Suwannee American Cement
SAC
Branford, Florida, USA
P.O. Box 410
Branford, Fl 32008

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AUG 29 2005
BUREAU OF AIR REGULATION

August 25, 2005

Ms. Trina Vielhauer
Division of Air Resources
Department of Environmental Protection
2600 Blair Stone Road, MS # 5500
Tallahassee, Florida 32399-2400

SUBJECT: Response to Request for Additional Information dated August 5, 2005
Suwannee American Cement – Branford Plant
DEP File No. 1210465-014-AC (PSD-FL-352)
Proposed New Kiln at the Branford Cement Plant in Suwannee County, Florida

Dear Ms. Vielhauer:

Suwannee American Cement (SAC) includes the following information in response to the Florida Department of Environmental Protection's (Department) request for additional information (RAI) dated August 5, 2005. SAC has included text from the Department's RAI in *italics* for clarity with SAC responses following each question.

This most recent RAI request focused on the Prevention of Significant Deterioration (PSD) modeling, Ambient Air Quality modeling, and Class I modeling results. The questions and issues raised by the Department and Dr. Ellis were believed to have been addressed and mutually agreed upon by SAC and the Department in pre-application meetings. SAC believes the original application submitted in February of 2005 and subsequent additional information provided to the Department constitutes a complete application. Additionally, SAC believes the application submitted to the Department provides more information and details then other contemporaneous applications received and approved by the Department for other cement projects.

SAC has confidence in the Department's ability to determine the completeness status of the current application. SAC has worked with the Department on several RAI responses in addition to the first RAI received on March 31, 2005 which have requested additional information beyond that needed to clarify additional information or to answer new questions raised by the additional information provided by SAC. This despite of the fact that Florida Administrative Code (FAC) 62-4.055 (3) outlines that subsequent RAI's should only reflect questions raised by information submitted in response to previous RAI's.

SAC requests in accordance with FAC 62-4.055 (4) that the Department process the Air Construction Permit Application submitted by SAC since the following information completes the application and provides the Department with reasonable assurance based on the information provided in the application that the construction will not emit or cause pollution in contravention of Department standards or rules. Should the Department have additional questions or wish to meet to discuss the completeness of the application, SAC would welcome this opportunity. SAC would be pleased to meet with the Department to clarify any outstanding issues or present the information in the application to demonstrate to the Department the applications completeness.

Additionally, a copy of the RAI response and modeling files have been sent to Dr. Howard Ellis, President of Enviroplan Consulting. If you or Dr. Ellis should have any additional questions please feel free to contact me directly to discuss at (386) 935-5039 or by e-mail at jbhorton@suwanneecement.com.

Sincerely,

Joe Horton
Suwannee American Cement

CC: Michael Cooke – DEP (w/o drawings)
Jeff Koerner – DEP (w/o drawings)
Meredith Bond, US FWS (w/o drawings)
Tom Messer – SAC (w/o drawings)
Celso Martini – SAC (w/o drawings)
Kent Berry - Environmental Quality Management
Dr. Howard Ellis - Enviroplan Consulting
Cleve Holladay - DEP

Limitation 1. *The (x,y) coordinates for point sources used in the SAC Report are incorrect based on measurements made using the plant site map provided by SAC. Table 1 compares the coordinates in the SAC Report for the five existing and five new point sources at the plant with the greatest PM10 emissions to those coordinates measured from the plant site map. This table shows that the measured (x,y) location of these ten point sources vary by 26 to 60 meters from the locations specified in the SAC Report and used in the SAC air quality modeling. Since the closest distance of a plant source to the plant fence line is only about 325 meters, these measurement errors are unacceptable.*

We digitally overlaid the source map based on the UTM spatial coordinates of each modeled source given in the input data to the ISC Model on the plant site map showing each source and each road segment both as provided by SAC. A visual inspection of the plant road segments from this overlay indicates that the coordinates on the plant site map provided by SAC do not match the road segment coordinates used in the ISC modeling.

Also, we compared the Existing and New plant road locations and shapes based on the ISC Model input data coordinates with those based on the plant site map provided by SAC. Figure 1 shows the plant road locations and shapes based on the ISC Model input data coordinates. The plant site map indicates that the Existing Road forks into an eastern and western branch before merging again at the plant fence line. However, the Existing Road based in the ISC Model coordinates has no fork. Possibly, the trucks do not travel on the western fork of the Existing Road.

Conclusion: *Recheck all point and area source coordinates used in the modeling study to determine their accuracy and provide corrected coordinate information to the Department. Confirm the actual truck traffic patterns on the western and eastern forks of the Existing Road.*

Response: The model inputs for the point sources have been verified and the modeling input files and report provided to the Department contained the correct coordinates. The oversized maps requested by the Department and provided to the Department in July incorrectly located the reference coordinate. The reference point should have displayed the coordinates of 321243.75 Easting, 3315195.69 Northing. Revised facility layout and area maps are attached with the correct coordinates shown.

