Mosaic Fertilizer, LLC
13830 Circa Crossing Drive
Lithia, FL 33547

June 25, 2010

Via email & fedex

Mr. Syed Arif, P.E.
FDEP, New Source Review Section
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: New Wales Plant, Multifos C Kiln
DEP Project No. 1050059-066-AC

Dear Mr. Arif:

With respect to your letter dated March 30, 2010 on the referenced matter, Mosaic is pleased to provide below the response to the additional information requested, following the numbering in your letter.

1. Please provide NO_x emissions history for the Multifos C Kiln from installation until now. The original project went through a PSD review, but the applicant accepted a synthetic minor source status for Multifos C Kiln at a later date. The Department is interested in the NO_x emissions from Multifos C Kiln when it initially went through PSD review (Was NO_x a PSD pollutant?) and later it became a synthetic minor source and accepted 39.9 tons per year (tpy) for NO_x emissions. Please provide the necessary stack tests, documents to support your NO_x emission numbers.

Compliance tests performed for the Multifos C Kiln since 2002 is provided in Table 1 included in the attachment section of this response. The BACT determination (PSD-FL-244) for the C kiln application notes that as originally proposed, i.e. with the 25 tons per hour C kiln capacity, it would have resulted in a significant increase in the emissions of PM, F and SO_2. With respect to SO2, the facility proposed to cap the feed rate input to 17.1 tons per hour, and to install a scrubber for the new C kiln, so that PSD review and permitting would not be required. A restriction on fuel oil consumption was later proposed by the facility so that PSD review would not be required for NO_x.

The BACT determination also noted that preliminary analysis by the Department showed that actual NO_x emissions would have been above PSD significance threshold of 40 tons per year and that the proposed feed rate cap (for SO2) would not resolve PSD concerns for NO_x. The proposed permit and public Notice of Intent issued on July 24, 1998, stated that a NO_x control strategy was to be submitted before final permit action could occur to provide reasonable assurance that the C kiln NO_x emissions would be limited to a level representative of BACT or to less than 40 tons per year. Eventually, the Department and the facility agreed that rates for the A and B kilns would be limited, that caustic scrubbing would be installed and that the NOx limit for C kiln would be determined following testing. Subsequently, the facility

submitted an application for a synthetic minor source permit on September 25, 2003.

The Department followed up with an RAI for the application asking for a demonstration that NO_x emissions would be below 40 tons per year at a production rate of 17 tons per hour. In an October 13, 2003 response, the facility stated that compliance with the requirement to stay under 40 tons per year would be established by further testing and suggested that as an alternative the NO_x limit could be established as a maximum fuel usage in lieu of a specific numeric limit as had been done for the A and B kilns. It is now apparent that the initial production capacity of 25 tons per hour was inappropriate as shown by operating data. The C kiln has only averaged about 10 tons per hour. Based on the data and the emission calculations shown in the application, it is clear that, with the requested 500 hours per year for dump chute method of operation, the PSD significance threshold of 40 tons per year will not be exceeded.

2. Please explain why the Department should not consider the implication of source obligation rule as codified in Rule 62-212.400(12)(b), F.A.C. The kiln was restricted to 39.9 tpy of NO_x and the modification is requesting additional 4 tpy of NO_x emissions which will put it above the 40 tpy threshold of being a PSD pollutant.

As shown and explained on page 22 of our application, NO_x emissions during the dump chute operation are 3.8 tpy and during normal operation they are 36.1 tpy, which gives a total of 39.9 tpy. Emissions, therefore, do not exceed the 39.9 tpy restriction and the 40 tpy PSD pollutant threshold is not exceeded.

