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BUREAU OF AIR REGULATION

December 3, 2008

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Attention: Mr. Syed Arif, P.E.

**RE: MOSAIC FERTILIZER, LLC – NEW WALES FACILITY
PROJECT NO. 0570059-061-AC
BEST AVAILABLE RETROFIT TECHNOLOGY EXEMPTION APPLICATION
REQUEST FOR ADDITIONAL INFORMATION**

Dear Mr. Arif:

Mosaic Fertilizer, LLC (Mosaic) has received the Florida Department of Environmental Protection's (FDEP) request for additional information (RAI) dated October 31, 2008, regarding the best available retrofit technology (BART) exemption application for the New Wales facility. Each of the FDEP's requests is answered below, in the same order as they appear in the RAI letter.

Comment 1. As indicated in your BART exemption application on Page 2-6, under scenario A, Mosaic is proposing to shut down the Multifos A and B Kilns and their respective coolers. The reduction in particulate matter (PM) emissions resulting from these shutdowns total 36.2 pounds per hour (lb/hr), the reduction in sulfur dioxide (SO₂) emissions is 316 lb/hr, the reduction in nitrogen oxides (NO_x) emissions is 45.7 lb/hr and the reduction in sulfuric acid mist (SAM) emissions is 4.2 lb/hr. Please provide to the Department information on how the reduction in emissions in lb/hr for the various pollutants were arrived at. Submit any test data or other supporting documents to validate these emission reductions.

Response: The emissions reductions are based on the 24-hour average emission rates used in the baseline visibility impact analysis for the BART-eligible emissions units planned to be shut down under Scenario A. These rates and references are presented in Table 2-3 through 2-5 of Appendix A of the BART Modeling Protocol (September 2008). Reductions are estimated as follows:

PM

Review of the stated PM emission reduction revealed that the emissions were overestimated. The correct reductions are as follows:

Sum of PM emission rates for EU ID Nos. 032 and 033= 2.14+2.14 = 4.28 lb/hr

Emission rate for EU036 = 29.83 lb/hr

Emission rate of EU036 blending operation only= 10.0 lb/hr (see Table 2-4 of Protocol)

Total reduction = 4.28 + 29.83 – 10.0 = 24.11 lb/hr

SO₂

Emission rate for EU 036, which was used as 316 lb/hr in the initial BART exemption application submitted in January 2007, but was later revised as 177.5 lb/hr based on more recent test data (RAI response dated July 9, 2007). The reduction in SO₂ emissions is based on actual stack test data from the A and B Kilns (see Table 2-3 of the September 2008 Air Modeling Protocol).

NO_x and SAM

The reduction in NO_x and SAM emissions is based on Table A-6 in Appendix A of the January 2007 Revised Air Modeling Protocol (table attached for convenience), which is based on maximum fuel oil firing in the A and B Kilns and the dryer, and AP-42 factors for fuel oil firing.

Comment 2. On Page 2-8 of the Bart exemption application, the amount of standard vanadium catalyst listed for Sulfuric Acid Plant (SAP) No. 1 and 2 is listed as 610,000 liters. The Haldor Topsoe summary for reactor calculations at the end of the application lists a different volume for each of the two SAPs. Please explain the discrepancy.

Response: The Topsoe summaries of reactor calculations presented in Appendix C of the application were performed for a 3,400 TPD production rate. Since the plants are now limited to 3,200 TPD production rate, these catalyst volumes were scaled back in direct proportion to the production rate. This gave 605,892 liters required for SAP No. 2, which was rounded up to 610,000 liters for the narrative.

SAP No. 1 had a slightly higher required loading at 621,771 Liters at 3,200 TPD, scaled down from the 3,400 TPD loading. SAP No. 1 needed slightly more catalyst at 3,400 TPD because the distribution of catalyst space in its converter was not optimum. It is expected that by limiting the plant rate to 3,200 TPD, the pass by pass catalyst loading can be made closer to optimum in the available space and therefore approach the 605,892 liters required for SAP No. 1 (rounded to 610,000 liters).

Comment 3. Please provide information on what kind (brand name and type) of catalyst does the converter for each of the three SAPs currently contain. Also, indicate the amount that each bed of those converters currently holds? The application indicates that standard vanadium catalyst loading will be increased in the three SAPs. Please specify the type of standard catalyst that will be used.

Response: All three converters have XLP-220/LP-120 in the 1st pass. The 2nd, 3rd, and 4th pass all contain XLP-110/LP/110. All catalyst is manufactured by MECS. Current quantities are:

	<u>SAP No. 1</u>	<u>SAP No. 2</u>	<u>SAP No. 3</u>
1 st pass	99,200	113,225	103,200
2 nd pass	117,400	117,400	119,400
3 rd pass	129,400	129,400	130,800
4 th pass	<u>152,400</u>	<u>176,400</u>	<u>181,800</u>
Total	498,000	536,425	535,200

New catalyst added to each SAP will be MECS XLP-220 (or Topsoe equivalent) in the 1st pass and MECS XLP-110 (or Topsoe equivalent) in the 2nd, 3rd, and 4th passes.

Comment 4. Page 2-9 of the Bart exemption application refers to Mosaic determining that it is more cost-effective to use a larger catalyst volume with standard catalyst versus cesium catalyst. Please provide the cost-effectiveness information to validate the claim.