The new oversized map labeled Facility Layout attached provides the correct coordinate reference point and overlays correctly with coordinates used in the modeling input files. Traffic patterns have been correctly identified in the modeling for the Existing Road.

Limitation 2. *SAC reported the results of its measurement program of silt content. It found an average silt content of 0.25 grams per square meter on the plant paved road before sweeping. A 40 percent broom sweeping collection efficiency was applied to this to come up with the 0.15 g/m2 silt loading used in the emissions modeling. The predicted maximum PM10 concentrations from the road segments are directly proportional to the road silt loading.*

The silt content on an unswept road may also vary as a function of the traffic volume on the road. We are not advocating a study of this relationship because it is not evident whether increased traffic volume will increase or decrease the amount of silt on the road. However, we wanted you to be aware of this possible influence on silt loading.

Conclusion. *What is the frequency of broom sweeping needed to obtain a 40 percent collection efficiency of silt loading on a paved road?*

Response: SAC recognizes that silt loading may vary as a function of traffic volume on the road, as shown in Table 13.2.1-3 of AP-42. SAC has chosen the baseline silt loading corresponding to the expected traffic volume on the roads.

In SAC's May 9, 2005 RAI response (Question 2), SAC showed a control efficiency of 40 percent for street sweeping which is consistent with the efficiencies in Table 2-4 (2 different studies) for vacuum sweeping (0 to 58% and 46%). Table 2-4 is included in Enclosure A. SAC did not specify a frequency of sweeping since the assumption of 40 percent was conservative in nature to the control efficiencies listed in Table 2-4. SAC has proposed to sweep paved roads as necessary.

SAC compared this silt loading factor with other AP42 factors for daily roads with similar traffic amounts as a secondary means to insure the controlled silt factor of $0.15 g/m^2$ was within in good engineering reason. Enclosure A also contains the page from AP-42 showing that the baseline silt loading for roads with average daily traffic (ADT) between 500 to 5000 is 0.2 g/m^2, comparable to SAC's 0.15 g/m^2 after sweeping.

Limitation 3. *Emissions from unpaved roads (segments 19 and 20) are not included in the modeling input data.*

Conclusion: *Add road segments 19 and 20 to the modeling input data used for the air quality modeling.*

Response: Road segments 19 and 20 (modeling source ID's UP19 and UP20) were included in the air quality modeling analysis. These two segments (front end loader emissions in the quarry on unpaved roads) are included in the modeling files as volume sources, which better represents these emissions as compared to other road segments modeled as area sources.

Limitation 4. *We used the June 2005 SAC Report and PDF files submitted by SAC to verify the emission rate calculations for the new and existing point sources, process fugitive emission sources and road segments.*

We reviewed the accuracy of a large sample of the emission units in each source category (28 of 52 road segments, 22 of 26 process fugitive emission sources, one of 21 new point sources and two of 22 existing point sources). We were unable to evaluate the accuracy of the emission rates for other point sources because information on the way in which these emission rates were determined was not provided.

We reviewed the accuracy of the emission factors in terms of appropriateness and the calculations using these emission factors. The large majority of emission factors were from U.S. EPA's AP-42 document. Emission factors for the new and existing Source ID E21_01 and 02 (Kiln/Raw Mill Baghouse Stack) and the existing Source ID K15_01 Clinker Cooler ESP Stack were based on Best Available Control Technology determinations by FDEP.

Emission rates were calculated using these emission factors and the activity level by emission unit in the SAC Report and the PDF files.

All emission rates were determined to be correct except for the following total PM10 emission rates (existing plus new) for the two process fugitive sources in Table 2. For these sources, the calculated emission rates were 9% to 90% less than the emission rates in the SAC Report.

In addition, the use of a constant emission rate for each source over the 24-hour period assumes that there is no large hourly variation to truck traffic into and out of the plant site and no large hourly variation in production rate, e.g. not operating certain shifts of the day. SAC should confirm that this is the case. If there is significant variation by hour in production rates or truck traffic, then representative hourly emission rates should be used instead of constant emission rates since the highest fence line concentrations are expected to occur under light wind stable conditions, which typically occur at night time.

Conclusion: *Revise the total emission rates for these two sources before the final air quality modeling run. Provide information to permit the verification of the accuracy of the emission rates for the other point sources or at least those point sources with the highest emission rates in the SAC Report. Confirm whether there is significant hourly variation in the truck traffic or production rates at the plant, and if so, obtain representative hourly variation in emission rates for use in the air quality modeling.*

Response: The emission rates for these two segments have been corrected (see attached revised page 27 to July 27, 2005 Modeling Report). The changes are trivial and have no impact on the modeling results since the corrections lower emissions from the two sources.

