

Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

July 19, 2002

Mallika Muthiah, P.E.  
Chief, Air Facilities Section  
Miami Dade DERM  
33 SW 2nd Avenue  
Miami, FL 33130-1540

Re: Tarmac AC Permit Application (Dated 6/25/02)  
Relocation and Replacement of Existing Concrete Block Plant (at Tarmac Pennsuco, Medley, FL)  
Permit No. 0250020-014-AC

Dear Ms. Muthiah:

As you know, Tarmac Pennsuco is a wet-process Portland cement plant located in Medley, Florida. This plant is owned by Tarmac America LLC and is an existing, major source pursuant to State Prevention of Significant Deterioration (PSD) rules. Accordingly, requests from Tarmac for air construction (AC) permits should be reviewed by the Department of Environmental Protection (DEP), New Source Review Section, for PSD applicability.

To facilitate such a review for Tarmac's recent AC permit application (for the relocation and replacement of the existing concrete block plant; Permit No. 0250020-014-AC), you forwarded a copy of the application to DEP on July 12, 2002. While DEP does not feel that this project triggers the requirements of New Source Review, we do have several comments and concerns.

PM Emission Calculations. Tarmac estimated the potential particulate matter (PM) emissions from the new concrete block plant as part of their application (reference Attachment TA-E022-L2, Emissions Calculations). The DEP has several questions about these calculations.

1. The number of cement unloadings and the time required for each unloading seem irrelevant. The AP-42 emission factor for cement unloading to elevated storage silos is provided in emissions per mass of material transferred.<sup>1</sup> Based on the application, the new concrete block plant would have a capacity of 5500 blocks per hour (requiring 8.53 tons of cement/5500 blocks) = 0.00155 tons cement per block. In one year of operation (limited to 6,240 hours), this equates to  $(0.00155)(5500)(6240) = 53,227$  tons cement transferred to the storage silos. At 0.72 lb PM/ton cement transferred, uncontrolled PM emissions from the cement storage silos are thereby estimated to be 19.2 tons per year.
2. Tarmac's calculation for PM from the weigh hopper/mixer assumes a single weigh hopper/mixer that only processes cement from the cement storage silos. Looking at Attachment TA-E022-L1, Process Flow Diagram, it is clear that there are a number of weigh hoppers. Each of the three aggregate storage silos has a weigh hopper, as do each of the two cement storage silos. The aggregate weigh hoppers process a total of 81.68 tons aggregate per hour, and the cement silo

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Printed on recycled paper.

weigh hoppers process a total of 8.53 tons cement per hour. The mixer, however, would appear to process  $(8.53 + 81.68) = 90.21$  tons of material per hour.

3. The DEP agrees with the rationale for assuming aggregate storage and silo loading PM emissions are negligible. Likewise, DEP agrees with the suggested control for PM emissions from unpaved roads. Both of the paragraphs listed under "unconfined emissions" in Tarmac's emission calculation should be included as conditions in the AC permit.

The following table summarizes DEP's calculations of PM emissions from the new concrete block plant. (PM = emission factor \* throughput \* 6,240 hours/year \* 1 ton/2000 lbs)

Emission Source	Emission Factor <sup>1</sup>	Throughput	Uncontrolled PM
Aggregate Silo Loading	Negligible	81.68 ton/hr	Negligible
Aggregate Weigh Hopper Loading	0.0051 lb/ton	81.68 ton/hr	1.3 tons/year
Cement Silo Loading	0.72 lb/ton	8.53 ton/hr	19 tons/year
Cement Weigh Hopper Loading	0.0051 lb/ton	8.53 ton/hr	0.14 tons/year
Mixer Loading	0.22 lb/ton	90.21 ton/hr	62 tons/year

Assuming 99 percent control efficiency for the baghouses, this results in maximum total controlled PM emissions of 0.82 tons/year. This is well below the significant emission rate for PM (25 tons/year).

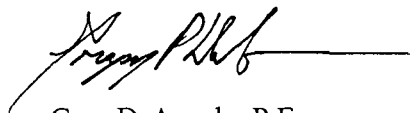
"Debottlenecking" the Kiln. The new, replacement concrete block plant has a capacity 80 percent larger than the existing plant (5500 blocks per hour versus current capacity of 3000 blocks per hour). To meet the new demand for 2500 blocks per hour, the existing wet-process Portland cement plant would have to produce additional cement. Based on the numbers in Tarmac's application, 24,000 tons per year of cement would be required to make the additional concrete blocks. While this is only a three percent increase compared to current production levels (approximately 757,000 tons of cement per year), a three percent increase in kiln NO<sub>x</sub> and SO<sub>2</sub> would trigger the PSD significance levels for those pollutants.

