximum lime throughput rate of any of the baghouse-controlled transfers and therefore represents the highest potential emission rate.

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Emissions Calculations

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Synergy Management, LLC
Stone Processing Emissions

Stone Processing Emissions

Eqpt No.	Desc.	Process Rate[2] (TPH)	Emission Factors[1] TP (lb/ton)	PM10 (lb/ton)	PM2.5 (lb/ton)	Control Efficiency	Emission Rates TP (lb/hr)	TP (tpy)	PM10 (lb/hr)	PM10 (tpy)	PM2.5 (lb/hr)	PM2.5 (tpy)	Notes
S1	Screen	1000	0.0022	0.00074	0.00005	90%	0.22	0.96	0.07	0.324	0.005	0.022	
S2	Screen	1000	0.0022	0.00074	0.00005	90%	0.22	0.96	0.07	0.324	0.005	0.022	
S3	Screen	600	0.0022	0.00074	0.00005	90%	0.13	0.58	0.04	0.194	0.003	0.013	
S4	Screen	750	0.0022	0.00074	0.00005	90%	0.17	0.72	0.06	0.243	0.004	0.016	
F1	Feeder	1000	0.0022	0.00074	0.00005	90%	0.22	0.96	0.07	0.3241	0.005	0.022	4
CR1	Crusher	600	0.0012	0.00054	0.0001	50%	0.36	1.58	0.16	0.710	0.030	0.131	
CR2	Crusher	600	0.0012	0.00054	0.0001	50%	0.36	1.58	0.16	0.710	0.030	0.131	
CR3	Crusher	350	0.0012	0.00054	0.0001	50%	0.21	0.92	0.09	0.414	0.018	0.077	
Maximum Uncontrolled Potential Emissions (for 40 CFR Part 64 (CAM) applicability[3])													
S2	Screen	1000	0.0022	---		0%	---	9.64	---	---	---	---	3
CR1	Crusher	600	0.0054	---		0%	---	14.19	---	---	---	---	

Notes:

1. Emission Factors from AP-42 Table 11.19.2-2. A 90% control is assumed for transfers occurring in enclosures/tunnels. Enclosures provide a physical barrier to particulate emissions and block wind. Comparing emission factors derived from AP-42 Chapter 13.2.4, Equation 1 at different wind speeds helps quantify enclosure efficiency. Reducing mean wind speeds from the local average (10.13 mi/hr) to the minimum wind speed for which the equation is valid (1.3 mi/hr) yields a 93% reduction in the emission factor. A control efficiency of 50% is assumed for partial enclosure.

2. Throughput rates represent equipment design capacity.

3. Compliance Assurance Monitoring (CAM) requirements may apply to sources whose pre-controlled potential emission rate exceeds 100 tons per year. These calculations show that, for the maximum throughput rate through a screen and crusher, uncontrolled potential to emit would be no more than 14.43 tons per year. CAM requirements would therefore not apply to any material processing equipment within the proposed facility. (Note that the screening emission calculation uses a "controlled" emission factor for retained or inherent moisture; moisture inherent in the stone justifies use of this factor, and, because it is an inherent control, and not an add-on control, it is not considered to be a control for the purpose of CAM applicability.)

Synergy Management, LLC
Kiln and Baghouse Emissions

Baghouse/Filter Emissons

Baghouses	Description	Flow Rate (acfm) [1]	Flow Rate (scfm)	Filterable PM/PM_{10} Grain Loading (gr/dscf)	PM Emission Rate		Filterable PM_{10} Emission Rate		$PM_{2.5}$ Emission Rate		Notes
					(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	
DC1	Kiln1 Baghouse	117,423	67,301	--	5.63	24.64	19.88	87.05	9.76	42.74	
DC2	Kiln2 Baghouse	117,423	67,301	--	5.63	24.64	19.88	87.05	9.76	42.74	
DC3/4	Cooler Discharge	8,300	7,140	0.010	0.61	2.68	0.61	2.68	0.32	1.39	2,4,5
DC5/6	Lime Processing	8,833	8,833	0.010	0.76	3.32	0.76	3.32	0.39	1.72	3,4,5
DC7	LKD Bin Vent	100	100	0.010	0.01	0.04	0.01	0.04	0.00	0.02	3,5
DC8	Lime Loadout	10,500	10,500	0.010	0.90	3.94	0.90	3.94	0.47	2.05	3,5
DC9	Off-spec Loadout	100	100	0.010	0.01	0.04	0.01	0.04	0.00	0.02	5
DC10	Lime Rail Loadout	2,500	2,500	0.010	0.21	0.94	0.21	0.94	0.11	0.49	3,5

Notes:
1. Flow rate through baghouses per design specifications.
2. SCFM calculated from ACFM at 150 deg F, 200 ft elevation, and 0% moisture.
3. SCFM assumed to equal ACFM for ambient temps and pressures.
4. Baghouses are redundant for maintenance purposes. Only one baghouse of the pair will be operating at a given time.
5. PM2.5 Emisisons were calculated using particle size distrbution and emissions control percentages found in the EPA's PM Calculator database, available for download at http://www.epa.gov/ttn/chief/eiinformation.html.

Kiln Emissions (per Kiln)

Kilns 1& 2 (each)	Lime Process Rate = 900 tons/day			
	Emission Factor (lbs/ton)	Emission Rate (lbs/hr)	Emission Rate (tons/yr)	Notes
PM/PM_{10} - Filterable	0.150	5.63	24.6	1
Total PM_{10}	0.530	19.9	87.1	2
$PM_{2.5}$	0.260	9.8	42.7	6
SO_2	2.00	75.0	329	3
NO_X	3.50	131	575	3
CO	2.50	94	411	3
VOC	0.20	7.50	32.9	3
H_2SO_4	7.66E-04	0.69	3.02	4
Lead	3.33E-05	1.25E-03	5.47E-03	5
Beryllium	8.44E-06	3.16E-04	1.39E-03	5
Mercury	1.67E-05	6.24E-04	2.73E-03	5
HF	4.67E-03	0.18	0.77	5

Lime Kiln Emissions Calculations Notes:

1. Emissions are controlled by baghouse; see results above. Production-related emission factor corresponds to BACT.
2. Emission factor from AP-42 Table 11.17-2 (2/98) for coal-fired rotary kilns with fabric filter control.
3. Emission factors derived from design constraints and BACT analyses.
4. See next page for calculations.
5. See HAPs emissions calculations. "lb/ton coal" factor multiplied by 0.185 ton coal (dry) / ton lime produced. Conversion based on a design value of 4.90 MMBtu/ton of lime and a dry basis fuel heat value of 13,240 btu/lb.

Synergy Management, LLC
Kiln Sulfuric Acid Mist Emissions

Input Values:

13,868 lb dry fuel per hour per kiln @ 800 tpd capacity; nominal design parameter
13.9% fuel moisture content; nominal design parameter
2.5% fuel sulfur content as received; operational design parameter
0.6% proportion of fuel sulfur emitted as SO3 for subbituminous coal; AP-42, Table 1.1-3 (footnote b)

$$13{,}868 \frac{\text{lb dry coal}}{\text{hr}} * \frac{1}{0.861} \frac{\text{lb A.R. coal}}{\text{lb dry coal}} * 0.025 \frac{\text{lb S}}{\text{lb A.R. coal}} * 0.006 \frac{\text{lb S (as SO3)}}{\text{lb S input}}$$

$$= 2.42 \frac{\text{lb S (as SO3)}}{\text{hr}}$$

32 MW S, lb/mol
16 MW O, lb/mol
1 MW H, lb/mol

$$2.42 \frac{\text{lb S (as SO3)}}{\text{hr}} * \frac{80}{32} \frac{\text{lb SO3}}{\text{lb S}} * \frac{98}{80} \frac{\text{lb H2SO4}}{\text{lb SO3}} = 7.40 \frac{\text{lb H2SO4}}{\text{hr}} \text{ (uncontrolled)}$$

90.68% SO2/SO3/H2SO4 scrubbing efficiency (inherent) -- derived using 2.0 lb SO2 / ton of lime proposed BACT limit
9.32% emission proportion (= 1 - scrubbing efficiency)

$$7.40 \frac{\text{lb } H_2SO_4 \text{ formed}}{\text{hr}} * 0.093 \frac{\text{lb emitted}}{\text{lb formed}} = 0.690 \frac{\text{lb } H_2SO_4 \text{ emitted}}{\text{hr}}$$

$$0.690 \frac{\text{lb } H_2SO_4}{\text{hr}} * \frac{8760}{2000} \frac{\text{hr/yr}}{\text{lb/ton}} = 3.02 \frac{\text{lb } H_2SO_4 \text{ emitted}}{\text{yr}} \text{ each kiln}$$

$$= 6.04 \frac{\text{lb } H_2SO_4 \text{ emitted}}{\text{yr}} \text{ 2 kilns, total}$$

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Emissions Calculations

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Synergy Management, LLC
Kiln HAP Emissions

Combined Kilns -- Design Values		
Design Heat Rate (2 kilns) =	367.5	MMBtu/hr
Hours Per Year	8760	hr/y
Design Fuel Heat Value (dry basis) =	13,240	Btu/lb

Potential HAP Emissions from Lime Kilns (combined)

Hazardous Air Pollutant	CAS Number	Coal Heat Content (Btu/lb)	Emission Factor (EF)[a] (lb/ton)	Emission Factor (EF)[b] (lb/MMBtu)	EF Reference AP-42 Table	Annual Hours of Operation (hr/yr)	Emissions (lb/hr)	Emissions (tpy)
Organic HAPs								
1,1,1-Trichloroethane	71-55-6	13,240	2.0E-05	7.55E-07	1.1-14	8760	2.8E-04	1.2E-03
2-Chloroacetophenone	532-27-4	13,240	7.0E-06	2.64E-07	1.1-14	8760	9.7E-05	4.3E-04
2,4-Dinitrophenol	37359-43-6	13,240	2.8E-07	1.06E-08	1.1-14	8760	3.9E-06	1.7E-05
5-Methyl chrysene	3697-24-3	13,240	2.20E-08	8.31E-10	1.1-13	8760	3.1E-07	1.3E-06
Acenaphthene	83-39-9	13,240	5.1E-07	1.93E-08	1.1-13	8760	7.1E-06	3.1E-05
Acenaphthylene	208-96-8	13,240	2.5E-07	9.44E-09	1.1-13	8760	3.5E-06	1.5E-05
Acetaldeyde	75-07-0	13,240	5.7E-04	2.15E-05	1.1-14	8760	7.9E-03	3.5E-02
Acetophenone	98-86-2	13,240	1.5E-05	5.66E-07	1.1-14	8760	2.1E-04	9.1E-04
Acrolein	107-02-8	13,240	2.9E-04	1.10E-05	1.1-14	8760	4.0E-03	1.8E-02
Benzene	71-43-2	13,240	1.3E-03	4.91E-05	1.1-14	8760	1.8E-02	7.9E-02
Benzo(a)anthracene	56-55-3	13,240	8.0E-08	3.02E-09	1.1-13	8760	1.1E-06	4.9E-06
Benzo(a)pyrene	50-32-8	13,240	3.8E-08	1.44E-09	1.1-13	8760	5.3E-07	2.3E-06
Benzo(b+k)fluoranthene	205-99-2	13,240	1.1E-07	4.15E-09	1.1-13	8760	1.5E-06	6.7E-06
Benzo(g,h,I)Perylene	191-24-2	13,240	2.7E-08	1.02E-09	1.1-13	8760	3.7E-07	1.6E-06
Benzo(k)fluoranthene	207-08-9	13,240	1.1E-07	4.15E-09	1.1-14	8760	1.5E-06	6.7E-06
Benzyl chloride	100-44-7	13,240	7.0E-04	2.64E-05	1.1-14	8760	9.7E-03	4.3E-02
Biphenyl	92-52-4	13,240	1.70E-06	6.42E-08	1.1-13	8760	2.4E-05	1.0E-04
Bis(2-ethylhexyl)phthalate (DEHP)	126639-29-0	13,240	7.3E-05	2.76E-06	1.1.14	8760	1.0E-03	4.4E-03
Bromoform	75-25-2	13,240	3.9E-05	1.47E-06	1.1-14	8760	5.4E-04	2.4E-03
Carbon disulfide	75-15-0	13,240	1.3E-04	4.91E-06	1.1-14	8760	1.8E-03	7.9E-03
Chlorobenzene	1089-07-0	13,240	2.2E-05	8.31E-07	1.1-14	8760	3.1E-04	1.3E-03
Chloroform	67-66-3	13,240	5.9E-05	2.23E-06	1.1-14	8760	8.2E-04	3.6E-03
Chrysene	218-01-9	13,240	1.0E-07	3.78E-09	1.1-13	8760	1.4E-06	6.1E-06
Cumene	98-82-8	13,240	5.3E-06	2.00E-07	1.1-14	8760	7.4E-05	3.2E-04
Cyanide	74-90-8	13,240	2.5E-03	9.44E-05	1.1-14	8760	3.5E-02	1.5E-01
Dimethyl sulfate	77-78-1	13,240	4.8E-05	1.81E-06	1.1-14	8760	6.7E-04	2.9E-03
Ethyl benzene	100-41-4	13,240	9.4E-05	3.55E-06	1.1-14	8760	1.3E-03	5.7E-03
Ethyl chloride	75-00-3	13,240	4.2E-05	1.59E-06	1.1-14	8760	5.8E-04	2.6E-03
Ethylene dichloride	107-06-2	13,240	4.0E-05	1.51E-06	1.1-14	8760	5.6E-04	2.4E-03
Ethylene dibromide	106-93-4	13,240	1.2E-06	4.53E-08	1.1-14	8760	1.7E-05	7.3E-05
Fluoranthene	207-08-9	13,240	7.1E-07	2.68E-08	1.1-13	8760	9.9E-06	4.3E-05
Fluorene	86-73-7	13,240	9.1E-07	3.44E-08	1.1-13	8760	1.3E-05	5.5E-05
Formaldehyde	50-00-0	13,240	2.4E-04	9.06E-06	1.1-14	8760	3.3E-03	1.5E-02

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Emissions Calculations

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Potential HAP Emissions from Lime Kilns (combined)