The emission rates for the point sources have been verified and represent maximum hourly rates to insure modeling impacts are overly conservative in nature. Cement operations typically do not have hourly or shift variations since operations are constant over a 24-hour basis. Additionally, in Florida seasonal variations do not occur due to the year round construction schedule giving constant throughput values as well. The manufacturing of cement is a steady state process and does not operate in a batch process manner where hourly or daily emissions may vary dramatically. This includes truck traffic which occurs 24-hours a day and 365 days a year.

Limitation 5. *Many maximum activity levels were used to calculate the Potential to Emit emission rates employed in the air quality modeling. Table 3 lists the maximum activity levels used by SAC to calculate the Potential to Emit emission rates for* *existing sources at the plant. These emission rates were then used in SAC's air quality modeling. Table 4 provides the same information for the proposed SAC new sources at the plant.*

Conclusion. *Please verify the maximum activity levels for the sources in these tables.*

Response: The activity levels have been reviewed and are correct.

Limitation 6. *We compared the receptors used in the air quality modeling in the July 2005 SAC Report with the fence line locations given on the SAC plant site map. Receptors used in the air quality modeling are not located at the fence line based on UTM coordinates measured using the SAC plant site map.*

Furthermore, the highest predicted 24-hour PM10 concentrations are expected to occur at locations adjacent to the plant roads as they exit from the plant property. Such receptors are expected to capture the maximum 24 hour PM10 concentrations from the new plant modification when the winds blow parallel to the relatively straight Existing and/or New Roads sweeping up the PM10 emissions of the road surfaces from successive road segments. No receptors were located at these locations in the SAC modeling.

It is useful to examine the predicted source contributions in the SAC output files to the highest predicted 24-hour PSD increment consumption (29.4 ug/m^3 at (x,y) = (321,234.1, 3,315,167.8)). This receptor is located about 53 meters from the edge of the closest road segment.

Plant point sources contribute only 3 ug/m^3 to this 24-hour concentration. The remainder is from plant volume sources and the area sources representing the road segments. The SAC output files did not provide separate source contributions for the road segments versus the volume sources. However, we expect that the majority of the 26 ug/m^3 predicted concentration from these sources comes from the roads because of their closer proximity to this receptor. This illustrates how potentially important the plant road segments are to determining the maximum 24-hour PSD increment consumption.

Table 5 provides the locations of four receptors that should be included in the final air quality modeling by SAC.

Conclusion. *Include the four receptors in Table 5 in the final air quality modeling by SAC. Position additional receptors at 25 meter intervals along the fence line using the eastern most (REC_3) and western most (REC_2) of these four receptors as the starting point. Also include one receptor where the highest 24-hour PSD increment consumption was predicted in the SAC July Report.*

Response: SAC has remodeled the fenceline concentrations near the entrance roads and the entire fence line making two changes. First, the entrance roads were flared at the exit to better reflect the configuration of the existing road and future road. Second, the receptors were located 25 meters back from the edge of each entrance road and then every 25 meters thereafter along the property line. This constitutes a 25 meter receptor spacing along the entire fence line.

As previously discussed, Section IV.D.2 of EPA's New Source Review Workshop Manual for Prevention of Significant Deterioration and Nonattainment Area Permitting indicates that a 100 meter receptor grid should be sufficiently dense to capture maximum impacts. SAC proposed fence line receptors spaced at 50 meters in a preliminary modeling meeting with the Department on October 20, 2004. It was SAC's understanding from this meeting that 50 meter receptor spacing on the fence line was acceptable to the Department. This was stated in a letter of understanding of the Modeling Protocol submitted to the Department on October 28, 2004 which is included in Enclosure C. SAC received no comments from this letter of understanding or questions regarding fence line spacing until a RAI dated July 22, 2005 requested finer spacing of the fence line receptors. SAC conducted refined modeling of the receptor grid at the fence line down to 25 meters. The Department has also approved similar modeling results from a similar expansion project with fence line spacing as high as 100 meters or **four times** greater than the spacing being required for SAC. The Department has also approved similar modeling results from another similar expansion project with fence line spacing at 50 meters as originally proposed and modeled by SAC.

Enclosure B contains revised tables to our July 27, 2005 Modeling Report containing the results of the revised modeling with fence line receptors spaced at 25 meters around the entire property boundary as described above. The modeling files are being sent to Cleve Holladay and Howard Ellis under separate cover.

Limitation 7.

The following identifies the outstanding questions identified to date with regard to the Calpuff modeling analysis.