For example, current NO<sub>x</sub> emissions are around 2300 tons per year. A three percent increase in NO<sub>x</sub> would yield an additional 70 tons per year, which is greater than the significant emissions rate of 40 tons per year.

To avoid PSD implications, the AC permit should provide assurances that cement is only being "shifted" from other products to the concrete block plant. There must not be an increase in cement production from the existing wet-process kilns to meet the new capacity of the concrete block plant. In other words, for DEP's PSD determination to remain valid, the AC permit must maintain the current production limits for the existing wet-process kilns.

Please feel free to contact me with any additional questions or comments at (850)921-9506.

Sincerely,



Greg DeAngelo, P.E.  
New Source Review Section

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<sup>1</sup> EPA Report. "Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume 1: Stationary Point and Area Sources." Section 11.12, Concrete Batching. October 2001.



January 25, 2001

**CERTIFIED MAIL NO. 7000 1670 0004 7257 7306**  
**RETURN RECEIPT REQUESTED**

Mr. Scott Quaas  
Corporate Environmental Manager  
Tarmac America, Inc.  
455 Fairway Drive  
Deerfield Beach, FL 33441

**RECEIVED**

JAN 29 2001

**BUREAU OF AIR REGULATION**

**ENVIRONMENTAL RESOURCES MANAGEMENT**  
AIR QUALITY MANAGEMENT DIVISION  
33 S.W. 2nd AVENUE  
SUITE 900  
MIAMI, FLORIDA 33130-1540  
TELEPHONE: (305) 372-6925  
FAX: (305) 372-6954

RE: Tarmac America, Pennsuco Cement Plant Construction Project

Dear Mr. Quaas:

The DERM Air Facilities Section staff reviewed the revised construction permit application for the modernization of the referenced plant and your letter dated December 29, 2000 containing the requested additional information. Please be informed that further information and clarification of certain items are needed in order to continue processing your application.

- 1) Provide the manufacturer information, such as, make, model No., capacity in terms of air and gas flow rate, expected hours of operation, inside temperature, etc., for all pollution control equipment. Furthermore, match all pollution control equipment with the appropriate emissions points described in the application.
- 2) Detail the generation and destruction, or retention, of the air pollutants inside each emissions and control unit throughout the process.
- 3) Provide stack test results from similar cement plant facilities, if available, to demonstrate the feasibility of the proposed emissions limits.
- 4) Submit computer-modeling analyses to demonstrate maximum impacts of projected emission levels from the facility. Call me undersigned to further discuss details of such modeling.

Please provide the above mentioned information to our office as soon as possible. The following items are provided for informational purposes and do not require action on your part:

- a) The Notice of Intent to Issue the construction permit must be published as per Rule 62-210.350(1)(a), FAC. Although an EPA review is not required for construction permits, a 14-day public comment period is required.
- b) The department intends to include 30-day rolling average emissions limits instead of the proposed annual average levels for the following pollutants: SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOCs. In addition, appropriate maximum 24-hour average limits will be imposed for those pollutants in the permit.
- c) Continuous Emission Monitoring will be required for the following pollutants: SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOCs.

If you have any questions regarding this letter contact Frank Echanique of my staff or myself at (305) 372-6925.

Sincerely,

A handwritten signature in cursive script that reads 'Mallika Muthiah'.

Mallika Muthiah, P.E., Chief  
Air Facilities Section

**COPY**

**RECEIVED Tarmac**

CERTIFIED MAIL  
0022 7981 4046

FEB 19 2001

**BUREAU OF AIR REGULATION**

**Tarmac America, Inc.**  
455 Fairway Drive  
Deerfield Beach, FL 33441  
(954) 481-2800  
Fax (954) 480-9352  
www.tarmacamerica.com  
**Environmental Services**  
Direct line (954) 425-4165  
Direct fax (954) 480-9352

16 February 2001

Ms. Mallika Muthiah, P.E., Chief  
Air Facilities Section  
Miami-Dade County Environmental Resources Management  
33 SW 2<sup>nd</sup> Avenue  
Miami, Florida 33130-1540

RE: **Pennsuco Cement**  
**Dade County – AP**  
**Facility ID# 0250020**

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Dear Ms. Muthiah:

Tarmac appreciated the time the DERM spent to discuss the additional information regarding the cement plant modernization permit revision. Following is additional information and concurrence on issues raised during the meeting.