Hazardous Air Pollutant	CAS Number	Coal Heat Content (Btu/lb)	Emission Factor (EF)[a] (lb/ton)	Emission Factor (EF)[b] (lb/MMBtu)	EF Reference AP-42 Table	Annual Hours of Operation (hr/yr)	Emissions (lb/hr)	Emissions (tpy)
Hexane	110-54-3	13,240	6.7E-05	2.53E-06	1.1-14	8760	9.3E-04	4.1E-03
Indeno(1,2,3,c,d)pyrene	193-39-5	13,240	6.1E-08	2.30E-09	1.1-13	8760	8.5E-07	3.7E-06
Isophorone	102771-74-4	13,240	5.8E-04	2.19E-05	1.1-14	8760	8.0E-03	3.5E-02
Methyl bromide	74-83-9	13,240	1.6E-04	6.04E-06	1.1-14	8760	2.2E-03	9.7E-03
Methyl chloride	74-87-3	13,240	5.3E-04	2.00E-05	1.1-14	8760	7.4E-03	3.2E-02
Methyl ethyl ketone	78-93-3	13,240	3.9E-04	1.47E-05	1.1-14	8760	5.4E-03	2.4E-02
Methyl hydrazine	60-34-4	13,240	1.7E-04	6.42E-06	1.1-14	8760	2.4E-03	1.0E-02
Methyl methacrylate	80-62-6	13,240	2.0E-05	7.55E-07	1.1-14	8760	2.8E-04	1.2E-03
Methyl tert butyl ether	1634-04-4	13,240	3.5E-05	1.32E-06	1.1-14	8760	4.9E-04	2.1E-03
Methylene chloride	75-09-2	13,240	2.9E-04	1.10E-05	1.1-14	8760	4.0E-03	1.8E-02
Naphthalene	91-20-3	13,240	1.3E-05	4.91E-07	1.1-13	8760	1.8E-04	7.9E-04
Phenanthrene	85-01-8	13,240	2.7E-06	1.02E-07	1.1-13	8760	3.7E-05	1.6E-04
Phenols	68610-51-5	13,240	1.6E-05	6.04E-07	1.1-14	8760	2.2E-04	9.7E-04
Polychlorinated dibenzo-p-dioxins[f]	PCDD	13,240	4.28E-08	1.62E-09	1.1-12	8760	5.9E-07	2.6E-06
Polychlorinated dibenzo-p-furans[g]	PCDF	13,240	2.01E-07	7.59E-09	1.1-12	8760	2.8E-06	1.2E-05
Propionaldehyde	123-38-6	13,240	3.8E-04	1.44E-05	1.1-14	8760	5.3E-03	2.3E-02
Pyrene	129-00-0	13,240	3.3E-07	1.25E-08	1.1-13	8760	4.6E-06	2.0E-05
Tetrachloroethylene	127-18-4	13,240	4.3E-05	1.62E-06	1.1-14	8760	6.0E-04	2.6E-03
Toluene	108-88-3	13,240	2.4E-04	9.06E-06	1.1-14	8760	3.3E-03	1.5E-02
Styrene	100-42-5	13,240	2.5E-05	9.44E-07	1.1-14	8760	3.5E-04	1.5E-03
Xylenes	1330-20-7	13,240	3.7E-05	1.40E-06	1.1-14	8760	5.1E-04	2.2E-03
Vinyl acetate	108-05-4	13,240	7.6E-06	2.87E-07	1.1-14	8760	1.1E-04	4.6E-04
Total Organic HAPs				**3.48E-04**				**0.56**
Inorganic HAPs								
Antimony	7440-36-0	13,240	1.80E-05	6.80E-07	1.1-18	8760	2.50E-04	1.09E-03
Arsenic	7440-38-2	13,240	4.10E-04	1.55E-05	1.1-18	8760	5.69E-03	2.49E-02
Beryllium	7440-41-7	13,240	4.56E-05	1.72E-06	Note (j)	8760	6.33E-04	2.77E-03
Cadmium	7440-43-9	13,240	5.10E-05	1.93E-06	1.1-18	8760	7.08E-04	3.10E-03
Chromium	18540-29-9	13,240	2.60E-04	9.82E-06	1.1-18	8760	3.61E-03	1.58E-02
Cobalt	7440-48-4	13,240	1.00E-04	3.78E-06	1.1-18	8760	1.39E-03	6.08E-03
Lead	7439-92-1	13,240	1.80E-04	6.80E-06	Note (i)	8760	2.50E-03	1.09E-02
Manganese	7439-96-5	13,240	4.90E-04	1.85E-05	1.1-18	8760	6.80E-03	2.98E-02
Mercury	7439-97-6	13,240	9.00E-05	3.40E-06	Note (c)	8760	1.25E-03	5.47E-03
Nickel	7440-02-0	13,240	2.80E-04	1.06E-05	1.1-18	8760	3.89E-03	1.70E-02
Selenium	7782-49-2	13,240	1.30E-03	4.91E-05	1.1-18	8760	1.80E-02	7.90E-02
Total Inorganic HAPs				**1.22E-04**				**0.20**

Potential HAP Emissions from Lime Kilns (combined)

Hazardous Air Pollutant	CAS Number	Coal Heat Content (Btu/lb)	Emission Factor (EF)[a] (lb/ton)	Emission Factor (EF)[b] (lb/MMBtu)	EF Reference AP-42 Table	Annual Hours of Operation (hr/yr)	Emissions (lb/hr)	Emissions (tpy)
Acid Gases								
Hydrochloric acid	7647-01-0	13,240	--	--	Note (h)	8760	8.44	36.95
Hydrofluoric acid	7664-39-3	13,240	2.5E-02	9.54E-04	Note (d)	8760	0.351	1.54
Total Acid Gases				**0.0010**				**38.49**
Total Calculated Maximum Potential HAP Emissions							**8.96**	**39.24**

[a] AP-42 Chapter 1.1 Bituminous and Subbituminous Coal Combustion (09/98).

[b] Coal pound per million Btu EF is calculated as follows: (lb HAP/ton coal)*(ton coal/2000 lb coal)*(lb coal/13,000 Btu)* (10^6Btu/MMBtu)= (lb HAP/MMBtu Coal).

[c] Potential emissions of mercury are calculated based on 0.06 ppmwd of Hg in coal and assuming 25% control from the kiln and baghouse. Also assumes 100% of Hg is emitted to the air.

[d] Potential emissions of HFare calculated based on 60 ppmwd of fluorine in coal and assuming 80% control from the kiln and baghouse. Also assumes 100% of F in coal is converted to HF.

[f] EF for total PCDD is the sum of total TCDD, total PeCDD, total HxCDD, total HpCDD, and total OCDD.

[g] EF for total PCDF is the sum of total TCDF, total PeCDF, total HxCDF, total HpCDF, and total OCDF.

[h] See subsequent sheet for calculation of HCl emissions.

[i] Potential emissions of lead are calculated based on 9.0 ppmwd of Pb in coal and assuming 99% control from the kiln and baghouse. Also assumes 100% of Pb is emitted to the air.

[j] Potential emissions of beryllium are calculated based on 2.28 ppmwd of Be in coal and assuming 99% control from the kiln and baghouse. Also assumes 100% of Be is emitted to the air.

Synergy Management, LLC
Kiln HCl Emission Rate Calculation

The HCl emission rate is calculated from the "conservative default concentration" of 10 ppm applied to preheater kilns in the National Lime Association report "Final Report on Modeling of Lime Kiln HCl Emissions," From Arline Seeger, NLA & Alan Kao, ENVIRON to Joe Wood & Jim Crowder, USEPA; 2/13/2002.

The conversion from 10 ppm to a lb/hr emission rate follows a two step procedure. First the concentration is converted from units of ppm to mg/m^3 based on exhaust gas temperature. Then the concentration value is converted to an hourly mass flow rate.

1. Concentration Conversion

Conc (mg/m^3) = [Conc. (mg/kg) * P * MW] / [R * T]

Where:

Conc. =	10	mg/kg (ppmvd)
P =	1	atm, pressure
MW =	36.5	kg/kg-mol, molecular weight of HCl
R =	0.082057	m^3-atm/kgmol-K, gas constant
T =	463.7	K, (375 F) exhaust temperature

Result:

Conc = 9.593 mg/m^3

2. Mass Flow Rate Calculation

ER (lb/hr) = [Conc (mg/m^3)] * [FR] * cf1 * cf2

Where:

FR =	55.4	m^3/s, actual design exhaust flow rate for single kiln
cf1 =	0.001	g/mg, conversion factor
cf2 =	7.937	(lb/hr)/(g/s), conversion factor

Result:

ER = 4.218 lb/hr, HCl emission rate per kiln

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Limestone Inactive Stockpile Wind Erosion Emissions

Emission Factor Calculation[1]

Month	Day	Wind Speed [(a)] u+ (mph)	Wind Speed [(a)] u+ (m/s)	Friction Velocity U* (m/s)				Erosion Potential (g/m²/event)			
				$U_s/U_r = 0.2$	$U_s/U_r = 0.6$	$U_s/U_r = 0.9$	$U_s/U_r = 1.1$	$U_s/U_r = 0.2$	$U_s/U_r = 0.6$	$U_s/U_r = 0.9$	$U_s/U_r = 1.1$
January	1	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
January	2	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
January	3	32	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
January	4	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
January	5	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
January	6	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
January	7	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
January	8	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
January	9	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
January	10	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
January	11	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
January	12	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
January	13	39	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
January	14	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
January	15	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
January	16	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
January	17	32	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
January	18	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
January	19	12	5	0.05	0.15	0.23	0.28	0.00	0.00	0.00	0.00
January	20	13	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
January	21	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
January	22	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
January	23	35	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
January	24	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
January	25	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
January	26	13	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
January	27	13	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
January	28	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
January	29	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
January	30	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
January	31	38	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
February	1	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
February	2	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
February	3	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
February	4	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
February	5	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
February	6	32	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
February	7	37	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
February	8	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
February	9	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
February	10	40	18	0.18	0.54	0.81	0.99	0.00	0.00	0.00	0.00
February	11	52	23	0.23	0.69	1.04	1.27	0.00	0.00	0.00	4.84
February	12	38	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
February	13	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
February	14	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
February	15	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
February	16	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
February	17	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
February	18	33	15	0.15	0.45	0.68	0.83	0.00	0.00	0.00	0.00
February	19	33	15	0.15	0.45	0.68	0.83	0.00	0.00	0.00	0.00
February	20	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
February	21	41	18	0.18	0.54	0.81	0.99	0.00	0.00	0.00	0.00
February	22	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
February	23	13	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
February	24	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
February	25	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
February	26	44	20	0.20	0.60	0.90	1.10	0.00	0.00	0.00	0.00
February	27	43	19	0.19	0.57	0.86	1.05	0.00	0.00	0.00	0.00
February	28	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
March	1	31	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
March	2	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
March	3	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
March	4	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
March	5	40	18	0.18	0.54	0.81	0.99	0.00	0.00	0.00	0.00
March	6	36	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00

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Limestone Inactive Stockpile Wind Erosion Emissions											
March	7	40	18	0.18	0.54	0.81	0.99	0.00	0.00	0.00	0.00
March	8	54	24	0.24	0.72	1.08	1.32	0.00	0.00	0.00	7.32
March	9	38	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
March	10	40	18	0.18	0.54	0.81	0.99	0.00	0.00	0.00	0.00
March	11	44	20	0.20	0.60	0.90	1.10	0.00	0.00	0.00	0.00
March	12	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
March	13	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
March	14	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
March	15	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
March	16	13	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
March	17	35	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
March	18	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
March	19	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
March	20	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
March	21	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
March	22	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
March	23	37	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
March	24	41	18	0.18	0.54	0.81	0.99	0.00	0.00	0.00	0.00
March	25	36	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
March	26	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
March	27	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
March	28	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
March	29	37	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
March	30	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
March	31	36	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
April	1	39	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
April	2	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
April	3	40	18	0.18	0.54	0.81	0.99	0.00	0.00	0.00	0.00
April	4	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
April	5	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
April	6	39	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
April	7	38	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
April	8	35	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
April	9	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
April	10	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
April	11	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
April	12	31	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
April	13	37	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
April	14	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
April	15	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
April	16	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
April	17	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
April	18	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
April	19	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
April	20	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
April	21	32	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
April	22	31	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
April	23	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
April	24	39	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
April	25	39	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
April	26	45	20	0.20	0.60	0.90	1.10	0.00	0.00	0.00	0.00
April	27	46	21	0.21	0.63	0.95	1.16	0.00	0.00	0.00	0.95
April	28	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
April	29	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
April	30	41	18	0.18	0.54	0.81	0.99	0.00	0.00	0.00	0.00
May	1	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
May	2	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
May	3	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
May	4	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
May	5	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
May	6	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
May	7	38	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
May	8	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
May	9	43	19	0.19	0.57	0.86	1.05	0.00	0.00	0.00	0.00
May	10	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00

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May	11	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
May	12	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
May	13	39	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
May	14	48	21	0.21	0.63	0.95	1.16	0.00	0.00	0.00	0.95
May	15	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
May	16	31	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
May	17	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
May	18	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
May	19	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
May	20	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
May	21	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
May	22	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
May	23	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
May	24	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
May	25	36	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
May	26	35	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
May	27	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
May	28	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
May	29	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
May	30	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
May	31	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
June	1	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
June	2	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
June	3	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
June	4	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
June	5	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
June	6	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
June	7	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
June	8	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
June	9	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
June	10	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
June	11	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
June	12	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
June	13	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
June	14	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
June	15	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
June	16	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
June	17	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
June	18	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
June	19	45	20	0.20	0.60	0.90	1.10	0.00	0.00	0.00	0.00
June	20	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
June	21	12	5	0.05	0.15	0.23	0.28	0.00	0.00	0.00	0.00
June	22	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
June	23	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
June	24	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
June	25	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
June	26	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
June	27	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
June	28	36	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
June	29	32	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
June	30	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
July	1	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
July	2	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
July	3	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
July	4	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
July	5	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
July	6	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
July	7	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
July	8	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
July	9	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
July	10	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
July	11	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
July	12	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
July	13	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
July	14	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00

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Limestone Inactive Stockpile Wind Erosion Emissions											
July	15	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
July	16	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
July	17	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
July	18	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
July	19	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
July	20	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
July	21	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
July	22	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
July	23	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
July	24	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
July	25	33	15	0.15	0.45	0.68	0.83	0.00	0.00	0.00	0.00
July	26	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
July	27	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
July	28	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
July	29	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
July	30	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
July	31	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
August	1	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
August	2	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
August	3	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
August	4	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
August	5	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
August	6	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
August	7	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
August	8	36	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
August	9	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
August	10	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
August	11	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
August	12	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
August	13	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
August	14	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
August	15	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
August	16	37	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
August	17	31	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
August	18	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
August	19	37	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
August	20	33	15	0.15	0.45	0.68	0.83	0.00	0.00	0.00	0.00
August	21	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
August	22	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
August	23	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
August	24	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
August	25	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
August	26	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
August	27	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
August	28	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
August	29	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
August	30	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
August	31	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
September	1	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	2	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	3	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	4	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
September	5	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
September	6	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
September	7	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	8	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
September	9	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
September	10	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
September	11	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
September	12	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	13	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	14	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
September	15	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
September	16	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
September	17	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00