The Federal Land Manager (FLM) is responsible for evaluation of Class I deposition and visibility guidance. These established levels are guidance recommended in the IWAQM and FLAG guidance and have been addressed with the FLM. This information was developed and discussed with the FLM in detail prior to and following the modeling analysis. As stated in Section 165(d) of the Clean Air Act, the FLM has the primary responsibility for defining and identifying when a facility would have an adverse impact on the air quality related values in Federal Class I areas. The Department should rely on the FLM to give guidance and recommendations on Class I impacts related to deposition and visibility.

a) *A comparison of Section 6 to the SAC reports of June 23 and July 27 shows that the predicted concentrations of SO2, NO2 and PM10 have changed at each Class I area. The worst-case concentrations continue to be predicted at Okefenokee and overall the SILs continue to be less than the threshold for cumulative analysis by at least a factor of 2. Given that the stack release parameters and emissions rates show no change, we believe that this is due to the issues mentioned in paragraphs b) and c) below (i.e., chemical transformation reactions). Any additional changes to background ozone and/or ammonia based on the comments below will further impact these results. Please discuss.*

The background ozone and ammonia concentrations come from recommendations in the IWAQM/FLAG and EarthTech guidance.

The default background concentrations for ozone (80 ppb) and ammonia (10 ppb) were the original concentrations used in the Class I CALPUFF screening modeling discussed in Section 6 of the Modeling Report dated June 23, 2005. The default concentration for ozone was conservatively high as compared to actual background values for ozone obtained from monitoring data collected by the FDEP [see paragraph (b) for details pertaining to monitored ozone concentrations]. Similarly, the background value for ammonia as recommended in both IWAQM/FLAG and EarthTech guidance for forested areas (0.5 ppb) was significantly lower than the default (10 ppb). Thus, based on available ozone monitoring data and guidance pertaining to background ammonia concentrations, the SAC Class I screening analysis was revised and the revised results summarized in Section 6 of the SAC report dated July 27, 2005.

b) *Section 6.1 of the July 27 report indicates that daily ozone concentrations (1-hour and 8-hour) were obtained from four FDEP monitor sites considered by SAC as representative of the ambient conditions at each Class I area. Maximum 8-hour ozone concentrations were identified for each day, and were averaged on a monthly basis to produce twelve (12) monthly background ozone concentrations that were input to Calpuff. Is this the method that was used?*

The method described above was the method used to obtain the background ozone concentrations. This was stated in Section 6 (page 50) of the SAC Modeling Report dated July 27, 2005 as described below:

"The default MESOPUFF II algorithms describe the rates of transformation. The MESOPUFF-generated transformation rates are a function of inputted background ozone and ammonia concentrations. The background ammonia concentration was set to 0.5 ppb, which is the IWAQM recommendation for forested areas. Background concentrations for ozone were obtained from the Florida Department of Environmental Protection – Division of Air Resource Management. Daily ozone monitoring data (1-hour and 8-hour averages) for calendar year 2003 for multiple sites in Florida were downloaded from the Florida DEP internet web site (http://www.dep.state.fl.us/air/flaqs/county). Maximum 8-hour ozone concentrations (in ppb) were obtained for each day, then averaged for each month for use in the CALPUFF-lite screening modeling analysis. Data from the following ozone monitors were used for each of the four Class I areas evaluated:

Class I Area	Monitor Name	AIRS ID#	Florida County
Bradwell Bay	St. Marks Wildlife Refuge	A129-0001	Wakulla
Chassahowitzka	Paynes Prairie St. Park	B001-3011	Alachua
Okefenokee	Osceola National Forest	B003-0002	Baker
St. Marks	St. Marks Wildlife Refuge	A129-0001	Wakulla

Thus, the data collected from the above mentioned monitors produced the following average monthly ozone concentrations used in the CALPUFF-lite screening modeling:

Month	8-hr Monthly Average Ozone Concentration (ppb)*			
	Bradwell Bay	Chassahowitzka	Okefenokee	St. Marks
January	38.9	35.8	35.4	38.9
February	39.6	36.6	36.7	39.6
March	41.9	38.5	39.6	41.9
April	53.3	49.9	50.9	53.3
May	45.3	46.8	46.2	45.3
June	37.4	33.1	39.6	37.4
July	32.3	31.8	30.7	32.3
August	33.5	26.2	29.5	33.5
September	42.3	37.7	36.6	42.3
October	45.5	38.8	39.8	45.5
November	37.9	33.7	32.9	37.9
December	34.5	30.6	27.2	34.5