3. Please provide pictures showing the dump chute method of operations.

Pictures showing the dump chute, a process flow diagram showing its location and operation, and video clips of the dump chute operation are provided with this response. Briefly, kiln feed, essentially comprising dried phosphate rock that has been blended with soda ash and phosphoric acid in the pugmill, is fed into the kiln at one end, traverses the length of the kiln to be defluorinated and exits at the other end to enter the grate cooler. Defluorination kiln temperatures and operational control are achieved by air, natural gas and steam that are input at the exit end of the kiln. The connecting section between the kiln and the grate cooler has an opening, closed under normal operations, into which a dump chute is inserted to divert the material exiting the kiln from entering the grate cooler. The inserted dump chute thus diverts the exiting kiln material into a dump chute bunker. This dump chute alternate method of operation is used when upset conditions are encountered. As explained in the application, the flow of feed material under this upset condition is reduced from the normal approximately 10 tons per hour to about 4 tons per hour and the all other flows into the kiln are accordingly throttled but not cut off completely so as keep the kiln operating at a rate that will minimize, or even when possible obviate, the detrimental effects of thermal shock that will set in and occur if the kiln was shut down. The material collected in the dump chute bunker during this upset condition is later recycled in with the normal operation feed material when normal operations is resumed. Sketch number 1 is provided in the attachment section illustrates this dump chute operation. As shown in the sketch, with the dump chute in the 'out' position, the hot unsized product from the kiln drops down into the grate cooler and goes on to the discharge conveyor. With the dump chute in the 'in' position, the hot unsized product from the kiln is diverted away from

going into the grate cooler and goes into the dump chute bunker. The annotated pictures included show the kiln, the dump chute and the dump chute bunker, in relation to the kiln and the grate cooler. Video clips showing the dump chute in operation are also included with this submission.

4. The application indicates re-establishing the minimum indicator value on successful completion of each required annual compliance test. Please explain what reasonable assurance the Department has that the applicant was in compliance throughout the previous year if the minimum indicator value this year is higher compared to the previous year.

The minimum indicator value is re-established *only* if needed or necessary as indicated by compliance testing. This request and the basis for the request is not different from the flowrates and pressure drops in scrubber parametric monitoring currently accepted and used in the Title V permits that have minimum indicator values that are re-established when and only when compliance testing so indicates as being warranted. Please understand that we are not saying that a minimum will be re-established on successful completion of *each* annual compliance test. If a compliance test is successful and the indicator value for that test is higher that the previously tested value, then the previously tested minimum indicator value will prevail.

5. The data (6.26/08) of NO_x measurements during dump chute activity submitted with the application indicates that the higher mass NO_x emissions correlate with lower C Kiln oxygen numbers. Please explain the reasons for lower oxygen numbers compared to other runs and how this could be rectified to keep NO_x emissions to a minimum.

The 6/26/08 data of NO_x measurements during dump chute activity has only three data points relating to dump chute activity, run numbers 6, 7 and 8, that show C kiln feed belt values of 4.0 tons per hour. The corresponding C kiln oxygen analyzer data are 2.6, 12.0 and 17.6 with NO_x lb/hr values of 12.2, 2.7 and 0.7. During the dump chute activity, the material is diverted out of the kiln and into the open dump chute bunker, the feed material is throttled down, and adjustments are made to the air, burner natural gas and steam flows to ensure minimal thermal stress to the kiln. As such, as can be seen from the numbers, kiln oxygen numbers can be erratic and attributable to variations in kiln air flow in general that can arise from the throttling of air, steam and natural gas and compounded by the opening and operation of the dump chute itself. Unfortunately, there is no simple one to one paired cause and effect type of scenario that can be deduced from this operation or operational data.

6. Please provide the actual mixed feed rate in tons per hour for the August 12, 2009 stack test. The synthetic minor source permit issued in August 2004 restricts the mixed feed rate to 12.1 tons per hour; please provide stack test results for the test that was operated close to the permitted rate of 12.1 tons per hour.

The actual mixed feed rate in tons per hour, fuel rate, NOx emissions measured and calculated per AP-42 factors are provided in Table 1. Stack test report for the August 12, 2009 was provided to the FDEP Southwest District Office as required by the synthetic minor source permit issued in August 2004.

7. Please provide calculations for NO_x emissions from Kiln C on an annual basis based on fuel usage. Please include natural gas as primary fuel as well as fuel oil as back-up fuel in your calculations.