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Limestone Inactive Stockpile Wind Erosion Emissions											
September	18	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	19	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
September	20	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
September	21	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	22	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
September	23	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
September	24	12	5	0.05	0.15	0.23	0.28	0.00	0.00	0.00	0.00
September	25	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
September	26	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
September	27	33	15	0.15	0.45	0.68	0.83	0.00	0.00	0.00	0.00
September	28	45	20	0.20	0.60	0.90	1.10	0.00	0.00	0.00	0.00
September	29	33	15	0.15	0.45	0.68	0.83	0.00	0.00	0.00	0.00
September	30	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	1	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	2	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
October	3	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
October	4	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
October	5	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
October	6	51	23	0.23	0.69	1.04	1.27	0.00	0.00	0.00	4.84
October	7	44	20	0.20	0.60	0.90	1.10	0.00	0.00	0.00	0.00
October	8	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
October	9	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	10	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	11	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	12	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
October	13	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
October	14	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	15	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	16	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	17	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
October	18	27	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
October	19	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
October	20	18	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
October	21	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
October	22	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
October	23	38	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
October	24	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
October	25	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
October	26	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
October	27	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
October	28	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
October	29	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
October	30	45	20	0.20	0.60	0.90	1.10	0.00	0.00	0.00	0.00
October	31	37	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
November	1	13	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
November	2	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
November	3	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
November	4	13	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
November	5	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
November	6	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
November	7	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
November	8	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
November	9	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
November	10	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
November	11	12	5	0.05	0.15	0.23	0.28	0.00	0.00	0.00	0.00
November	12	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
November	13	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
November	14	21	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
November	15	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
November	16	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
November	17	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
November	18	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
November	19	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
November	20	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
November	21	13	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00

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Limestone Inactive Stockpile Wind Erosion Emissions											
November	22	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
November	23	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
November	24	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
November	25	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
November	26	30	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
November	27	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
November	28	15	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
November	29	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
November	30	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
December	1	31	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
December	2	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
December	3	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
December	4	29	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
December	5	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
December	6	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
December	7	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
December	8	39	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
December	9	49	22	0.22	0.66	0.99	1.21	0.00	0.00	0.00	2.72
December	10	37	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
December	11	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
December	12	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
December	13	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
December	14	28	13	0.13	0.39	0.59	0.72	0.00	0.00	0.00	0.00
December	15	32	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
December	16	16	7	0.07	0.21	0.32	0.39	0.00	0.00	0.00	0.00
December	17	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
December	18	12	5	0.05	0.15	0.23	0.28	0.00	0.00	0.00	0.00
December	19	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
December	20	14	6	0.06	0.18	0.27	0.33	0.00	0.00	0.00	0.00
December	21	17	8	0.08	0.24	0.36	0.44	0.00	0.00	0.00	0.00
December	22	22	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
December	23	31	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
December	24	32	14	0.14	0.42	0.63	0.77	0.00	0.00	0.00	0.00
December	25	36	16	0.16	0.48	0.72	0.88	0.00	0.00	0.00	0.00
December	26	25	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
December	27	24	11	0.11	0.33	0.50	0.61	0.00	0.00	0.00	0.00
December	28	39	17	0.17	0.51	0.77	0.94	0.00	0.00	0.00	0.00
December	29	23	10	0.10	0.30	0.45	0.55	0.00	0.00	0.00	0.00
December	30	20	9	0.09	0.27	0.41	0.50	0.00	0.00	0.00	0.00
December	31	26	12	0.12	0.36	0.54	0.66	0.00	0.00	0.00	0.00
							Non-zero days =	0	0	0	6
							Events per day =	12.00	12.00	12.00	12.00
							Subtotal potential, Pst ($g/m^2/yr$) =	0.00	0.00	0.00	259.45
							Subtotal potential, Pst ($ton/m^2/yr$) =	0.00	0.00	0.00	2.86E-04
							Subtotal potential, Pst ($g/m^2/hr$) =	0.00	0.00	0.00	3.66
							Subtotal potential, Pst ($lb/m^2/hr$) =	0.00	0.00	0.00	4.03E-06

Draft Permit T181-26877-0050, Supplemental Information
AP42 Wind Erosion Calculations

Limestone Inactive Stockpile Wind Erosion Emissions

Wind Speed Calculations:

$U^* = (U_s/U_t)(U^+)(C)$ [b]

$C = (0.4)\,[\ln(10 / 0.005) / \ln(z / 0.005)] / [3.22 - \ln(z_o)]$ [b]

Where:

U^* =	var	friction velocity for pile, m/s (results in table above)
U_s/U_t =	var	geometric wind speed normalization constant, see Figure 13.2.5-2
U^+ =	var	maximum daily 5-sec observed wind speed[a], m/s
z =	6.4	anemometer height for observed wind speed, m
z_o =	0.003	surface roughness height for pile[c], cm
C =	0.05	calculated constant

Emissions Potential Calculations:

$P = [58\,(U^* - U_t^*)^2 + 25\,(U^* - U_t^*)]$ Eq. 3

Where:

P =	var	erosion potential, g/m^2/event (results at bottom of table above)
U^* =	var	friction velocity for pile, m/s
U_t^* =		threshold friction velocity for pile, m/s
=	1.12	for uncrusted coal pile, Table 13.2.5-2

Emissions Calculations:

ER = Pst * A * f * D * c * k

Where:

ER =	var	emission rate for each pollutant, ton/yr
Pst =	var	subtotal emission potential for each Us/Ur category, ton/m^2/yr (see above)
A =	11,844	total pile area, m^2 (127,359 ft^2)
f =	var	fraction of pile area for which Us/Ur applies (see table below)
D =	100%	portion of pile disturbed (conservative assumption)
c =	0%	control efficiency (assumed)
k =	var	particle size multiplier, pg. 13.2.5-3: PM = 1.0, PM10 = 0.5, PM2.5 = 0.075

Pile Shape Us/Ur Area Distributions (f):

	Us/Ur			
Pile Shape[d]	0.2	0.6	0.9	1.1
A	0.40	0.48	0.12	0.00
B1	0.36	0.50	0.14	0.00
B2	0.31	0.51	0.15	0.03
B3	0.28	0.54	0.14	0.04

Results:

Pile Shape	B3	*note (d)*				
Us/Ur		0.2	0.6	0.9	1.1	
Area fraction[e]		0.28	0.54	0.14	0.04	Total
TSP, tpy		0.00	0.00	0.00	0.14	0.14
PM10, tpy		0.00	0.00	0.00	0.07	0.07
PM2.5, tpy		0.00	0.00	0.00	0.01	0.01
TSP, lb/hr		0.00E+00	0.00E+00	0.00E+00	1.91E-03	1.91E-03
PM10, lb/hr		0.00E+00	0.00E+00	0.00E+00	9.56E-04	9.56E-04
PM2.5, lb/hr		0.00E+00	0.00E+00	0.00E+00	1.43E-04	1.43E-04

Draft Permit T181-26877-0050, Supplemental Information
AP42 Wind Erosion Calculations

Limestone Inactive Stockpile Wind Erosion Emissions

Pile Geometry

Pile Name	Mat'l	Angle of Repose	Radius of Pile	Height of Pile	Surface Area	
		(degree)	(ft)	(ft)	(ft^2)	(m^2)
Kiln Feed Pile 1	limestone	35	65.0	45.5	16,204	1505.37
Kiln Feed Pile 2	limestone	35	66.0	46.2	16,706	1552.04
Kiln Feed Pile 3	limestone	35	67.0	46.9	17,216	1599.43
Kiln Feed Pile 4	limestone	35	45.0	31.5	7,766	721.51
Kiln Feed Pile 5	limestone	35	70.0	49.0	18,792	1745.87
Oversize Pile 7	limestone	35	20.0	14.0	1,534	142.52
Undersize Pile 8	limestone	35	20.0	14.0	1,534	142.52
BitStone Pile 6	limestone	35	49.0	34.3	9,208	855.48
Fuel pile	coal/coke	35	53.0	37.1	10,773	1000.85
					99,734	9,266

Pile Wind Erosion Emissions

Pile Name	Mat'l	Emission Rate TP		Emission Rate PM10		Emission Rate PM2.5	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Kiln Feed Pile 1	limestone	2.429E-04	1.72E-02	1.215E-04	8.61E-03	1.822E-05	1.29E-03
Kiln Feed Pile 2	limestone	2.505E-04	1.78E-02	1.252E-04	8.88E-03	1.878E-05	1.33E-03
Kiln Feed Pile 3	limestone	2.581E-04	1.83E-02	1.291E-04	9.15E-03	1.936E-05	1.37E-03
Kiln Feed Pile 4	limestone	1.164E-04	8.25E-03	5.822E-05	4.13E-03	8.733E-06	6.19E-04
Kiln Feed Pile 5	limestone	2.817E-04	2.00E-02	1.409E-04	9.99E-03	2.113E-05	1.50E-03
Oversize Pile 7	limestone	2.300E-05	1.63E-03	1.150E-05	8.15E-04	1.725E-06	1.22E-04
Undersize Pile 8	limestone	2.300E-05	1.63E-03	1.150E-05	8.15E-04	1.725E-06	1.22E-04
BitStone Pile 6	limestone	1.381E-04	9.79E-03	6.903E-05	4.89E-03	1.035E-05	7.34E-04
Fuel pile	coal/coke	1.615E-04	1.14E-02	8.076E-05	5.72E-03	1.211E-05	8.59E-04

Notes:

General — Calculations are all based on AP-42, Chapter 13.2.5-3, Industrial Wind Erosion (11/06).

General — These calculations assume piles are disturbed 12 times per day. They also assume 100 percent of each pile is disturbed each time. Finally, they assume the maximum daily wind speed occurs between each of the 12 daily disturbances. On the whole, these assumptions tend to overestimate wind erosion emissions significantly.

(a) Data are from South Bend, IN, Station 14848, for 2009. The AP-42 chapter prescribes the use of a "fastest mile" wind, but this parameter is no longer measured and historical data are not available. Wind speed values that are readily available on a daily basis are the fastest 5-second average and fastest 2-minute average. EPA provides no guidance on what available parameter to substitute for fastest mile. The 5-second average was selected for this demonstration because it would conservatively result in higher emissions than the 2-minute average. Note that the average 5-second value for this data set of 25 mph, if considered as a fastest mille value, would have an effective averaging time of 2.4 minutes [(60 min/hr)/(25 mi/hr)=2.4 minutes to travel one mile]. This indicates that a 2-minute average may be a more appropriate substitution.

(b) These equations are derived from several equations presented in AP-42, Chapter 13.2.5-3.

(c) Per Table 13.2.5-2 for overburden, scoria (roadbed material), and uncrusted coal pile.

(d) See Figure 13.2.5-7 for distribution of Us/Ur categories for various pile shapes and wind angles. See Table 13.2.5-3 for quantitative area distributions of Us/Ur categories for various pile shapes and wind angles.

APPENDIX Aa - Addendum to Technical Support Document

Emissions Calculations

T181-26877-00050 Date: November 10, 2010

Synergy Management, LLC
Quarry Emissions

Input Values:

Lime production capacity	1,800	tpd
Stone-to-lime ratio	2	
Waste factor (assumed)	20%	
Annual stone throughput	1,576,800	tpy

	TP Em Fctr	PM10 Em Fctr	PM2.5 Em Fctr	Units	Parameter	Units	# of Srcs	Cntrl	Cntrl Eff (%)	Em Rate, TP (tpy)	Em Rate, PM10 (tpy)	Em Rate, PM2.5 (tpy)	Notes
Ore removal	0.01	0.005	5.00E-04	lb/ton	1576800	ton/yr	1	---	0	7.88	3.942	0.394	1,8
Ore dumping - FEL to truck	3.36E-05	1.60E-05	1.60E-06	lb/ton	1576800	ton/yr	1	---	0	0.03	0.013	0.001	2,8
Ore dumping - Truck to Hopper	3.36E-05	1.60E-05	1.60E-06	lb/ton	1576800	ton/yr	1	BOP	0	0.03	0.01	0.00	2,8
Drilling	1.3	0.16	0.016	lb/hole	1300	holes/yr	1	Cyclone	70	0.25	0.031	0.003	1,3,8
Blasting	58.6	29.3	2.93	lb/blast	260	blasts/yr	1	--	0	7.62	3.809	0.381	1,4,8
Hauling (FELs)	6	3	0.3	lb/VMT	2986	vmt/yr	1	Water Spray	70	2.69	1.344	0.134	1,5,6,8
Hauling (loadout trucks)	6	3	0.3	lb/VMT	29864	vmt/yr	1	Water Spray	70	26.88	13.44	1.34	1,6,7,8
Waste Loading/Dumping	0.0084	0.0084	8.40E-04	lb/ton	315360	ton/yr	1	---	0	1.32	1.325	0.132	1,8
Disturbed Area: New	760	380	38	lb/acre	19	acre	1	---	0	7.22	3.610	0.361	1,8
									Total	**53.92**	**27.52**	**2.75**	
											6.284	0.628	lb/hr

Notes:

1 Emission factors used for annual emissions reporting and fee payment at limestone quarry in Montana.
2 PM10 factor from AP-42, Table 11.19.2-2 (8/04) for truck unloading, fragmented stone (uncontrolled). Assumed TP equals 2.1 times PM10.
3 Project owners project typical blasting schedule of five per week.
4 Assume five holes drilled per blast.
5 Assume FEL miles traveled equals 10% of haul truck miles traveled.
6 Control efficiency is considered feasible base on the previously submitted dust control plan. For results of unpaved road dust control efficiency tests, see "Particulate Emission Measurements from Controlled Constructin Activities," National Risk Management REsearch Laboratory, April 2001, EPA-600/R-01-031.
7 Haul truck VMT calculated as follows:

ore processed	1,576,800	tons
truck capacity	20	tons, typical
trips req'd	78840	
length of haul road	1000	feet, estimate
VMT	29864	miles/yr