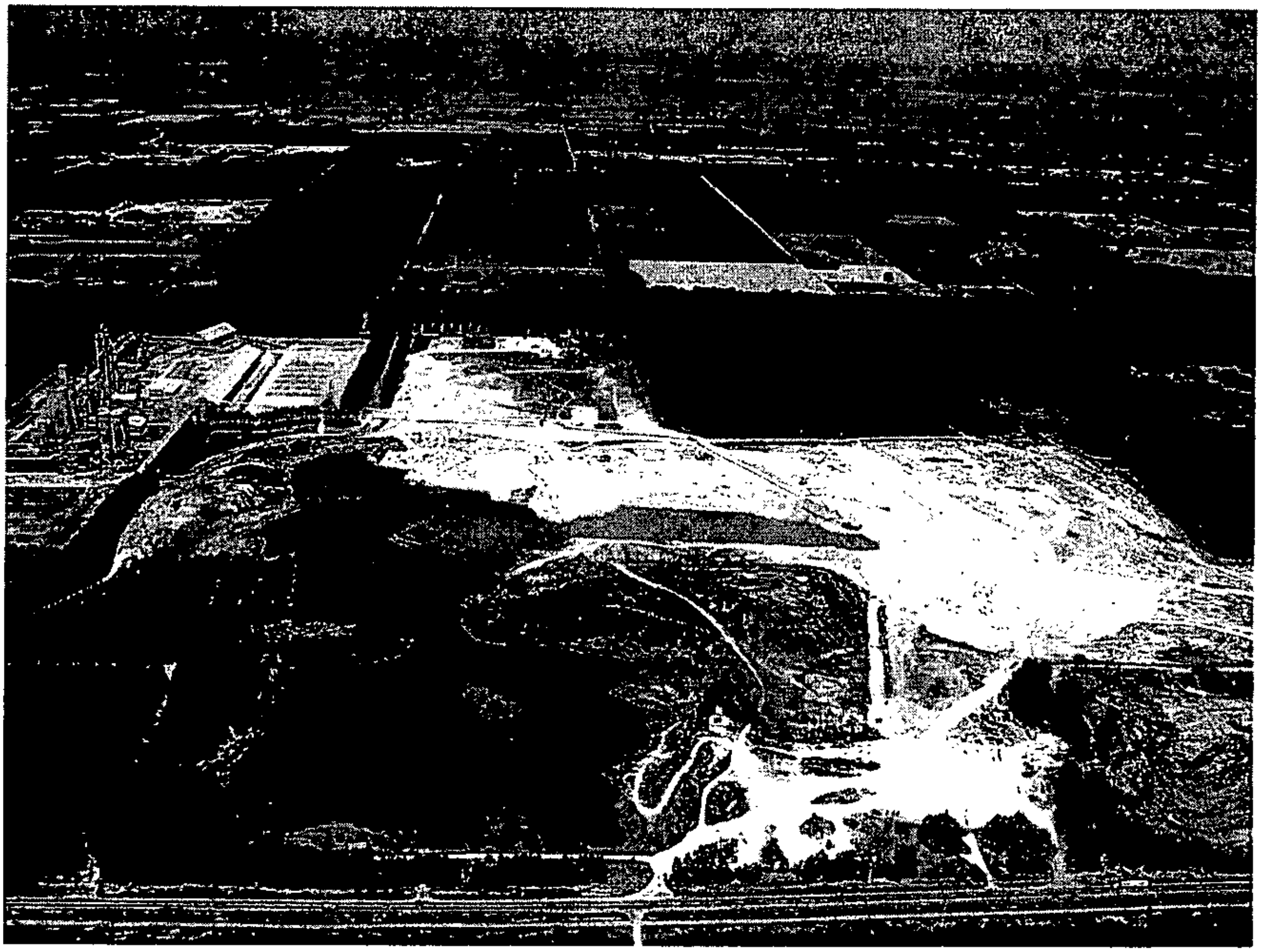
*Based on daily maximum 8-hr concentrations averaged over each month.

c) Constant monthly ammonia background concentrations of 0.5 ppb were input to Calpuff. This constant concentration is reflective of a forested area, as indicated in the final FLAG document, and is the recommended default value unless there is specific data available for the modeling domain. This notwithstanding, FLAG also specifies a default value of 10 ppb for grasslands. Since a value of 10 ppb was used in the June 2005 Class I modeling, and presuming no specific data are available for each Class I area, it is unclear why the background ammonia has changed. Given the importance of the background ammonia concentration towards chemical transformation and the creation of sulfates and nitrates, which are hygroscopic and have a profound impact on visibility and the percent change in extinction coefficients, SAC should justify choosing a default value of 0.5 ppb instead of 10 ppb. Such could be based on an analysis of the predominant land-use type (forest or grassland), as found within each Class I area.