- 1] Tarmac will provide pollution control manufacturer information when the information becomes available during the initial construction phases of the project. The information will post-date the issuance of a permit revision but will pre-date the submittal of the operation permit application.
- 2] Tarmac agreed to perform an air quality modeling analysis of the main stack emissions associated with at the new cement plant at Pennsuco. Golder Associates was commissioned to perform the analysis. Pollutants modeled include particulate matter with diameter less than 10 microns (PM10), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and carbon monoxide (CO).

The pollutants were modeled for the main stack based on a stack height of 387 feet, an exit diameter of 18 feet, an exit temperature of 194°F, and flowrate of 486,000 acfm. The modeled emission rates are as follows: 44.9 lb/hr for PM10, 320 lb/hr for SO<sub>2</sub>, 720 lb/hr for NO<sub>x</sub>, and 576 lb/hr for CO. Building downwash analysis considered the kiln feed blending silo at a height of 205 ft., the raw mill grinding building at a height of 160 ft., and the coal grinding building at a height of 140 ft.

All air dispersion modeling was performed as per U. S. Environmental Protection Agency (EPA) guidelines. Five years of meteorological data (1987-1991) were used in the modeling analysis. Surface data was collected from the Miami International Airport and upper air data from National Weather Service stations in West Palm Beach.

The receptor grid used in the modeling analysis contained property fence line receptors at 100-meter spacing and off-property receptors were generated as a polar grid. The grid consists of 2 degree spacing at distances of 300, 500, 700, 1000, 1300, 1700, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000, 8000, and 10,000 meters. The modeling origin used is the stack location at the first proposed site. Additional receptors were placed at 100 meter spacing along the Florida Turnpike, which runs through the property owned by Tarmac America, Inc. Refinements of the maximum impacts were made with 1 degree spacing for maximum impacts greater than 2,500 meters away to ensure resolution of 100 meter or less spacing between receptors.

The maximum impacts from the proposed project were predicted by initially performing a screening analysis. The maximum impacts were all offsite, but within a distance of 3000 meters from the modeling origin. The project was found to be insignificant for NO<sub>x</sub>, PM<sub>10</sub>, and CO, but just significant for SO<sub>2</sub>, when compared to the EPA Class II Significant Impact Levels (SILs) as shown in Table 1. A refined analysis was then performed on the initial screening results, and the refined modeling results are shown in Table 2. The maximum 24-hour SO<sub>2</sub> impact was 6.02 ug/m<sup>3</sup>, just above the SIL of 5 ug/m<sup>3</sup>. The maximum 3-hour SO<sub>2</sub> impact was 26.6 ug/m<sup>3</sup>, just above the SIL of 25 ug/m<sup>3</sup>.

Although the modeling results for SO<sub>2</sub> are just slightly above the SILs, the maximum impacts represent less than 2.5 percent of the Florida SO<sub>2</sub> ambient air quality standards of 260 ug/m<sup>3</sup>, 24-hour average, and 1,300 ug/m<sup>3</sup>, 3-hour average. Therefore, there is no justification from an air quality standpoint to reduce SO<sub>2</sub> emissions any further.

- 3] Tarmac will agree to a 12-month rolling average for the ton/year SO<sub>2</sub> and NO<sub>x</sub> allowable emissions. The averaging time will assure that the annual emission limits will be met. The 12-month rolling average will be calculated by summing the total emissions over the most recent twelve calendar months. Tarmac also will agree to a 24-hour block average for the lb/hour short-term emission limits.
- 4] Tarmac will agree to the installation, calibration, and maintenance of an additional continuous emission monitoring system in the in-line kiln/raw mill stack to measure and record the emissions of VOC. The VOC allowable emissions include both a

short term 24-hour limit and an annual limit. The averaging time for VOC shall be a 24-hour block average for the lb/hour short-term emission limits and a 12-month rolling average for the annual ton/year allowable emissions limit. This is also consistent with the SO<sub>2</sub> and NO<sub>x</sub> emission limits.

I have attached a revised Table 1-2 from the existing permit with changes consistent with the issues discussed above. Tarmac will await a "review" copy of the proposed permit revision. Should you have any questions or need clarification of the above information please contact me at (954) 425-4165.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Quaas", with a large, stylized flourish above the name.