8 PM2.5 emission rates are assumed to be 10% of PM10 emission rates, based on AP-42 13.2.2-2.

Synergy Management, LLC
Emergency Generator Emissions

Input Values:

347 bhp, worst-case engine power output
14.8 gal/hr, worst-case diesel consumption rate
0.0015% max. S content of ULS diesel
500 hr/yr, maximum annual operation
0.91 typical specific gravity of No. 4 diesel
7.594 lb/gal, density of No. 4 diesel (calculated)
64 MW of SO2
32 MW of S
0.0022 lb/g, conversion factor

SO2:

(14.8 gal diesel / hr)*(7.594 lb / gal)*(1.5E-05 lb S / lb diesel)*(64 lb SO2 / 32 lb S) =

0.0034 lb/hr SO2
0.0008 ton/yr SO2

PM10, CO, & NOx:

	Em. Fctr (g/HP-hr)	Em. Rate (lb/hr)	Em. Rate (ton/yr)
PM10	0.15	0.1145	0.0286
PM2.5	0.15	0.1145	0.0286
CO	2.60	1.985	0.4962
NOx/NMHC	3.00	2.290	0.5726

Synergy Management, LLC
Lime Plant Road Fugitive Particulate Emissions

ɔut Values:

26	tons, haul truck capacity
4.5	cu. yds, FEL bucket capacity (for CAT 950 front end loader)
52	lb/ft^3, coal bulk density (Powder and Bulk.com)
1.053	tons coal/trip, FEL haul rate (calculated)
23.2	tons, average FEL weight
33	tons, average haul truck weight
0.082	empirical constant 'k' for TSP (PM_{30})
0.016	empirical constant 'k' for PM10
0.004	empirical constant 'k' for PM2.5
8.2	g/m^2, silt loading ('sL'), ref. AP-42 Table 13.2.1-4, quarry roads
5E-04	Emission factor ('C') for 1980s vehicle fleet exhaust, brake wear, and tire wear for PM and PM_{10} (lb/VMT) - Table 13.2.1-2
4E-04	Emission factor ('C') for 1980s vehicle fleet exhaust, brake wear, and tire wear for $PM_{2.5}$ (lb/VMT) - Table 13.2.1-2
144	number days with preciptation > 0.01 in ('P'), South Bend, IN climate station, http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/prcpdays.html
365	Number of days in the averaging period ('N')
3.98	lb/VMT, TSP emission factor for FEL (calculated)[a]
0.78	lb/VMT, PM10 emission factor for FEL (calculated)[a]
0.19	lb/VMT, PM2.5 emission factor for FEL (calculated)[a]
6.75	lb/VMT, TSP emission factor for haul trucks (calculated)[a]
1.32	lb/VMT, PM10 emission factor for haul trucks (calculated)[a]
0.33	lb/VMT, PM2.5 emission factor for haul trucks (calculated)[a]
92%	Fuel road watering control efficiency[b]
87%	Lime road watering control efficiency[b]
16.11	tph, design fuel feed rqmnt for 1800 tpd lime production
75	tph, design lime production rate (1800 tpd)
37.5	tph, design rail loadout rate for lime (900 tpd)

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Emissions Calculations T181-26877-00050 Date: November 10, 2010

Road Segment	Material	Design TP Rate (tph)	Surge Factor	Short-Term TP Rate (tph)	Vehicle Capacity (tons/trip)	Travel Distance (mi)	Vehicle Miles per Hour	TSP Em. Rate (lb/hr)	TSP Em. Rate (tpy)	PM10 Em. Rate (lb/hr)	PM10 Em. Rate (tpy)	PM2.5 Em. Rate (lb/hr)	PM2.5 Em. Rate (tpy)
Fuel deliv	coal/coke	16.1	1.2	19.3	26	1	0.74353846	0.40151077	1.75861717	0.07851766	0.34390736	0.01962942	0.08597684
Fuel FEL	coal/coke	16.1	1.2	19.3	1.053	0.04	0.73435897	0.2338199	1.02413115	0.045824	0.20070912	0.01116226	0.04889068
Lime	product li	38	1.2	45	26	1.13	1.95576923	1.7161875	7.51690125	0.33561	1.4699718	0.0839025	0.36749295
Bitstone F	Bitstone	40	1.2	48	26	1	1.84615385	1.62	7.0956	0.3168	1.387584	0.0792	0.346896

Notes:

(a) Derived from AP-42 13.2.1 Eq (2) (11/06).
(b) EPA quidance, EPA-450/2-92-004, "Fugitive Dust Background Document and Technical

Tailpipe Emissions (Mobile6 EPA Model)

-Most conservative values are based on using January model output files.

n Factor VOC =	0.461	g/mi =	0.001016	lb/mi
ion Factor CO =	2.742	g/mi =	0.006045	lb/mi
n Factor NOx =	9.080	g/mi =	0.020018	lb/mi
on Factor SO_2 =	0.0132	g/mi =	2.91E-05	lb/mi
on Factor TSP =	0.3304	g/mi =	0.000728	lb/mi
n Factor PM_{10} =	0.2753	g/mi =	0.000607	lb/mi
n Factor $PM_{2.5}$ =	0.2753	g/mi =	0.000607	lb/mi

	Fuel Trucks		FEL		Lime Trucks		Bitstone Trucks	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
VOC	0.0008	0.0033	0.0002	0.0010	0.0020	0.0087	0.0019	0.0082
CO	0.0045	0.0197	0.0014	0.0062	0.0118	0.0518	0.0112	0.0489
NOx	0.0149	0.0652	0.0047	0.0205	0.0392	0.1715	0.0370	0.1619
SO2	0.0000	0.0001	0.0000	0.0000	0.0001	0.0002	0.0001	0.0002
TSP	0.0005	0.0024	0.0002	0.0007	0.0014	0.0062	0.0013	0.0059
PM_{10}	0.0005	0.0020	0.0001	0.0006	0.0012	0.0052	0.0011	0.0049
PM2.5	0.0005	0.0020	0.0001	0.0006	0.0012	0.0052	0.0011	0.0049

Total Particulate (tailpipe + fugitive dust)

	Fuel Trucks		FEL		Lime Trucks		Bitstone Trucks	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
TSP	0.4021	1.7610	0.2340	1.0249	1.7176	7.5231	1.6213	7.1015
PM_{10}	0.0790	0.3459	0.0460	0.2013	0.3368	1.4752	0.3179	1.3925
PM2.5	0.0201	0.0880	0.0113	0.0495	0.0851	0.3727	0.0803	0.3518

Attachment Bb

Addendum to the Technical Support Document

Air Quality Analysis

Synergy Management LLC - Lime Plant

Monon, Indiana (White County)

Tracking and Plant ID: 181-26877-00050

Proposed Project

Synergy Management, LLC (Synergy) first submitted their original PSD application on July 2006. They resubmitted their PSD application on August 2008. Another revision was sent in September 2010 to address the new air quality standards.

Synergy plans to build a lime plant that will manufacture dolomitic lime one mile south of Monon, Indiana. The specifications for the site include using two preheater rotary kilns with a total nominal production capacity of 1800 tons per day.

Bison Engineering prepared the modeling portion of the permit application for Synergy. This technical support document provides the air quality analysis review of the submitted modeling by Bison Engineering for Synergy.

Analysis Summary

Based on the potential emissions after controls, a PSD air quality analysis was triggered for SO_2, PM_{10}, $PM_{2.5}$, CO, and NO_2. For VOCs, no analysis is required. The significant impact analysis for NO_2, SO_2, $PM_{2.5}$, and PM_{10} determined that modeling concentrations exceeded the significant impact levels. A refined analysis was required and showed no violation of the NAAQS and the PSD increment. CO did not exceed significant impact levels. (Pre-construction monitoring requirements are not necessary since existing monitoring is available.) An additional impact analysis was conducted and showed no significant impact. A Hazardous Air Pollutant (HAP) analysis was performed since emissions of one HAP were greater than 10 tons per year. Based on the HAPs modeling results, the source will not pose a health concern.

Air Quality Impact Objectives

The purpose of the air quality impact analysis in the permit application is to accomplish the following objectives. Each objective is individually addressed in this document in each section outlined below.

A. Establish which pollutants require an air quality analysis based on PSD significant emission rates.

B. Provide analyses of actual stack heights with respect to Good Engineering Practice (GEP), the meteorological data used, a description of the model used in the analysis, and the receptor grid utilized for the analyses.

C. Determine the significant impact level, the area impacted by the source's emissions and background air quality levels.

D. Demonstrate that the source will not cause or contribute to a violation of the National Ambient Air Quality Standard (NAAQS) or PSD increment if the applicant exceeds significant impact levels.

E. Perform a qualitative analysis of the source's impact on general growth, soils, vegetation and visibility in the impact area with emphasis on any Class I areas. The nearest Class I area is Kentucky's Mammoth Cave National Park.

F. Perform a Hazardous Air Pollutant (HAP) screening for informational purposes.

G. Summarize the Air Quality Analysis.

Section A - Pollutants Analyzed for Air Quality Impact

Applicability

The PSD requirements, 326 IAC 2-2, apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a major stationary source or modification. Significant emission levels for each pollutant are defined in 326 IAC 2-2-1 and in the Code of Federal Regulations (CFR) 52.21(b) (23) (i).

Proposed Project Emissions

VOCs, PM_{10}, $PM_{2.5,}$ NO_2, SO_2, CO, Pb, Beryllium, Mercury, Fluorides, and Sulfuric Acid Mist are the pollutants that will be emitted from Synergy and are summarized below in Table 1. PM_{10}, $PM_{2.5,}$ NO_2, SO_2, CO, and Beryllium potential emissions after controls exceed the PSD significant emission rates and will require an air quality analysis.

TABLE 1
Significant Emission Rates for PSD

POLLUTANT	**SOURCE EMISSION RATE** (Facility totals in tons/year)	**SIGNIFICANT EMISSION RATE** (tons/year)	**PRELIMINARY AQ ANALYSIS REQUIRED**
VOC[1]	66.3 40		No[1]
PM_{10} 220.7		15	Yes
$PM_{2.5}$ 95.8		10	Yes
NO_2 1151		40	Yes
SO_2 657		40	Yes
CO 822		100	Yes
Pb .01		.06	No

Sulfuric Acid Mist[2] 6.04		7	No
Beryllium[2] .003		.0004	Yes
Mercury[2] .005		.1	No
Flourides[2] 1.54		3	No

[1] An air quality analysis is not performed for VOCs because they are photochemically reactive Photochemical models like UAM-V are used in regulatory or policy assessments to stimulate the impacts from all sources by estimating pollutant concentrations and deposition of both inert and chemically reactive pollutants over large spatial scales. Currently, U.S. EPA has no regulatory photochemical models which can take into account small spatial scales or single source PSD modeling for ozone.
[2] Beryllium, Fluorides, and Mercury have monitoring concentration thresholds listed in 326 IAC 2-2-4. There is no National Ambient Air Quality Standard for these pollutants. Sulfuric Acid Mist has no monitoring threshold or National Ambient Air Quality Standard. No AQ analysis is required for Sulfuric Acid Mist under the PSD regulations.

Synergy's permitted emission rates were taken from emissions calculation sheets on page 15 of their application and recent modeling submitted by Bison Engineering. These are the emission rates that were modeled in Table 1.

Section B – Good Engineering Practice (GEP), Met Data, Model Used, Receptor Grid and Terrain

Stack Height Compliance with Good Engineering Practice (GEP)

Applicability

Stacks should comply with GEP requirements established in 326 IAC 1-7-4. If stacks are lower than GEP, excessive ambient concentrations due to aerodynamic downwash may occur. Dispersion modeling credit for stacks taller than 65 meters (213 feet) are limited to GEP for the purpose of establishing emission limitations. The GEP stack height takes into account the distance and dimensions of nearby structures, which would affect the downwind wake of the stack. The downwind wake is considered to extend five times the lesser of the structure's height or width. A GEP stack height is determined for each nearby structure by the following formula:

$$Hg = H + 1.5L$$

Where: Hg is the GEP stack height
H is the structure height
L is the structure's lesser dimension (height or width)

New Stacks

Since the new stack heights for Synergy are below GEP stack height, the effect of aerodynamic downwash will be accounted for in the air quality analysis for the project.

Meteorological Data

The meteorological data used in AERMOD consisted of 1988 through 1992 surface data from the South Bend, Indiana and upper air measurements taken at Peoria, Illinois. The meteorological data was downloaded from Lakes Environmental and preprocessed using AERMET.

Model Description

Bison Engineering used AERMOD, Version 07026 and Version 09292. Version 07026 was used for all the modeling submitted August 2008. Version 09292 was used for the modeling submitted in

September 2010. An update to the AERMOD dispersion model was released by EPA on October 23, 2009. This new release, version 09292, contains a number of modifications and enhancements to the previous version 07026. A detailed list of changes can be found in the latest Model Change Bulletin (MCB) at http://www.epa.gov/scram001/models/aermod/aermod_mcb3.txt. Office of Air Quality (OAQ) used the same model versions in their air quality analysis review to determine maximum off-property concentrations or impacts for each pollutant. All regulatory default options were utilized in the U.S. EPA approved model, as listed in the 40 Code of Federal Register Part 51, Appendix W "Guideline on Air Quality Models".

Receptor Grid

OAQ modeling used the same receptor grids generated by Bison Engineering. The receptor grid is outlined below:

- 100 meter spacing along the facility's property boundary,
- 100 meter spacing from 0 to 1,000 meters from the facility,
- 250 meters spacing from 1,000 to 3,000 meters from the facility,
- 500 meters spacing from 3,000 to 10,000 meters from the facility.

Treatment of Terrain

Receptor terrain elevation inputs were interpolated from DEM (Digital Elevation Model) data obtained from the USGS. DEM terrain data was preprocessed using AERMAP. The terrain files that were used in the terrain analysis can be found on the CD-ROM in Appendix J of the air quality technical support document provided by Bison Engineering.

Section C - Significant Impact Level/Area (SIA) and Background Air Quality Levels

A significant impact analysis was conducted to determine if the source would exceed the PSD significant impact levels (concentrations). If the source's concentrations would exceed these levels, further air quality analysis is required. Refined modeling for PM_{10}, $PM_{2.5}$, SO_2, and NO_2 was required because the results did exceed significant impact levels. Significant impact levels are defined by the following time periods in Table 2 below with all maximum-modeled concentrations from the worst case operating scenarios. A full conversion of NO to NO_2 was assumed.