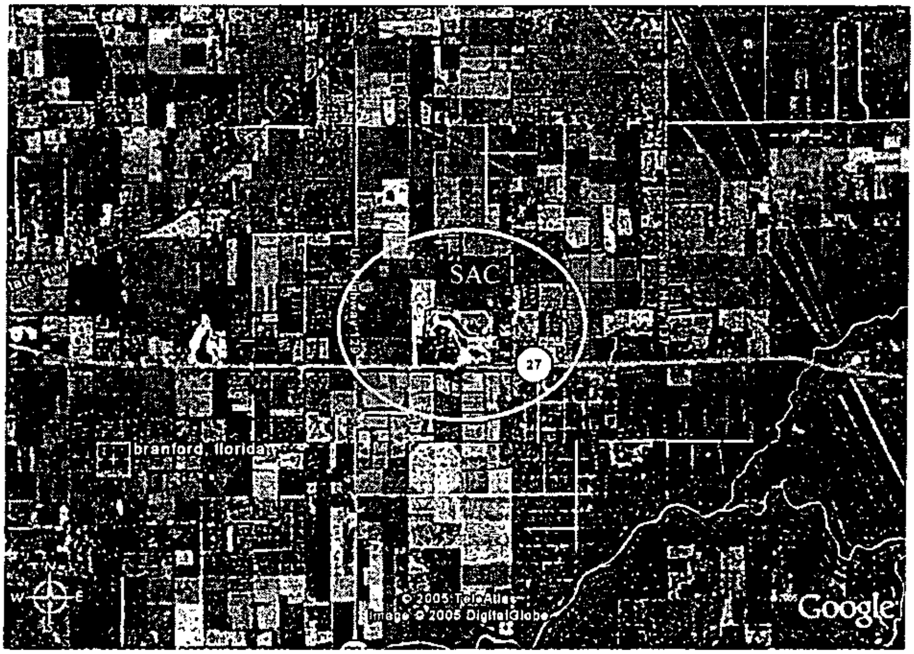
As stated in paragraph (a), the default background concentrations for ozone (80 ppb) and ammonia (10 ppb) were the original concentrations used in the Class I CALPUFF screening modeling discussed in Section 6 of the SAC report dated June 23, 2005. The 10 ppb ammonia concentration was the *default* background concentration used by the model and not the concentration recommended in IWAQM/FLAG and EarthTech guidance for the predominant land-use type, which consists of predominantly forested areas. The background value for ammonia as recommended in both IWAQM/FLAG and EarthTech guidance for forested areas is 0.5 ppb, which is significantly lower than the default value of 10 ppb for grassland. Thus, based on available guidance pertaining to background ammonia concentrations, the SAC Class I screening analysis was revised and the results summarized in Section 6 of the SAC report dated July 27, 2005. This issue was also discussed with the FLM during a July 27, 2005 conference call between the FLM, SAC, and EQ at which time no objections were presented.

Additionally, not only the Class I Area has to be evaluated, but the entire path to the Class I from the source (SAC) should be evaluated, since this the path along which the chemical transformations take place. The land use in this area is consistent with forested areas, and not grasslands. Aerial photographs are provided below to show the land use coverage of the area.

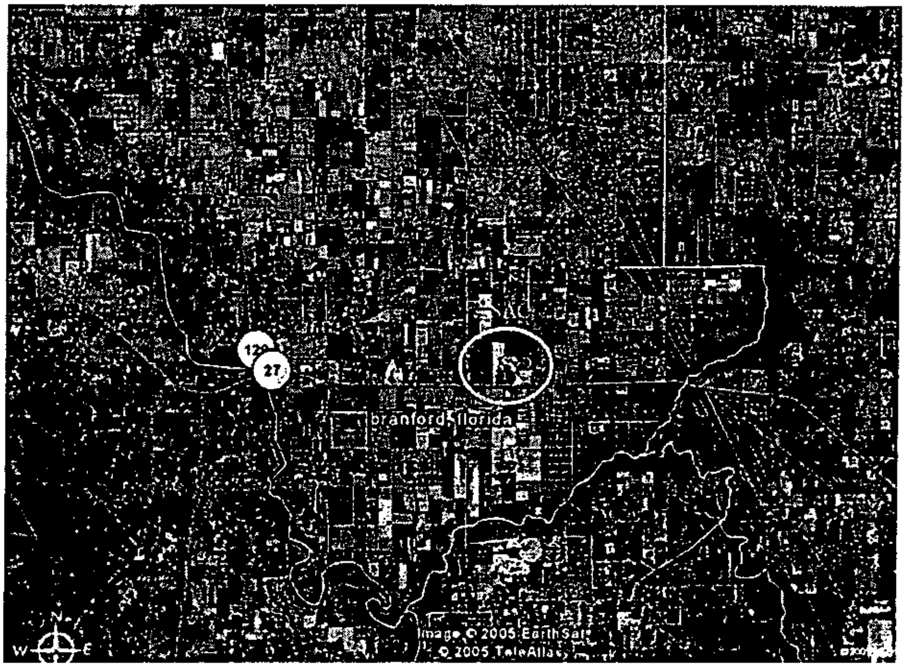
Aerial photograph of SAC and Immediate Surrounding Land Use