Calculations for annual NO_x emissions from Kiln C based on fuel usage are provided in Table 1.

8. Please provide a marked up version of the existing synthetic minor source permit with the changes requested in this application.

As we are only asking for an alternate method of operation and no changes to any emission limits or capacity throughputs, a marked up version of the existing synthetic minor source permit would be redundant – a change in the process description section to incorporate this alternate method of operation would suffice.

If you have any questions concerning the information in this response, please feel free to contact me of at (813) 500-6478.

Sincerely,

Rama Iyer, P.E.
Senior Engineer
Environmental

ec: T. Fuchs, F. Salmon, D. Ahrens, D. Turley, D. Jellerson, J. Voyles, D. Jagiella / Mosaic
P. Raval / Koogler

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Rama Iyer**
   Registration Number: **56919**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Mosaic Fertilizer, LLC**
   Street Address: **13830 Circa Crossing Drive**
   City: **Lithia** State: **Florida** Zip Code: **33547**
3. Professional Engineer Telephone Numbers...
   Telephone: **(813) 500 - 6478** ext. Fax: **(813) 571 - 6908**
4. Professional Engineer E-mail Address: **rama.iyer@mosaicco.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

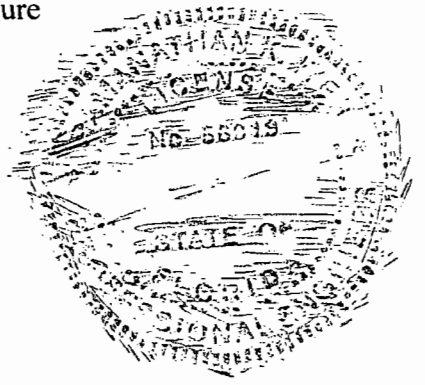
(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☐, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☒, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Ramaiyer
Signature

June 25, 2010
Date



(seal)

New Wales, C Kiln
DEP Proj. No. 0570059-066-AC
Response to RAI dated 03/30/2010

Attachment

Table 1. NO_x Emissions Data
C Kiln Process Flow Diagram
Dump chute pictures
Dump chute operation videos