TABLE 2
Significant Impact Analysis

POLLUTANT	TIME AVERAGING PERIOD	MAXIMUM MODELED IMPACTS (ug/m^3)	SIGNIFICANT IMPACT LEVEL (ug/m^3)	REFINED AQ ANALYSIS REQUIRED
NO_2	Annual*	2.7	1	Yes
NO_2	1 hour*	108.0	7.55	Yes
PM_{10}	Annual*	4.4	1	Yes
PM_{10}	24 hour*	22.1	5	Yes
$PM_{2.5}$	Annual*	1.4	.3	Yes
$PM_{2.5}$	24 hour	7.9	1.2	Yes
SO_2	3 hour*	52.5	25	Yes
SO_2	24 hour*	19.2	5	Yes
SO_2	Annual*	1.5	1	Yes

SO_2	1 hour*	63.3	7.80	Yes
CO 1	hour*	82.0	2000	No
CO 8	hour*	53.4	500	No

*First highest values per EPA NSR manual October 1990. Impacts are from Synergy only.

Pre-construction Monitoring Analysis

Applicability

The PSD rule, 326 IAC 2-2-4, requires an air quality analysis of the new source or the major modification to determine if the pre-construction monitoring threshold is triggered. In most cases, monitoring data taken from a similar geographic location can satisfy this requirement if the pre-construction monitoring threshold has been exceeded. Also, post construction monitoring could be required if the air quality in that area could be adversely impacted by applicant's emissions. Beryllium has a monitoring concentration threshold listed in 326 IAC 2-2-4.

Modeling Results

The modeling results were compared to the PSD preconstruction monitoring thresholds. The results are shown in the table below.

TABLE 3
Preconstruction Monitoring Analysis

POLLUTANT	TIME AVERAGING PERIOD	MAXIMUM MODELED IMPACTS (ug/m^3)	DEMINIMIS LEVEL (ug/m3)	ABOVE DE MINIMIS LEVEL
NO_2 Annual*		2.7	14	No
PM_{10}	24 hour*	22.1	10	Yes
$PM_{2.5}$	24 hour*	7.9	4	Yes
SO_2	24 hour*	19.2	13	Yes
Beryllium 24	hour*	.00009	.001	No

*First highest values per EPA NSR manual October 1990. Maximum modeled impacts are from Synergy only.

PM_{10}, $PM_{2.5}$ and SO_2 did trigger the preconstruction monitoring threshold level. Synergy can satisfy the preconstruction monitoring requirement since there is air quality monitoring data representative of the area in other counties.

Background Concentrations

Applicability

EPA's "Ambient Monitoring Guidelines for Prevention of Significant Deterioration" (EPA-450/4-87-007) Section 2.4.1 is cited for approval of the monitoring sites chosen for this area.

Background Monitors

Background data was taken from representative monitoring stations for Synergy. The PM_{10} monitoring station is located in Lake County and the NO_2 monitoring station is located in Hendricks County. For the new 1 hour standards, the $PM_{2.5}$ monitoring station is located in Tippecanoe County. For SO_2, a monitoring site selection analysis was performed to get a representative value and avoid double counting of a NAAQS inventory source. Maximum monitoring concentrations were used from the latest three years of data for NO_2 and SO_2. The background design value was used for $PM_{2.5}$. For all 24-hour background concentrations, the averaged second highest monitoring values were used. Annual background concentrations were taken from the maximum annual values. It was agreed between Synergy and OAQ that this approach is taken in place of the preconstruction monitoring requirement.

SO_2 Monitor Site Selection Analysis

The closest SO_2 monitor to the proposed Synergy location is the Wheatfield monitoring site. The monitor at Wheatfield shows a maximum value of 330 ug/m^3 and a three year design value of 173 ug/m^3. This source-oriented monitor is correctly sited to show maximum impact from the NIPSCO Schahfer plant, but is too high to be considered a background monitor for the Synergy area. This documents a demonstration that is needed to develop an appropriate background value.

Proposed Background Monitor Location

The closest Indiana monitor to Synergy's proposed location is a SO_2 monitor in Wheatfield in Jasper County. The monitor site ID is 180730002.

According to the August 23, 2010, memo from Tyler Fox, a "first tier" assumption that may be applied without further justification is to add the overall highest hourly background SO_2 concentration from a "representative monitor" to the modeled design value. The memo goes on to state that some level of temporal pairing of modeled and monitored values may be considered on a case by case basis with adequate justification and documentation. No further guidance has been given on what kind of temporal pairing would be acceptable for approval.

The overall highest value from the Wheatfield monitor in the past three years is 126 ppb (330.12 ug/m^3). The new 1-hour SO_2 standard is 75 ppb (196 ug/m^3). This background value is over the standard before adding Synergy's contribution. The monitored value from Wheatfield is due in large part to the NIPSCO Schahfer Power Plant located 2.5 miles NE of the monitor.

Given the proposed location of the Synergy plant in White county, no major industrial source is located within 2.5 miles of Synergy, unlike the Schahfer Power Plant proximity to the Wheatfield monitor. OAQ provided a map to illustrate this fact. As can be seen, the closest SO_2 source over ten tons per year is in Jasper County approximately 16 miles west of Synergy. The monitor at Wheatfield is not a "representative" monitor for Synergy in White County due to the influence of the Schahfer Power Plant. The Indiana SO_2 monitoring network consists of industrial source-oriented and urban monitors. There are no sites specifically established to show background values. The area around Monon is rural. The Schahfer plant is the closest large industrial source and its impact is characterized below. There are no monitors located in an area similar to Monon.

The closest monitors to Monon, other than the Wheatfield site, are in Lake, Porter, and LaPorte counties in northwest Indiana. Rather than rural, these are located in heavily populated and industrialized areas. The highest one-hour values at these sites for the past three years are: Gary – 393 ug/m^3, Hammond – 176 ug/m^3, Dune Acres – 451 ug/m^3, and Michigan City – 97 ug/m^3. None of these can be considered a background monitor or representative of the Monon area. Michigan City is separated from the major industrial areas by approximately 15 miles, but is a source-oriented site for another NIPSCO power plant.

The only monitor located in the Midwest that appears to be in an area similar to Monon is in Lima, Ohio. The site ID is 390030002. This site is directly east of Monon approximately 150 miles. While Lima is a small city with a couple of large SO_2 sources, the surrounding area is rural with no major sources surrounding it, similar to Monon.

The highest 1-hour value at Lima in the past three years is 89 ug/m^3. OAQ proposes to use the value from this site as background. This is close to the monitored value at Michigan City. As an alternative, the background value from Lima supports the use of the 97 ug/m^3 value from Michigan City as a background level.

Modeling Demonstration

In EPA's final 1-hour SO_2 rule, 40 CFR Parts 50, 53, and 58, it states, " …due to the generally localized impacts of SO2, we have not historically considered monitoring alone to be an adequate, nor the most appropriate, tool to identify all maximum concentrations of SO_2. In the case of SO_2, we further believe that monitoring is not the most cost-efficient method for identifying all areas of maximum concentrations". The rule goes on to state, "Modeling large emission sources, along with smaller sources with the potential to violate the NAAQS, deals effectively with the concern that the monitoring network is not large enough to account for all sources that could have high ambient SO2 concentrations."

Schafer is included in the NAAQS modeling inventory and in this modeling demonstration. OAQ believes, like EPA, that AERMOD deals effectively, although conservatively, in determining maximum concentrations from large emission sources like Schahfer. Furthermore, by not using the Wheatfield monitor, double counting of Schahfer's contribution is eliminated.

A receptor grid 8.5 km (5.27 miles) by 7.5 km (4.65 miles) consisting of 2081 receptors was used in the modeling demonstration. Therefore for this discussion, only the air quality within this grid is examined.

The modeled 99th percentile impact from Schahfer, Synergy, and other background sources outside the grid is 73.49 ug/m^3. To this value must be added a "representative" background value to determine if the NAAQS is protected, per EPA guidance.

The maximum impact at any receptor within the grid from Schahfer alone is 71.9 ug/m^3.

The proposed Synergy facility is located about 25 miles from the Wheatfield monitor. The Wheatfield site is approximately 2.5 miles from Schahfer. It can be expected that the impact from Schahfer would be considerably less at Synergy than at Wheatfield. This is demonstrated in the modeling.

Modeling shows that the maximum impact from Schahfer on the Wheatfield monitoring site is 542.8 ug/m^{3}and the 99th percentile value is 390.3 ug/m^3. This is a huge impact, roughly twice the 1-hour NAAQS for SO_2.

U.S.EPA guidance states that the highest monitored level at a representative site may be used as the background level. As stated above, the maximum monitored value, during a time when the monitor was directly downwind from Schahfer was 330 ug/m^3 and the 99th percentile value was 173 ug/m^3, also influenced by the source.

The monitored values also include contributions from distant background sources. Modeling shows a huge impact from the source. Therefore, it is reasonable to expect that the entire 330 ug/m^3 monitored reading was not from background sources.

Given that the modeling correctly shows the huge impact from Schahfer at Wheatfield, it also shows much less of an impact from Schahfer in the Synergy modeling grid, about 80% less (390 ug/m^3

versus 72 ug/m^3) for the 99th percentile. Therefore, it can be assumed based on this modeling demonstration that the first high value from the Wheatfield site is not a "representative" background level for Synergy.

Meteorological Demonstration

On-site meteorology around Schahfer was also examined to see if wind speed and wind direction would play a role in monitor concentrations. Using all monitor values over 35 ppb (92 ug/m^3), meteorological data was examined for 2009. OAQ believes an approximate monitor concentration of 92 ug/m^3 is valid rural value. Then wind speeds greater than 5 miles per hour and wind directions were examined to determine what conditions were associated with the higher values. OAQ found that no background levels exceeded that threshold and therefore, the background value from the Lima monitor is reasonable and likely conservative.

Wind directions coming from the south (180 degrees) and the west (270 degrees) should not show high monitoring values since these directions are primarily rural in nature. As stated above, the overall highest value from the Wheatfield monitor in the past three years is 126 ppb (330.12 *u*g/m^3). The wind at that time was coming from the north east (51 degrees). Schahfer is located in the north east direction in reference to the Wheatfield monitor. The next highest values are 99 ppb (259.4 *u*g/m^3) happening on two days. The wind direction for those highs is between the north east to east north east (55 degrees to 63 degrees). Again, these monitor concentrations are showing impact from Schahfer. Concentrations over 92 ug/m^3 are never registered for wind directions from the south and west of the monitor. In fact monitoring values are well below 92 ug/m^3. This again further validates our choice of using the Lima monitor. We have included a table of the meteorological data in the Appendix of this document.

TABLE 4
Existing Monitoring Data Used For Background Concentrations *

Pollutant	Location	Monitoring Site	Averaging Period	Concentration (ug/m3)
NO_2 Hendricks	County	18-063-0002	Annual	17.3
NO_2	Hendricks County	18-063-0002	1 hour	94.3
PM_{10} Lake	County	18-089-2010	Annual	19.3
PM_{10}	Lake County	18-089-2010	24 hour	38.3
$PM_{2.5}$ Tippecanoe	County	18-157-0008	Annual	11.8
$PM_{2.5}$	Tippecanoe county	18-157-0008	24 hour	27
SO_2	Lima, Ohio	39-003-0002	1 hour	89
SO_2	Lima, Ohio	39-003-0002	3 hour	129.7
SO_2	Lima, Ohio	39-003-0002	24 hour	65.5
SO_2 Lima,	Ohio	39-003-0002	Annual	5.7

*OAQ used the most conservative values for the air quality analysis. It is standard policy to use the latest 3 years of data. $PM_{2.5}$ used the design value. NO_2 and SO_2 used the maximum monitoring value.

Section D - NAAQS and PSD Increment

NAAQS Compliance Analysis and Results

OAQ supplied emission inventories of all point sources within a 50-kilometer radius of Synergy. The NAAQS inventories are generated **from I-STEPS (**State Emission Processing System) in accordance with 326 IAC 2-6. The PSD increment inventories include sources that affect the increment and are compiled from permits issued by OAQ.

NAAQs modeling for the appropriate time-averaging periods for NO_2, PM_{10} and SO_2 was conducted and compared to the respective NAAQs limit. OAQ modeling results are shown in Table 5. All maximum-modeled concentrations were compared to the respective NAAQS limit. All maximum-modeled concentrations during the five years were below the NAAQS limits and further modeling was not required.

TABLE 5[3]
NAAQS Analysis

Pollutant	Year	Time-Averaging Period	Maximum Concentration ug/m3	Background Concentration ug/m3	Total ug/m3	NAAQS Limit ug/m3	NAAQS Violation
NO_2 91		Annual[1] 3.1		17.3	20.4	100	NO
NO_2 n/a		1 hour[4] 86.6		94.3	180.9	188.68	NO
PM_{10} 88		Annual[1] 4.8		19.3	24.1	50	NO
PM_{10}	88 24	hour[2] 19.2		38.3	57.5	150	NO
$PM_{2.5}$ n/a		Annual	1.42	11.8	13.2	15	NO
$PM_{2.5}$ n/a		24 hour	7.9	27	34.9	35	NO
SO_2 n/a		1 hour[4] 73.5		89	162.5	195.0	NO
SO_2 89		3 Hour[2] 61.7		129.7	191.4	1300	NO
SO_2 92		24 hour[2] 16.7		65.5	82.2	365	NO
SO_2 91		Annual[1] 2.5		5.7	8.2	80	NO

[1] First highest values per EPA NSR manual October 1990.
[2] High 2nd high values per EPA NSR manual October 1990.
[3] Any differences between the maximum concentration numbers in Tables 5 and 6 are due to different sources used for the NAAQS and the increment inventories. Table 3 maximum concentrations are from Synergy only.
[4] Based on the new 1-hour design values.

Analysis and Results of Source Impact on the PSD Increment

Applicability

Maximum allowable increases (PSD increments) are established by 326 IAC 2-2 for NO_2, SO_2, and PM_{10}. This rule also limits a source to no more than 80 percent of the available PSD increment to allow for future growth.

Source Impact

Since the impact for NO_2, SO_2, and PM_{10} modeled above significant impact levels, a PSD increment analysis for Synergy and surrounding sources was required.