Response: Modest reductions in SO₂ emissions or increases in production rate are more economically made by increasing the loading of conventional catalyst rather than throwing out good catalyst to be replaced by cesium. Cesium is justified only when there is insufficient space in the converter to meet the emission limits with a high loading of conventional catalyst. The converters in

the New Wales SAP Nos. 1, 2 and 3 have sufficient space for additional conventional catalyst to operate at 3,200 TPD production rate.

For example, for SAP No. 1, the conventional catalyst volume is increasing from 498,400 liters to approximately 610,000 liters, or an increase of 111,600 liters. At \$4 per liter cost, this amounts to \$446,400.

If one switches to a cesium to meet the lower emissions rate and/or to achieve the permitted production rate, total catalyst loading required is about 139 L/TPD, of which perhaps 32 percent or 45 L/TPD is cesium in the 4th pass. Therefore, about 144,000 liters of cesium catalyst would be required, at a cost of roughly \$8/L or \$1,152,000. The remaining catalyst would be existing conventional catalyst, but only 300,800 liters would be required. Therefore, about 198,000 liters of conventional catalyst would need to be discarded (498,400 liters existing minus 300,800 liters required). This would represent a cost of \$792,000 at \$4/liter. The cesium catalyst option would therefore, be approximately \$1,500,000 more expensive for just one plant. Therefore, it is less costly to make the emission improvement via higher loading of conventional catalyst.

Comment 5. Page 2-13 of the BART exemption application indicates that SAP No. 1 has achieved 90 percent or more of the proposed maximum production rate of 3,200 tons per day (TPD) on 453 days between May 2004 (date of converter replacement) and September 1, 2008. The Department determined that this equates to less than 30 percent of the available time from May 2004 to September 1, 2008. Similarly, SAP No. 3 has operated even less percent of the available time compared to SAP No. 1. The application claims that the purpose for all the physical changes is to meet lower SO₂ emission limits and not to increase the production rates. What reasonable assurance can the applicant provide that both of these SAPs can operate at 3,200 TPD on a consistent basis?

Response: Sulfuric acid plants do not operate continuously at maximum capacity year-around. Also, the maximum daily capacity as contained in the permits cannot ever be exceeded. Therefore, operating rates reflect operation at optimum conditions (clean catalyst and well serviced other equipment following a turnaround, favorable ambient conditions, etc.) and these optimum conditions change over time with commensurate changes in the operating rate. Rates are always highest following a turnaround, but decrease slowly over time between turnarounds. Following a turnaround, emission limits can be met while at or close to maximum capacity. However, as the catalyst ages, production rate and other operational parameters would have to be suitably adjusted to maintain emissions at below the permitted limits. This is why production drops off over time to less than 95 percent or even 90 percent of permitted rate.

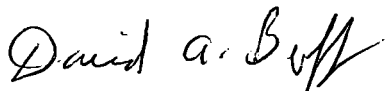
Therefore, the fact that each SAP has operated at 90 percent or greater of the proposed maximum production rate of 3,200 TPD on multiple days over a 3 or 4 year period clearly demonstrates these SAPs already operate at the proposed maximum capacity. Mosaic is proposing to reduce SO₂ emissions, but is not requesting any increase in the permitted H₂SO₄ production rates of the SAPs, and is actually lowering the permitted production rate of SAP Nos. 1, 2, and 3 from 3,400 TPD to 3,200 TPD.

As stated in the application, the purpose of the physical changes to the SAPs is to meet the BART exemption criteria, i.e., to meet lower SO₂ emission limits. Mosaic has not used production rate increases to internally justify any of these changes. Due to the lower SO₂ limits, the average daily short term H₂SO₄ production from the SAPs may actually decrease. This is because there is a correlation between SO₂ emissions and production rate in a SAP.

Thank you for the opportunity to provide you with this additional information. If you have any questions, please do not hesitate to call me at (352) 336-5600.

Sincerely,

GOLDER ASSOCIATES INC.



David A. Buff, P.E., Q.E.P.
Principal Engineer



Salahuddin Mohammad
Staff Engineer

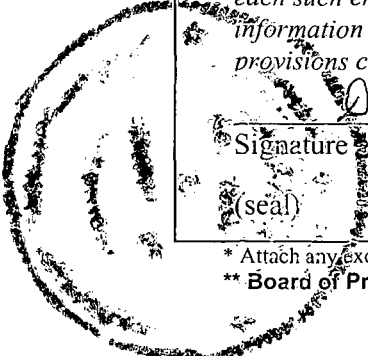
DB/tlc

- cc: D. Turley, Mosaic
D. Jagiella, Mosaic
D. Jellerson, Mosaic
R. Iyer, Mosaic
S. Mohammad, Golder

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FACILITY INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: David A. Buff Registration Number: 19011
2. Professional Engineer Mailing Address... Organization/Firm: Golder Associates Inc.** Street Address: 6241 NW 23rd Street, Suite 500 City: Gainesville State: FL Zip Code: 32653
3. Professional Engineer Telephone Numbers... Telephone: (352) 336-5600 ext. 545 Fax: (352) 336-6603
4. Professional Engineer Email Address: dbuff@golder.com
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(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</i> <i>(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.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, 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.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/>, 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 <input type="checkbox"/>, 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.</i> <i>(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 <input type="checkbox"/>, 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.</i>  Signature: <u>David A. Buff</u> Date: <u>12/03/08</u> (seal)

* Attach any exception to certification statement.

** Board of Professional Engineers Certificate of Authorization #00001670