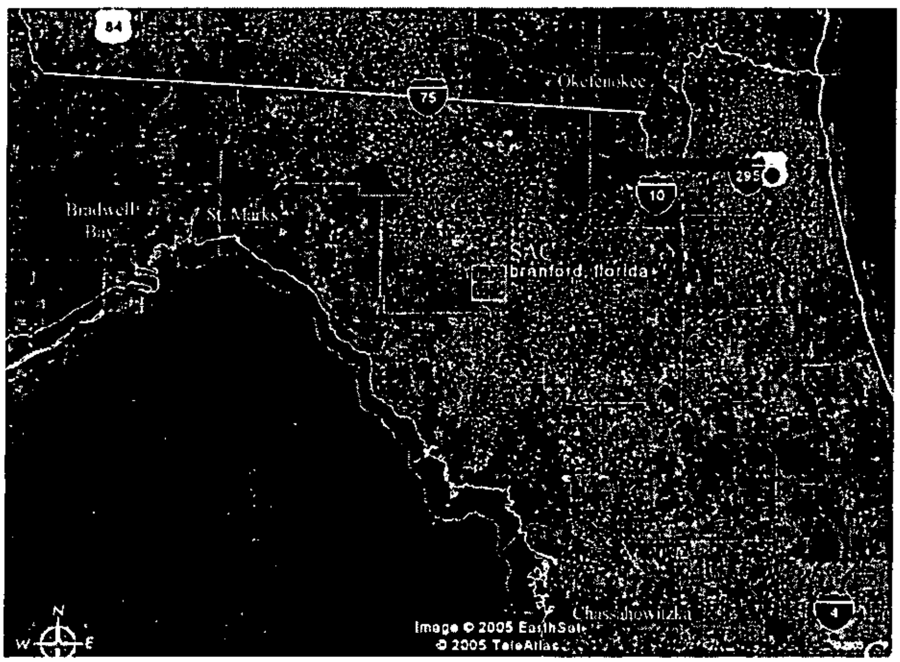
Aerial photograph depicting surrounding land use in the immediate vicinity of SAC



Zoomed out view of aerial photograph depicting surrounding land use in the vicinity of SAC
(consistent with forested areas)



Aerial photograph showing predominant land use between SAC and Class I Areas
(consistent with forested areas)



d) *The final FLAG report recommends using a Rayleigh scattering coefficient of 10 Mm^{-1} as input to the Calpost visibility modeling, but SAC used a value of 12 Mm^{-1} for each Class I area. Please discuss why the modeling does not reflect the FLAG recommended value.*

The FLAG guidance does recommend a Rayleigh scattering coefficient of 10 Mm^{-1} to be used in the Class I CALPUFF screening modeling, and this was the value used in the original report dated June 23, 2005. However, based on information presented in the reference document *Initial Draft of the BART Modeling Protocol for VISTAS*, dated January 31, 2005, one of the adjustments made to natural conditions that was considered appropriate for BART assessments is to use a correct value of the Rayleigh scattering for clean air, instead of the default 10 Mm^{-1} that is used in the IMPROVE equation. This protocol document was developed with contributions from Pat Brewer (VISTAS Technical Coordinator), Chris Arrington of the West Virginia Department of Environmental Protection, and Tom Rogers of the Florida Department of Environmental Protection.

The following paragraph was extracted from this reference regarding the Rayleigh scattering coefficient:

> *"One additional adjustment to natural conditions that is appropriate for BART assessments is to use a correct value of the Rayleigh scattering coefficient for clean air, instead of the default 10 Mm^{-1} that is in Equation 3-1 and the IMPROVE equation. The default value is appropriate for an elevation of 1600 m (about 5000 ft). Since the correct value at sea level is about 12 Mm^{-1}, so the default value could never be attained at low altitude sites and the relative impact of a source on haze would be overstated by using the default Rayleigh value."*

<u>Reference</u>: *Initial Draft, BART Modeling Protocol for VISTAS,* Ivar Tombach, VISTAS Technical Advisor, January 31, 2005. Includes contributions from Pat Brewer (VISTAS Technical Coordinator), Tom Rogers of the Florida Department of Environmental Protection, and Chris Arrington of the West Virginia Department of Environmental Protection.