Currently, sources do not have to comply with the new $PM_{2.5}$ increment. According to the Federal Register dated October 20, 2010, the ‘‘trigger date’’ is being set at October 20, 2011, which is 1 year after the date of promulgation of this final rule. We are using this approach to define the date on which the $PM_{2.5}$ increments become effective as 1 year from the date of publication, consistent with the 1-year delay

required under section 166(b) of the Act. (Preamble pages 64887 and 64888.) The Federal Register goes on to state, as described earlier, the emissions from major stationary sources that commence construction after the major source baseline date (October 20, 2010), regardless of the date on which their PSD application is submitted, must be counted toward consumption of the $PM_{2.5}$ increments. While these sources will not be required to submit an increment analysis for $PM_{2.5}$ as part of their complete application as long as they receive their PSD permit before the trigger date (October 20, 2011) for $PM_{2.5}$ (see discussion that follows in section VIII.B), the emissions increases resulting from the permitting of these sources ultimately must be counted toward the $PM_{2.5}$ increments when the first PSD permit application submitted after the trigger date establishes the minor source baseline date for the area of concern, and in all subsequent $PM_{2.5}$ increment analyses for that area. (Preamble page 64899.)

Results of the increment modeling are summarized in Table 6 below.

TABLE 6[3]
Increment Analysis

Pollutant	**Year**	**Time-Averaging Period**	**Maximum Concentration ug/m3**	**PSD Increment Ug/m3**	**Percent Impact on the PSD Increment**	Increment Violation
NO_2 1988		Annual[1] 5.1		25	20.4%	NO
PM_{10} 1989		Annual[1] 4.65		17	27.3%	NO
PM_{10} 1988		24 hour[2] 20.63		30	68.7%	NO
SO_2 1992		Annual[1] 3.5		20	17.5%	NO
SO_2 1989		3 hour[2] 192.3		512	37.7%	NO
SO_2 1992		24 hour[2] 42.8		91	47.0%	NO

[1] First highest value per EPA NSR manual October 1990.
[2] Highest second high per EPA NSR manual October 1990.
[3] Any differences between the maximum concentration numbers in Tables 5 and 6 are due to different sources used for the NAAQS and the increment inventories. Table 3 maximum concentrations are from Synergy only.

The results of the increment analysis show all pollutants for all averaging periods were below 80% of the available increment. No further analysis is required.

Part E – Qualitative Analysis

Additional Impact Analysis

All PSD permit applicants must prepare an additional impact analysis for each pollutant subject to regulation under the Act. This analysis assesses the impacts on growth, soils and vegetation, endangered species and visibility caused by any increase in emissions of any regulated pollutant from the source. The Synergy modeling submittal provided an additional impact analysis performed by Bison Engineering.

Economic Growth

The purpose of the growth analysis is to quantify project associated growth and estimate the air quality impacts from this growth either quantitatively or qualitatively.

It is estimated that approximately 10 additional jobs will be created as a result of the proposed project. Some of the employees will be drawn from surrounding areas. Since the area is predominately rural, it is not expected the growth impacts will cause a violation of the NAAQs or the PSD increment.

Soils and Vegetation Analysis

A list of soil types present in the general area was determined. Soil types include the following: Loamy Glacial Till, Moderate Thick Loess over Loamy Glacial Till and Thin Loess over Loamy Glacial Till.

Due to the agricultural nature of the land, crops in the White County area consist mainly of corn, sorghum, wheat, soybeans, and oats (2002 Agricultural Census for White County). The maximum modeled concentrations for Synergy are well below the threshold limits necessary to have adverse impacts on the surrounding vegetation such as autumn bent, nimblewill, barnyard grass, bishopscap and horsetail, and milkweed (Flora of Indiana – Charles Deam). Livestock in White County consist mainly of hogs, cattle, and sheep (2002 Agricultural Census for White County) and will not be adversely impacted from the facility. Trees in the area are mainly hardwoods. These are hardy trees and no significant adverse impacts are expected due to modeled concentrations.

Federal and State Endangered Species Analysis

Federal and state endangered or threatened species are listed by the U.S. Fish and Wildlife Service; Division of Endangered Species for Indiana, and includes 5 amphibians, 27 birds, 10 fishes, 7 mammals, 15 mollusks, and 15 reptiles. Of the federal and state endangered species on the list, 1 amphibian, 5 reptiles, 14 mollusks, 5 fish, 9 birds, 3 insects and 4 mammals have habitat within White County. The mollusks, fish, amphibians and certain species of birds and mammals are found along rivers and lakes while the other species of birds and mammals are found in forested areas. The facility is not expected to have any additional adverse effects on the habitats of the species than what has already occurred from the industrial, farming, and residential activities in the area.

Federal and state endangered or threatened plants are listed by the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana. They list 17 state significant species of plants. At this time no federally endangered plant species are found in White County. The endangered plants do not thrive in industrialized and residential areas. The facility is not expected to adversely affect any plant on the endangered species list.

Visibility Analysis

The VISCREEN model is designed as a screening model to determine the visual impact parameters from a single source plume. It is used basically to determine whether or not a plume is visible as an object itself. The visibility impairment analysis considers the impacts that occur within the impact area of the source as defined by the user distances. The user distances are determined by the nearest interstate or airport. EPA has defined these locations in guidance to the state.

The PM_{10} and NO_2 emissions limits were used to run a local visibility Level 1 and a Level 2 analysis. VISCREEN Version 1.01 was used to determine if the color difference parameter (Delta-E) or the plume (green) contrast limits were exceeded. The Delta-E was developed to specify the perceived magnitude of color and brightness changes and is used as the primary basis for determining the perceptibility of plume visual impacts. The plume constant can be defined at any wavelength as the relative difference in the intensity (called spectral radiance) between the viewed object and its background. This is used to determine how the human eye responds differently to different wavelengths of light. The Delta-E of 2.0 and the plume contrast of 0.05 were not exceeded at the nearest interstate location along I-65 or at the White County Airport.

Potential visibility impacts to Mammoth Cave National Park (further than 300 km from Synergy) would be insignificant. This is due to the distance from the Class 1 area and magnitude and characteristics of emission sources at Synergy.

Additional Analysis Conclusions

Finally, the results of the additional impact analysis conclude the operation of the facility will have

no significant impact on economic growth, soils, vegetation or visibility in the immediate vicinity or on any Class I area.

Part F – HAPs Analysis

OAQ currently requests data concerning the emission of 189 HAPs listed in the 1990 Clean Air Act Amendments (CAAA) that are either carcinogenic or otherwise considered toxic and may be used by industries in the State of Indiana. These substances are listed as air toxic compounds on the State of Indiana, Department of Environmental Management, Office of Air Quality's construction permit application Form GSD-08.

Potential emissions of aggregate HAPs are estimated to be over 22 tons per year. Hydrochloric acid is over 19 tons per year for a single HAP.

For Synergy, a full HAP analysis was completed comparing the maximum estimated concentrations of each pollutant with the Unit Risk Factor (URF) or Inhalation Unit Risk and the Reference Concentration (RfC). This analysis offers a refined, up to date site specific analysis that takes into account the different potencies and health effects that each pollutant presents to the public.

The Unit risk factor (URF) is the upper-bound excess lifetime cancer risk estimated to result from continuous inhalation exposure to a pollutant over a 70 year lifetime. Multiplying the estimated concentration by the URF will produce a cancer risk estimate. The cancer risk estimate is the conservative probability of developing cancer from exposure to a pollutant or a mixture of pollutants over a 70 year lifetime, usually expressed as the number of additional cancer cases in a given number of people, e.g., one in a million. For screening purposes at Synergy, the cancer estimates for each pollutant are considered to be additive when deriving the cumulative maximum individual cancer risk.

Non-cancer health effects are determined using the Reference Concentration (RfC). The RfC is an estimate of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. Dividing the estimated pollutant concentration by the RfC will determine the pollutant's Hazard Quotient (HQ). All of the HAPs' Hazard Quotients were added together to determine Synergy's Hazard Index (HI).

This HAP screening analysis uses health protective assumptions that overestimate the actual risk associated with emissions from Synergy. Estimates 1) assume a 70 year exposure time, 2) assume that all carcinogens cause the same type of cancer, 3) assume that all non-carcinogens have additive health effects, 4) assume maximum permit allowable emissions from the facility, and 5) use conservatively derived dose-response information. The risk analysis cannot accurately predict whether there will be observed health problems around Synergy; rather it identifies possible avenues of risk.

The results of the HAP modeling are in Table 7.

TABLE 7
Hazardous Air Pollutant Modeling Results

Compound	CAS Number	Annual Concentration	Adjusted Annual Concentration (ug/m3)	Cancer URF, (ug/m3)-1	Source	Cancer Risk	Non-Cancer Chronic RfC, ug/m3	Source of IDEM RfC	Hazard Quotient
1,1,1,2-tetrachloroethane	630206	**1.72E-06**	**2.59E-06**	7.4E-06	IRIS	1.91E-11			

2,4-Dinitrophenol	51285	**2.43E-08**	**3.65E-08**				7.00	Regions 6,9(R)	5.21E-09
2-chloroacetophenone	532274	**6.08E-07**	**9.13E-07**				0.03	IRIS	3.04E-05
Acenaphthene	83329	**4.46E-08**	**6.69E-08**				210.00	Regions 6,9(R)	3.19E-10
Acenaphthylene	208968	**2.13E-08**	**3.19E-08**				35.00	State of Michigan	9.13E-10
Acetaldehyde	75070	**4.97E-05**	**7.45E-05**	2.2E-06	IRIS	1.64E-10	9.00	IRIS	8.28E-06
Acetophenone	98862	**1.32E-06**	**1.98E-06**						
Acrolein	107028	**2.54E-05**	**3.80E-05**				0.02	IRIS	1.90E-03
Antimony Compounds	0	**1.52E-06**	**2.28E-06**				0.20	TRI	1.14E-05
Arsenic compounds	0	**3.55E-05**	**5.32E-05**	4.3E-03	IRIS	2.29E-07	0.03	CAL	1.77E-03
Benzene	71432	**1.12E-04**	**1.67E-04**	7.8E-06	IRIS	1.31E-09	30.00	IRIS	5.58E-06
Benzo[a]anthracene	56553	**6.90E-09**	**1.03E-08**	1.1E-04	CAL	1.14E-12			
Benzo[a]pyrene	50328	**3.24E-09**	**4.87E-09**	1.1E-03	CAL	5.35E-12			
Benzo[b]fluoranthene	205992	**9.53E-09**	**1.43E-08**	1.1E-04	CAL	1.57E-12			
Benzo[g,h,i]perylene	191242	**2.33E-09**	**3.50E-09**	8.9E-03	IDEM	3.11E-11			
Benzo[k]fluoranthene	207089	**9.53E-09**	**1.43E-08**	1.1E-04	CAL	1.57E-12			
Benzyl Chloride	100447	**6.08E-05**	**9.13E-05**	4.9E-05	IRIS	4.43E-09	10.15	Region 9	8.99E-06
Beryllium compounds	0	**1.83E-06**	**9.00E-05**	2.4E-03	IRIS	2.16E-07	0.02	IRIS	4.50E-03
Biphenyl	92524	**1.52E-07**	**2.28E-07**						
bis(2-Ethylhexyl)phthalate	117817	**6.29E-06**	**9.43E-06**	2.4E-06	CAL	2.26E-11	10.00	CAL	9.43E-07
Bromoform	75252	**3.35E-06**	**5.02E-06**	1.1E-06	IRIS	5.52E-12			
Cadmium compounds	7440439	**4.46E-06**	**6.69E-06**	1.8E-03	IRIS	1.20E-08	0.02	CAL	3.35E-04
Carbon disulfide	75150	**1.12E-05**	**1.67E-05**				700.00	IRIS	2.39E-08
Chlorobenzene	108907	**1.93E-06**	**2.89E-06**				1000.00	CAL	2.89E-09
Chloroform	67663	**5.07E-06**	**7.61E-06**	2.3E-05	IRIS	1.75E-10	0.30	Region 6(N)	2.54E-05
Chromium (VI) compounds	18540299	**2.23E-05**	**3.35E-05**	1.2E-02	IRIS	4.02E-07	0.10	IRIS	3.35E-04
Chrysene	218019	**8.62E-09**	**1.29E-08**	8.9E-04	CAL	1.15E-11			
Cobalt	0	**8.62E-06**	**1.29E-05**				0.10	ATSDR	1.29E-04
Cumene	98828	**4.56E-07**	**6.84E-07**				400.00	IRIS	1.71E-09
Cyanide Compounds	0	**2.13E-04**	**3.19E-04**				3.00	TRI	1.06E-04
Diethyl Sulfate	64675	**4.16E-06**	**6.24E-06**	3.4E-04	TRI	2.12E-09			
Chloroethane (Ethyl Chloride)	75003	**3.65E-06**	**5.48E-06**	1.3E-07	CAL		10000.00	IRIS	5.48E-10
Ethyl methanesulfonate	62500		**0.00E+00**	8.4E-02	HWIR	0.00E+00			
Ethylbenzene	100414	**8.11E-06**	**1.22E-05**				1000.00	IRIS	1.22E-08
Ethylene dibromide (1,2-dibromoethane)	106934	**1.01E-07**	**1.52E-07**	6.0E-04	IRIS	9.13E-11	9.00	IRIS	1.69E-08
Ethylene dichloride (1,2-dichloroethane)	107062	**3.45E-06**	**5.17E-06**	2.6E-05	IRIS	1.34E-10	4.90	Regions 3,9(N)	1.06E-06
Fluoranthene	206440	**6.19E-08**	**9.28E-08**				140.00	Regions 6,9(R)	6.63E-10
Fluorene	86737	**7.91E-08**	**1.19E-07**				140.00	Regions 6,9(R)	8.47E-10
Formaldehyde	50000	**2.03E-05**	**3.04E-05**	1.3E-05	IRIS	3.95E-10	9.80	ATSDR	3.10E-06
Hydrochloric Acid	7647010	**3.07E-02**	**4.61E-02**				20.00	IRIS	2.31E-03
Hydrofluoric acid	7664393	**3.29E-03**	**4.93E-03**				20.00	IRIS	2.46E-04
Indeno[1,2,3-cd]pyrene	193395	**5.27E-09**	**7.91E-09**	1.1E-04	CAL	8.70E-13			
Isophorone	78591	**5.07E-05**	**7.61E-05**	2.7E-07	IRIS	2.05E-11	2000.00	CAL	3.80E-08
Lead compounds	0	**1.52E-05**	**2.28E-05**				1.50	EPA OAQPS	1.52E-05