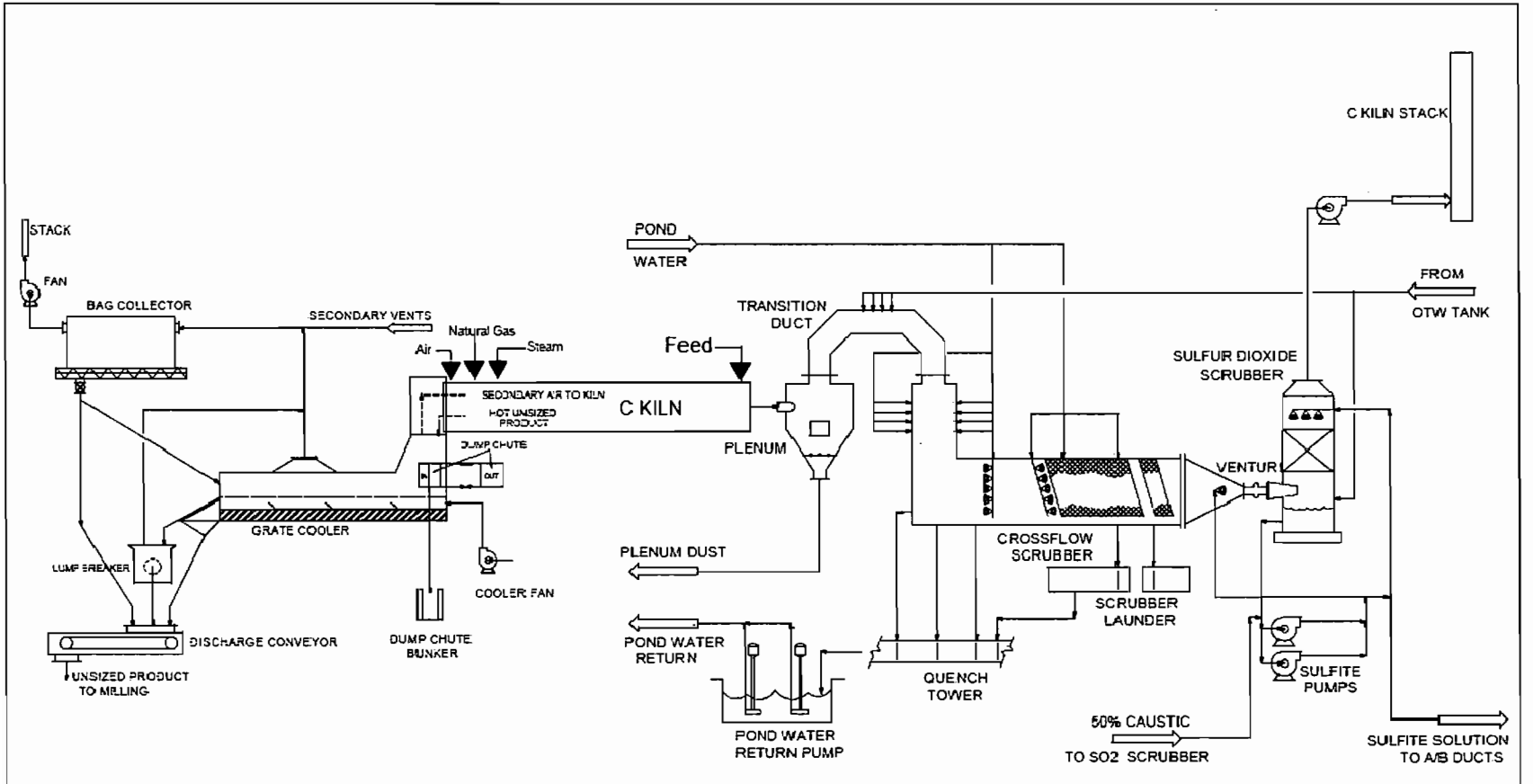
Table 1: NO_x Emissions Data Multifos C Kiln, New Wales				
Test Date	**Feed Rate[1] tons/hr**	**Fuel Rate mmBtu/hr**	**NO_x lb/hr**	**NO_x from Fuel[2] lb/hr**
9/17/2002	8.9	41.8	8.17	4.08
11/14/2003	11.0	44.2	5.80	4.31
8/31/2003	11.7	42.7	8.39	4.17
10/17/2005	12.0	41.4	8.05	4.04
1/11/2007	12.0	41.3	5.53	4.03
6/3/2008	9.5	42.8	5.58	4.18
8/12/2009	10.5	44.3	3.74	4.32
9/30/2009	10.5	44.7	5.77	4.36
10/20/2009	10.5	40.4	6.26	3.94

Notes:

[1]Mixed feed rate to the kiln
[2]Using AP-42 factor of 100 lb/mmcf (0.0976 lb/mmBtu) for natural gas