Scott Quaas  
Corporate Environmental Manager  
Environmental Services—Florida Region

cc: H. Johnson  
A. Townsend  
R. Hawks – EQM  
D. Buff – Golder  
A. Linero – Florida DEP

Table 1. Summary of Maximum Pollutant Concentrations Predicted for Tarmac Pennsuco Facility Compared to the EPA Class II Significant Impact Levels

Pollutant	Averaging Time	Maximum Predicted Concentration ( $\mu\text{g}/\text{m}^3$ )	Receptor Location		EPA Class II Significant Impact Levels ( $\mu\text{g}/\text{m}^3$ )
			Direction (degree)	Distance (m)	
SO <sub>2</sub>	Annual	0.422	324	2500	1
	24-Hour	6.02	96	1000	5
	3-Hour	26.6	294	2000	25
PM <sub>10</sub>	Annual	0.059	324	2500	1
	24-Hour	0.85	96	1000	5
NO <sub>2</sub>	Annual	0.949	324	2500	1
CO	8-Hour	33	96	1000	500
	1-Hour	117	176	1000	2,000

Table 2. Summary of Maximum Pollutant Concentrations Predicted for Tarmac Pennsuco Facility Compared to the EPA Class II Significant Impact Levels, Refined Analysis

Pollutant	Averaging Time	Maximum Predicted Concentration ( $\mu\text{g}/\text{m}^3$ )	Receptor Location		EPA Class II Significant Impact Levels ( $\mu\text{g}/\text{m}^3$ )
			Direction (degree)	Distance (m)	
SO <sub>2</sub>	Annual	0.424	324	2300	1
	24-Hour	6.02	96	1000	5
	3-Hour	26.6	294	2000	25
PM <sub>10</sub>	Annual	0.059	324	2300	1
	24-Hour	0.85	96	1000	5
NO <sub>2</sub>	Annual	0.953	324	2300	1
CO	8-Hour	33	96	1000	500
	1-Hour	117	176	1000	2,000



**Table 1-2. Air Pollutant Standards and Terms.**

FACILITY ID NUMBER: 0250020

**Permittee:**  
Tarmac America, Inc.

**Permit No.: 0250020-008-AC**  
New Dry Process Plant

E.U. ID#	Description	Pollutant ID	Fuel(s) [1]	Permit limits	Allowable Emissions [2]		Basis
					lb/hr [3]	TPY	
#021	Raw Mill/Preheater/Calciner/Kiln System	PM	coal/gas/oil	0.125 lb/ton dry kiln feed	53.1	174.5	Vendor Design
#021	Raw Mill/Preheater/Calciner/Kiln System	PM <sub>10</sub>	coal/gas/oil	85% of PM	44.6	146.6	AP-42
#021	Raw Mill/Preheater/Calciner/Kiln System	SO <sub>2</sub>	coal/gas/oil	1.54 lb/ton clinker (24-hr avg.)	320	806 [4]	Vendor Design
#021	Raw Mill/Preheater/Calciner/Kiln System	NO <sub>x</sub>	coal/gas/oil	3.46 lb/ton clinker (24-hr avg.)	720	1,953 [4]	Vendor Design
#021	Raw Mill/Preheater/Calciner/Kiln System	CO	coal/gas/oil	2.76 lb/ton clinker (24-hr avg.)	576	1,457	Vendor Design
#021	Raw Mill/Preheater/Calciner/Kiln System	VOC	coal/gas/oil	0.19 lb/ton clinker	40	155 [4]	Tarmac
#021	Raw Mill/Preheater/Calciner/Kiln System	H <sub>2</sub> SO <sub>4</sub> <sub>mist</sub>	coal/gas/oil	0.011 lb/ton clinker	2.24	8.68	Vendor Design
#021	Raw Mill/Preheater/Calciner/Kiln System	THC	coal/gas/oil	50 ppmvd			40 CFR 63, Subpart LLL
#021	Raw Mill/Preheater/Calciner/Kiln System	Dioxin/Furan	coal/gas/oil	0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm			40 CFR 63, Subpart LLL
#021	Raw Mill/Preheater/Calciner/Kiln System	VE	coal/gas/oil	20 % opacity			40 CFR 63,

**Notes:**

At a maximum design clinker production rate of 250.0 TPH and a dry feed rate of 425.0 TPH  
Maximum annual clinker production is 1,642,500 TPY with a dry feed rate of 2,792,250 TPY.

- (1) Fuel combustion as specified in Specific Condition No. C.6 and the protocols established by DERM. See also Specific Condition C.14
- (2) Compliance Units. This facility shall demonstrate compliance based on these standards.
- (3) Short Term – 24-hour block average
- (4) 12-month rolling average