Manganese compounds	0	**4.26E-05**	**6.39E-05**				0.05	IRIS	1.28E-03
Mercury, elemental	7439976	**7.61E-06**	**1.14E-05**				0.30	IRIS	3.80E-05
Methyl ethyl ketone (MEK)	78933	**3.35E-05**	**5.02E-05**				5000.00	IRIS	1.00E-08
Methyl hydrazine	60344	**1.52E-05**	**2.28E-05**	2.2E-04	CAL	5.02E-09			
Methyl methacrylate	80626	**1.72E-06**	**2.59E-06**				700.00	IRIS	3.69E-09
Methyl tert butyl ether	1634044	**3.04E-06**	**4.56E-06**	2.6E-07	CAL	1.19E-12	3000.00	IRIS	1.52E-09
Methylene chloride	75092	**2.54E-05**	**3.80E-05**	4.7E-07	IRIS	1.79E-11	3000.00	HEAST	1.27E-08
Naphthalene	91203	**1.12E-06**	**1.67E-06**	3.4E-05	CAL	5.69E-11	3.00	IRIS	5.58E-07
Nickel compounds	0	**2.43E-05**	**3.65E-05**	2.4E-04	IRIS	8.76E-09	0.20	ATSDR	1.83E-04
Phenanthrene	85018	**2.33E-07**	**3.50E-07**				10.50	IDEM(R)	3.33E-08
Phenol	108952	**1.42E-06**	**2.13E-06**				200.00	CAL	1.06E-08
Propionaldehyde	123386	**3.24E-05**	**4.87E-05**						
Pyrene	129000	**2.84E-08**	**4.26E-08**				105.00	Regions 6,9(R)	4.06E-10
Selenium compounds	0	**1.12E-04**	**1.67E-04**				20.00	CAL	8.37E-06
Styrene	100425	**2.13E-06**	**3.19E-06**				1000.00	IRIS	3.19E-09
Toluene	108883	**2.03E-05**	**3.04E-05**				400.00	IRIS	7.61E-08
Vinyl Acetate	108054	**6.59E-07**	**9.89E-07**				200.00	IRIS	4.94E-09
Xylenes	1330207	**3.24E-06**	**4.87E-06**				100.00	IRIS	4.87E-08
					Σ Cancer Risk		**8.81E-07**	**Hazard Index (HI)**	**1.32E-02**
					IDEM Standard		**1.00E-06**	**IDEM Standard**	**1.00E+00**
					Comparison		**Below**		**Below**

Note: The annual concentrations were adjusted as a percent increase based on increased production capacity except for Beryllium compounds which were modeled using estimated emissions from Bison Engineering.

* Further information on URFs and RfCs can be found at the following EPA website: http://www.epa.gov/ttn/atw/toxsource/chronicsources.html

The Hazard Index for the project does not exceed 1. Pollutants with a Hazard Quotient (HQ) greater than 1 are considered to be at concentrations that could represent a health concern. Hazard Quotients above 1 do not represent areas where adverse health effects will be observed but indicate that the potential exists.

The additive cancer risk estimate from all HAPs is 8.81 additional cancer cases in ten million people. This means if an individual was exposed to these HAPs continuously for 70 years, the risk of getting cancer from this exposure would be 8.81 in ten million. The US EPA considers one in ten thousand (1.0E-04) excess cancer risks to be the upper range of acceptability with an ample margin of safety. The probability for the general public to be exposed to these HAPs for 24 hours a day, seven days a week, 52 weeks a year for 70 years is minimal.

Part H - Summary of Air Quality Analysis

Bison Engineering prepared the modeling portion of the PSD application. White County is designated as attainment for all criteria pollutants. VOCs, PM_{10}, NO_2, SO_2, CO and Beryllium emission rates associated with the proposed facility exceeded the respective significant emission rates. Modeling results taken from AERMOD model showed PM_{10}, $PM_{2.5,}$ SO_2, NO_2 impacts were predicted to be greater than the significant impact levels. Synergy did trigger the preconstruction monitoring threshold level for $PM_{10,}$ $PM_{2.5,}$ and SO_2 but can satisfy the preconstruction monitoring requirement since there is existing air quality monitoring data representative of the area. The NAAQS and increment modeling for PM_{10}, $PM_{2.5,}$ NO_2, and SO_2 showed no violations of the standards. The nearest Class I area is Mammoth Cave National Park in Kentucky over 300 kilometers away from the source. An additional impact analysis was required but the operation of the proposed facility will have no significant impact. A Hazardous Air Pollutant (HAP) analysis was performed and showed no likely adverse impact.

APPENDIX

SO2 values above 35 ppb along with wind direction and wind speeds.

Day					Day					Day				
8-Feb-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value	2-Mar-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value	16-Mar-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	152	2.2	2		0:00	25	7.9	1		0:00	94	6	2
	1:00	93	3.6	1		1:00	24	8.8	1		1:00	92	5	2
	2:00	132	3.4	1		2:00	29	10	14		2:00	93	4.2	2
	3:00	124	4.3	1		3:00	37	9.6	3		3:00	67	4.2	2
	4:00	147	3.6	1		4:00	35	8.8	3		4:00	54	4.9	2
	5:00	93	4.9	1		5:00	26	6.7	16		5:00	74	5	2
	6:00	102	5	1		6:00	32	5.3	1		6:00	88	3.8	2
	7:00	107	4.8	1		7:00	29	7.6	11		7:00	87	4.1	2
	8:00	105	4.9	1		8:00	36	8	79		8:00	62	3.2	3
	9:00	120	5.6	3		9:00	38	7.6	66		9:00	52	2.1	3
	10:00	121	5.6	6		10:00	42	7.5	48		10:00	108	1.6	11
	11:00	120	6.6	35		11:00	73	7.4	8		11:00	72	2.8	43
	12:00	120	6.9	39		12:00	103	7	1		12:00	56	1.8	47
	13:00	127	5.6	21		13:00	92	8.1	1		13:00	53	4.3	17
	14:00	125	5.7	11		14:00	67	10.8	1		14:00	114	3.1	5
	15:00	122	8.9	6		15:00	68	10.4	1		15:00	244	3.9	5
	16:00	126	8.2	3		16:00	101	8.9	2		16:00	231	3.1	4
	17:00	120	6.3	2		17:00	54	8.7	2		17:00	266	1.2	4
	18:00	120	7.9	2		18:00	56	6.9	1		18:00	212	1	3
	19:00	149	5	1		19:00	69	4.4	1		19:00	154	1.6	2
	20:00	157	6.1	1		20:00	28	4	1		20:00	181	3.6	2
	21:00	174	9.7	1		21:00	59	3.6	3		21:00	190	3.6	2
	22:00	169	12.4	1		22:00	170	1.9	4		22:00	184	5	3
	23:00	174	9.7	1		23:00	75	2.3	2		23:00	192	3.7	2

Day						Day						Day				
11-May-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value		22-May-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value		23-May-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	286	1	4			0:00	122	2.4	1			0:00	167	1.2	2
	1:00	286	0.8	2			1:00	240	0.9	1			1:00	81	3.5	2
	2:00	270	0.9	1			2:00	216	1.4	1			2:00	74	3.4	1
	3:00	300	1	2			3:00	211	1.7	1			3:00	79	4.3	2
	4:00	229	0.7	2			4:00	212	2.3	1			4:00	145	2.6	2
	5:00	154	1.6	2			5:00	194	2.3	4			5:00	105	3	2
	6:00	48	3	10			6:00	86	2.4	10			6:00	173	1.8	2
	7:00	40	5.6	51			7:00	43	3.6	33			7:00	172	2.2	2
	8:00	39	6.2	88			8:00	41	5.1	58			8:00	179	2.7	2
	9:00	85	6.2	30			9:00	55	4.9	99			9:00	97	2.6	2
	10:00	100	6.2	1			10:00	50	4.2	50			10:00	51	2.4	126
	11:00	117	6.3	2			11:00	108	3.2	7			11:00	77	3.2	68
	12:00	206	5.1	2			12:00	108	3.6	19			12:00	133	4.2	48
	13:00	142	5.4	1			13:00	149	3.9	9			13:00	80	4	52
	14:00	109	5.5	2			14:00	196	4.7	5			14:00	65	4.9	
	15:00	118	5	2			15:00	205	5	3			15:00	49	4.9	
	16:00	149	3.2	3			16:00	179	4.6	1			16:00	39	5.7	
	17:00	85	5.6	4			17:00	206	2.9	1			17:00	57	5.1	
	18:00	25	8.5	5			18:00	235	2.3	2			18:00	168	2.7	1
	19:00	38	6.3	5			19:00	240	1.1	2			19:00	197	2.3	1
	20:00	62	4.7	2			20:00	283	0.6	2			20:00	221	1.7	1
	21:00	73	3.3	1			21:00	185	1	2			21:00	208	1.9	1
	22:00	86	2.1	1			22:00	200	0.9	2			22:00	254	1	1
	23:00	94	1.5	1			23:00	186	1.2	3			23:00	277	0.8	1

Day 11-May-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	286	1	4
	1:00	286	0.8	2
	2:00	270	0.9	1
	3:00	300	1	2
	4:00	229	0.7	2
	5:00	154	1.6	2
	6:00	48	3	10
	7:00	40	5.6	51
	8:00	39	6.2	88
	9:00	85	6.2	30
	10:00	100	6.2	1
	11:00	117	6.3	2
	12:00	206	5.1	2
	13:00	142	5.4	1
	14:00	109	5.5	2
	15:00	118	5	2
	16:00	149	3.2	3
	17:00	85	5.6	4
	18:00	25	8.5	5
	19:00	38	6.3	5
	20:00	62	4.7	2
	21:00	73	3.3	1
	22:00	86	2.1	1
	23:00	94	1.5	1

Day 22-May-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	122	2.4	1
	1:00	240	0.9	1
	2:00	216	1.4	1
	3:00	211	1.7	1
	4:00	212	2.3	1
	5:00	194	2.3	4
	6:00	86	2.4	10
	7:00	43	3.6	33
	8:00	41	5.1	58
	9:00	55	4.8	99
	10:00	50	4.2	50
	11:00	108	3.2	7
	12:00	108	3.6	19
	13:00	149	3.9	9
	14:00	196	4.7	5
	15:00	205	5	3
	16:00	179	4.6	1
	17:00	206	2.9	1
	18:00	235	2.3	2
	19:00	240	1.1	2
	20:00	283	0.6	2
	21:00	185	1	2
	22:00	200	0.9	2
	23:00	186	1.2	3

Day 23-May-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	167	1.2	2
	1:00	81	3.5	2
	2:00	74	3.4	1
	3:00	79	4.3	2
	4:00	145	2.6	2
	5:00	105	3	2
	6:00	173	1.8	2
	7:00	172	2.2	2
	8:00	179	2.7	2
	9:00	97	2.6	2
	10:00	51	2.4	126
	11:00	77	3.2	68
	12:00	133	4.2	46
	13:00	80	4	52
	14:00	65	4.9	
	15:00	49	4.9	
	16:00	39	5.7	
	17:00	57	5.1	
	18:00	168	2.7	1
	19:00	197	2.3	1
	20:00	221	1.7	1
	21:00	208	1.9	1
	22:00	254	1	1
	23:00	277	0.8	1

Day				
2-Jun-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	220	1.7	6
	1:00	239	2.2	5
	2:00	210	2.1	4
	3:00	193	2.1	4
	4:00	222	1.6	7
	5:00	251	2.1	5
	6:00	222	1.9	5
	7:00	120	3.8	4
	8:00	93	4.8	3
	9:00	36	6.9	3
	10:00	57	7.4	1
	11:00	31	10.3	12
	12:00	55	9	2
	13:00	45	7.5	4
	14:00	35	9.5	40
	15:00	74	7.4	4
	16:00	76	7.6	3
	17:00	22	9.3	6
	18:00	25	6.5	2
	19:00	51	6.4	1
	20:00	109	6	3
	21:00	155	2.1	2
	22:00	267	0.9	2
	23:00	81	4	2

Day				
3-Jun-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	23	4.9	2
	1:00	45	4.5	1
	2:00	83	4.4	1
	3:00	62	4.4	1
	4:00	29	5.9	2
	5:00	34	5.5	1
	6:00	27	6	12
	7:00	25	6.4	9
	8:00	31	7.9	61
	9:00	48	8.3	9
	10:00	52	8.9	2
	11:00	59	6.9	1
	12:00	57	6.1	1
	13:00	55	6.2	2
	14:00	92	7.8	4
	15:00	113	7.2	3
	16:00	104	6.9	1
	17:00	84	7.4	1
	18:00	56	8.3	2
	19:00	95	4.5	4
	20:00	59	3.9	15
	21:00	143	1.9	11
	22:00	244	1	1
	23:00	249	0.9	1

Day				
10-Jun-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	62	7.9	2
	1:00	94	3.2	3
	2:00	68	4.4	2
	3:00	29	5.8	5
	4:00	49	6.1	3
	5:00	59	4.3	2
	6:00	40	5.8	2
	7:00	56	5.3	1
	8:00	66	4.4	1
	9:00	58	4.7	1
	10:00	45	3	5
	11:00	63	4.6	99
	12:00	51	8.2	11
	13:00	48	7.1	2
	14:00	58	5	2
	15:00	54	5.7	2
	16:00	65	5.2	2
	17:00	35	9	8
	18:00	31	7.9	10
	19:00	31	6.4	3
	20:00	24	8	5
	21:00	59	3.3	6
	22:00	94	3.6	4
	23:00	49	4.8	3

Day				
12-Jun-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	85	3.9	1
	1:00	99	4.2	1
	2:00	93	3.3	1
	3:00	70	3.2	1
	4:00	139	2.9	1
	5:00	67	4.1	2
	6:00	29	4.9	6
	7:00	46	4.3	13
	8:00	138	3.8	28
	9:00	48	4.4	40
	10:00	57	5.6	3
	11:00	68	4.3	13
	12:00	71	4.3	15
	13:00	46	4.5	28
	14:00	55	4	15
	15:00	42	4.8	46
	16:00	50	5.3	6
	17:00	27	7.6	2
	18:00	34	5.6	2
	19:00	24	4.9	2
	20:00	24	4.5	9
	21:00	34	3.6	2
	22:00	35	3.6	2
	23:00	25	3.2	3