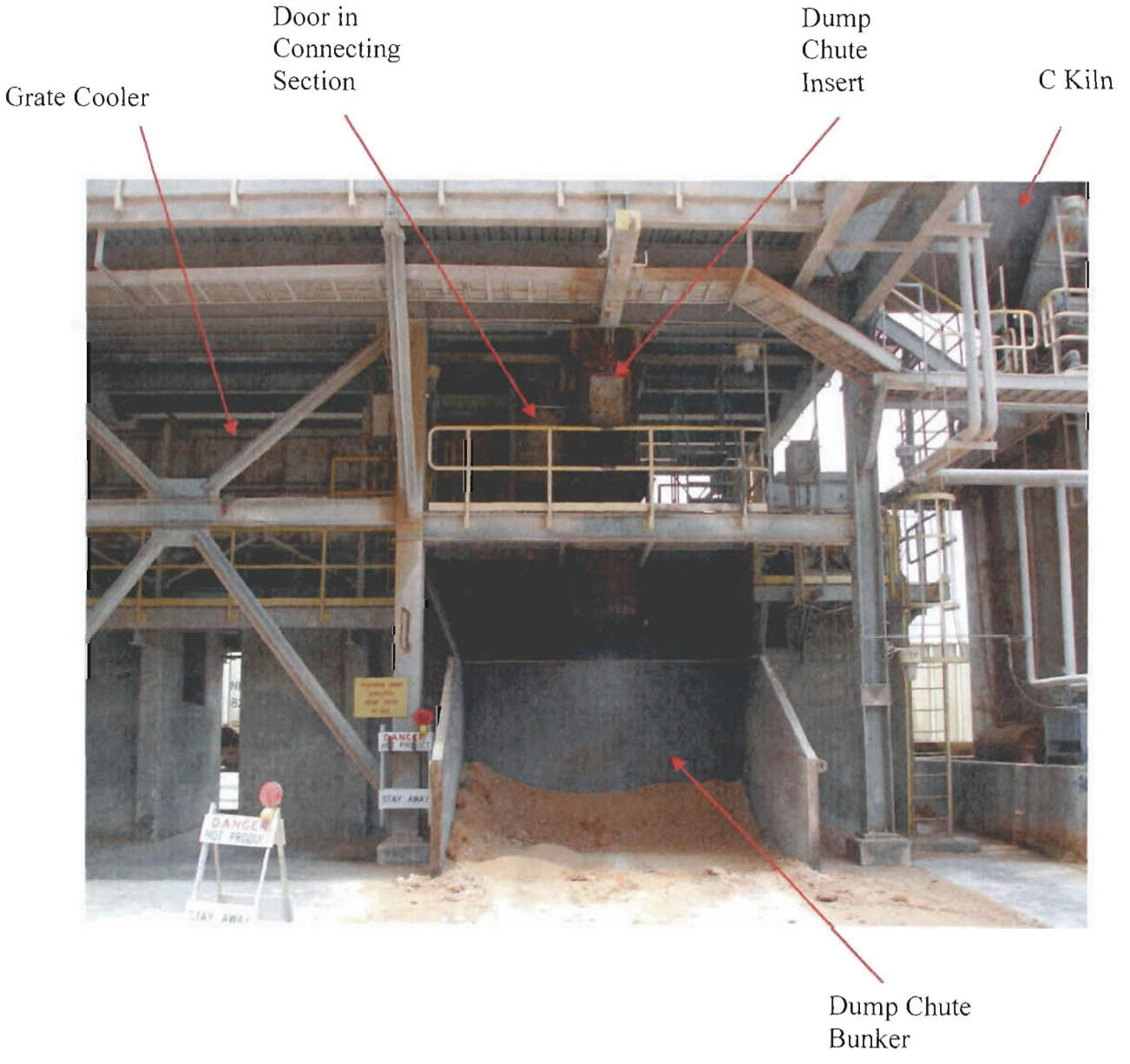
Maximum annual NO_x calculated using AP-42 factors for natural gas and No. 2 fuel oil (backup for 1,225 hours) as follows:

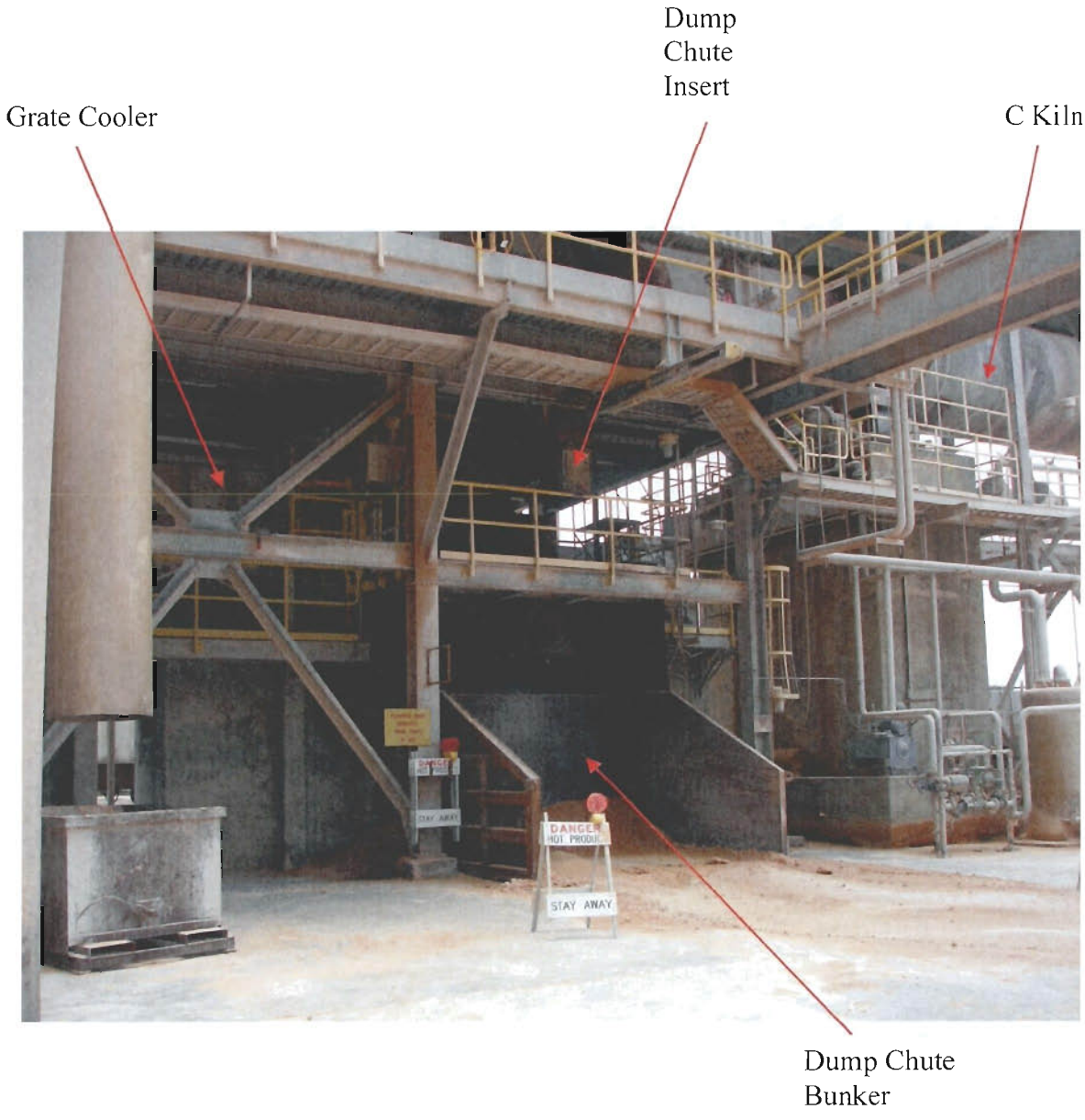
NO_x, N. Gas = 0.0976 lb/mmBtu x 56 mmBtu/hr x 8,760 hrs/yr x ton/2,000 lbs = 23.9 tpy
NO_x, No. 2 FO = 01408 lb/mmBtu x 56 mmBtu/hr x 1,225 hrs/yr x ton/2,000 lbs = 4.8 tpy
NO_x, max = (23.9 tpy x (8,760 – 1,225) hrs / 8,760 hrs)) + 4.8 tpy = 25.4 tpy



DATE: 06/17/10	NEW WALES MULTIFOS C KILN	MOSAIC FERTILIZER
EUIDs 074, 075	FLOW DIAGRAM - DUMP CHUTE OPERATION	SKETCH NO. 1


Baghouse
C Kiln
Grate Cooler
Dump
Chute
Insert


Grate Cooler
Door in Connecting Section
Dump Chute Insert
C Kiln
DANGER
HOT PROOF
STAY AWAY
Dump Chute Bunker


Dump
Chute
Insert
Grate Cooler
C Kiln
DANGER
HOT PRODUCT
STAY AWAY
Dump Chute
Bunker