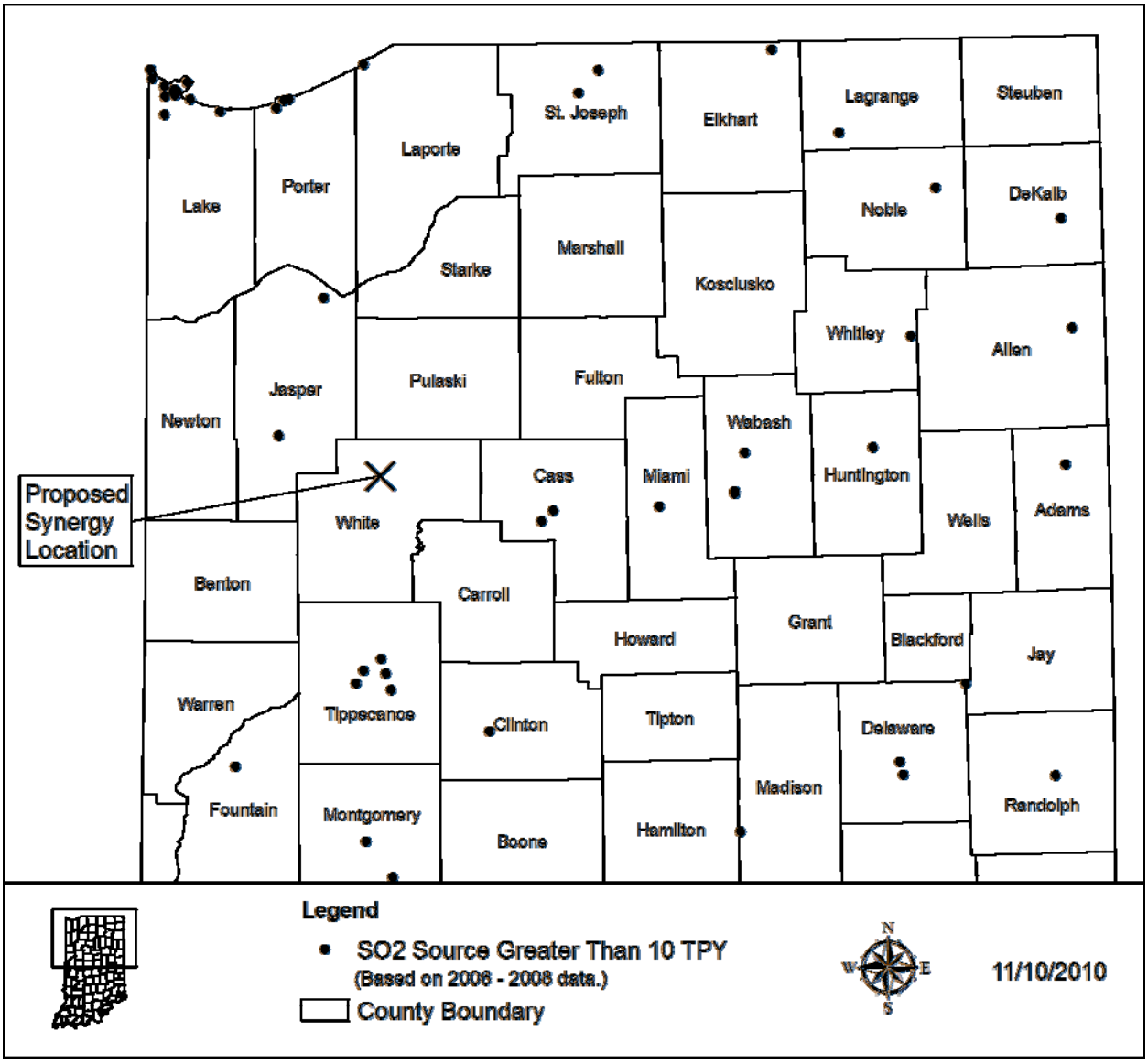
Day				
14-Jun-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	53	4.7	2
	1:00	59	3.8	2
	2:00	81	2.9	1
	3:00	113	2.8	1
	4:00	47	2.6	1
	5:00	41	6.3	2
	6:00	54	3.9	1
	7:00	46	4.1	3
	8:00	62	3.2	23
	9:00	41	5.2	59
	10:00	63	4.8	59
	11:00	47	5.6	20
	12:00	51	4.8	49
	13:00	113	4.7	4
	14:00	43	8.6	3
	15:00	72	7.6	8
	16:00	78	6.9	6
	17:00	61	6.6	5
	18:00	47	5.3	2
	19:00	153	1.8	3
	20:00	37	2.6	2
	21:00	190	1	2
	22:00	48	2.6	2
	23:00	42	2.7	6

Day				
7-Sep-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	49	3.2	3
	1:00	23	2.7	2
	2:00	82	2.2	2
	3:00	36	2.2	2
	4:00	30	2.3	2
	5:00	29	2	2
	6:00	25	2.3	2
	7:00	31	3.2	3
	8:00	32	4.2	4
	9:00	35	6	24
	10:00	43	7.6	39
	11:00	45	6.9	14
	12:00	38	6.6	3
	13:00	48	6.2	10
	14:00	120	5.2	17
	15:00	203	4.9	4
	16:00	160	4.6	4
	17:00	65	3.6	3
	18:00	30	4.3	3
	19:00	29	3.6	4
	20:00	28	2.7	4
	21:00	30	2	3
	22:00	114	1.5	3
	23:00	243	0.3	3

Day				
8-Sep-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	189	0.3	2
	1:00	118	1.4	2
	2:00	268	1	2
	3:00	59	1.8	2
	4:00	28	2.3	2
	5:00	187	1.1	2
	6:00	58	1.8	2
	7:00	65	1.9	3
	8:00	37	3.7	5
	9:00	37	4.3	15
	10:00	39	4.8	67
	11:00	45	3.1	4
	12:00	59	4.5	3
	13:00	51	5.3	3
	14:00	89	5.6	4
	15:00	65	4.3	4
	16:00	37	4.3	7
	17:00	32	4.5	5
	18:00	34	3.9	4
	19:00	45	2.5	3
	20:00	31	3.7	3
	21:00			3
	22:00	26	3	3
	23:00	33	3.7	3

Day				
12-Sep-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	131	2	3
	1:00	136	2.1	3
	2:00	145	2.1	2
	3:00	131	1.2	2
	4:00	98	2	2
	5:00	178	0.7	2
	6:00	285	0.7	2
	7:00	89	1.9	3
	8:00	72	2.2	3
	9:00	101	1.8	3
	10:00	69	2.6	8
	11:00	55	4.9	42
	12:00	52	5.6	
	13:00	45	5.8	
	14:00	46	6.3	
	15:00	36	6.9	4
	16:00	75	5.2	3
	17:00	56	3.4	2
	18:00	21	3.9	1
	19:00	25	3.2	1
	20:00	96	1.7	1
	21:00	33	2.1	1
	22:00	28	2.8	1
	23:00	27	2.6	1

Day				
14-Sep-09	Hour	Wind Direction	Wind Speed	SO2 Monitoring Value
	0:00	100	1.2	1
	1:00	136	1.1	1
	2:00	167	0.8	1
	3:00	235	0.3	1
	4:00	265	0.3	1
	5:00	290	0.3	1
	6:00	208	0.6	1
	7:00	43	2	2
	8:00	49	2	7
	9:00	55	2.5	5
	10:00	71	2.7	15
	11:00	58	3.3	67
	12:00	120	2.4	37
	13:00	115	3	31
	14:00	89	2.7	54
	15:00	74	3.1	39
	16:00	70	3.3	11
	17:00	35	3	2
	18:00	25	3.8	5
	19:00	43	2	6
	20:00	91	0.9	3
	21:00	42	0.6	2
	22:00	148	0.3	2
	23:00	168	1.1	1


Lake
Porter
Laporte
St. Joseph
Elkhart
Lagrange
Steuben
Noble
DeKalb
Starke
Marshall
Kosclusko
Whitley
Allen
Newton
Jasper
Pulaski
Fulton
Wabash
Huntington
Wells
Adams
Proposed Synergy Location
White
Cass
Miami
Benton
Carroll
Howard
Grant
Blackford
Jay
Warren
Tippecanoe
Clinton
Tipton
Delaware
Madison
Randolph
Fountain
Montgomery
Boone
Hamilton
Legend
SO2 Source Greater Than 10 TPY
(Based on 2006 - 2008 data.)
County Boundary
N
W
E
S
11/10/2010

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

SENT VIA U.S. MAIL: CONFIRMED DELIVERY AND SIGNATURE REQUESTED

TO: Robert L Bult
Synergy Management
PO Box 11733
Merrillville, IN 46411

DATE: December 2, 2010

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

SUBJECT: Final Decision
Title V
181-26877-00050

Enclosed is the final decision and supporting materials for the air permit application referenced above. Please note that this packet contains the original, signed, permit documents.

The final decision is being sent to you because our records indicate that you are the contact person for this application. However, if you are not the appropriate person within your company to receive this document, please forward it to the correct person.

A copy of the final decision and supporting materials has also been sent via standard mail to:

OAQ Permits Branch Interested Parties List

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178, or toll-free at 1-800-451-6027 (ext. 3-0178), and ask to speak to the permit reviewer who prepared the permit. If you think you have received this document in error, please contact Joanne Smiddie-Brush of my staff at 1-800-451-6027 (ext 3-0185), or via e-mail at jbrush@idem.IN.gov.

Final Applicant Cover letter.dot 11/30/07

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: Monon Town and Township Public Library

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

Subject: **Important Information for Display Regarding a Final Determination**

Applicant Name: Synergy Management
Permit Number: 181-26877-00050

You previously received information to make available to the public during the public comment period of a draft permit. Enclosed is a copy of the final decision and supporting materials for the same project. Please place the enclosed information along with the information you previously received. To ensure that your patrons have ample opportunity to review the enclosed permit, **we ask that you retain this document for at least 60 days.**

The applicant is responsible for placing a copy of the application in your library. If the permit application is not on file, or if you have any questions concerning this public review process, please contact Joanne Smiddie-Brush, OAQ Permits Administration Section at 1-800-451-6027, extension 3-0185.

Enclosures
Final Library.dot 11/30/07

Mail Code 61-53

IDEM Staff	DPABST 12/2/2010 Synergy Management 181-26877-00050 (Final)			AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING
Name and address of Sender	▶	Indiana Department of Environmental Management Office of Air Quality – Permits Branch 100 N. Senate Indianapolis, IN 46204	Type of Mail: **CERTIFICATE OF MAILING ONLY**	

Line	Article Number	Name, Address, Street and Post Office Address	Postage	Handing Charges	Act. Value (If Registered)	Insured Value	Due Send if COD	R.R. Fee	S.D. Fee	S.H. Fee	Rest. Del. Fee Remarks
1		Robert L Bult Synergy Management P.O. Box 11733 Merrillville IN 46411-1733 (Source CAATS) (CONFIRM DELIVERY)									
2		Mr. Harry D. DuVall P.O. Box 147 Idaville IN 47950 *(Affected Party)*									
3		Monon Town and Township Public Library 427 N. Market St Monon IN 47959 *(Library)*									
4		Monon Town Council and Town Manager P.O. Box 657 Monon IN 47959-0657 *(Local Official)*									
5		White County Commissioners P.O. Box 260 Monticello IN 47960-0260 *(Local Official)*									
6		Ms. Magie Read P.O. Box 248 Battle Ground IN 47920 *(Affected Party)*									
7		Mr. Robert Kelley 2555 S 30th Street Lafayette IN 44909 *(Affected Party)*									
8		Wolcott Town Council PO Box 38 Wolcott IN 47995 *(Local Official)*									
9		Ms. Connie Neininger White County 110 N Main St, County Courthouse, PO Box 1031 Monticello IN 47960 *(Affected Party)*									
10		White County Health Department 315 N Illinois St Monticello IN 47960 *(Health Department)*									
11		Gene and Charlotte Austin 216 N Walnut Monon IN *(Affected Party)*									
12		Linda Eckert 6298 N 100 E Monon IN 47959 *(Affected Party)*									
13		Christina Albrecht 518 Holly St Monon IN 47959 (Affected Party)									
14		Charles Ward 1661 W State Rd 16 Monon IN 47959 *(Affected Party)*									
15		Nina Jacoby 501 E Bedford Rd Monon IN 47959 *(Affected Party)*									

Total number of pieces Listed by Sender	Total number of Pieces Received at Post Office	Postmaster, Per (Name of Receiving employee)	The full declaration of value is required on all domestic and international registered mail. The maximum indemnity payable for the reconstruction of nonnegotiable documents under Express Mail document reconstructing insurance is $50,000 per piece subject to a limit of $50, 000 per occurrence. The maximum indemnity payable on Express mil merchandise insurance is $500. The maximum indemnity payable is $25,000 for registered mail, sent with optional postal insurance. See ***Domestic Mail Manual*** **R900, S913**, and **S921** for limitations of coverage on inured and COD mail. See ***International Mail Manual*** for limitations o coverage on international mail. Special handling charges apply only to Standard Mail (A) and Standard Mail (B) parcels.

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Mail Code 61-53

IDEM Staff	DPABST 12/2/2010 Synergy Management 181-26877-00050 (Final)			AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING
Name and address of Sender	▶	Indiana Department of Environmental Management Office of Air Quality – Permits Branch 100 N. Senate Indianapolis, IN 46204	Type of Mail: **CERTIFICATE OF MAILING ONLY**	

Line	Article Number	Name, Address, Street and Post Office Address	Postage	Handing Charges	Act. Value (If Registered)	Insured Value	Due Send if COD	R.R. Fee	S.D. Fee	S.H. Fee	Rest. Del. Fee Remarks
1		Robert 736 E Quarry Rd Monon IN 47959 (Affected Party)									
2		Aleta Chu PO Box 762 Monon IN 47959 *(Affected Party)*									
3		Joseph Bumbleburg PO Box 1535 Lafayette IN 47902 *(Affected Party)*									
4		Jim Davis 5631 N US 421 Monon IN 47959 *(Affected Party)*									
5		Mark Zeltwanger 26545 CR 52 Nappanee IN 46550 *(Affected Party)*									
6											
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15											

Total number of pieces Listed by Sender	Total number of Pieces Received at Post Office	Postmaster, Per (Name of Receiving employee)	The full declaration of value is required on all domestic and international registered mail. The maximum indemnity payable for the reconstruction of nonnegotiable documents under Express Mail document reconstructing insurance is $50,000 per piece subject to a limit of $50, 000 per occurrence. The maximum indemnity payable on Express mil merchandise insurance is $500. The maximum indemnity payable is $25,000 for registered mail, sent with optional postal insurance. See ***Domestic Mail Manual*** **R900, S913**, and **S921** for limitations of coverage on inured and COD mail. See ***International Mail Manual*** for limitations o coverage on international mail. Special handling charges apply only to Standard Mail (A) and Standard Mail (B) parcels.

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