This issue was also discussed with the FLM during a July 27, 2005 conference call between the FLM, SAC, and EQ at which time no objections were presented.

e) *Table 2.B-1 of Appendix 2.B to the Final FLAG report does not contain relative humidity adjustment factor information for the Bradwell Bay Class I area. SAC instead used the seasonal information presented in Table 2.B-1 for the St. Marks Class I area. Please discuss why the St. Marks' data was used as a surrogate for Bradwell Bay.*

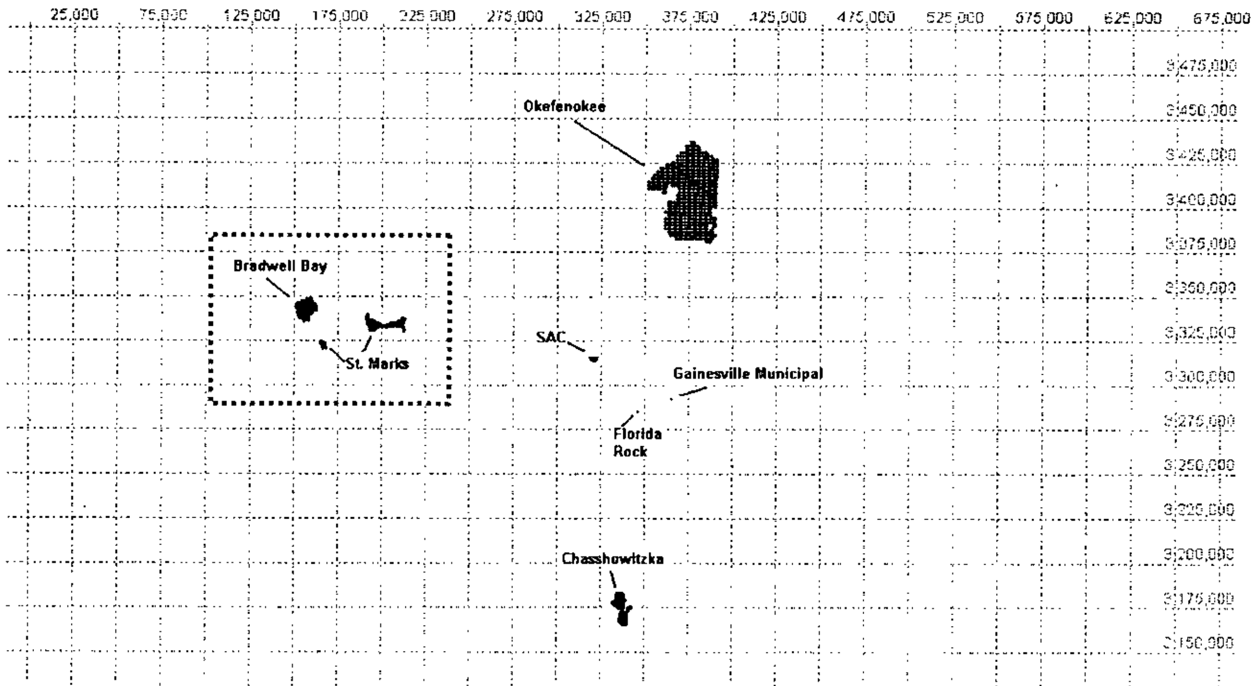
Table 2.B-1 of Appendix 2.B to the FLAG report does not contain relative humidity adjustment factor information for the Bradwell Bay Class I area. It does however, contain relative humidity adjustment factor information for the other Class I areas (Okefenokee, Chassahowitzka, and St. Marks). This information is listed below:

Class I Area	Season	Components of Dry Extinction (Mm^{-1})			f(RH)
		Hygro	Non-Hygro	Rayleigh	
Chassahowitzka	Annual	0.9	4.5	10.0	3.9
	Winter	0.9	4.5	10.0	3.4
	Spring	0.9	4.5	10.0	3.7
	Summer	0.9	4.5	10.0	4.1
	Fall	0.9	4.5	10.0	3.9
Okefenokee	Annual	0.9	4.5	10.0	3.5
	Winter	0.9	4.5	10.0	3.2
	Spring	0.9	4.5	10.0	3.4
	Summer	0.9	4.5	10.0	3.9
	Fall	0.9	4.5	10.0	3.6
St. Marks	Annual	0.9	4.5	10.0	3.6
	Winter	0.9	4.5	10.0	3.2
	Spring	0.9	4.5	10.0	3.5
	Summer	0.9	4.5	10.0	4.0
	Fall	0.9	4.5	10.0	3.6

Because Table 2.B-1 of Appendix 2.B of the FLAG guidance did not contain relative humidity adjustment factor information for the Bradwell Bay Class I area, the information for the other Class I areas considered in the analysis for SAC was evaluated and used to develop the most appropriate substitute for the Bradwell Bay Class I area. Comparing the information summarized above from the FLAG guidance, the values for "Components of Dry Extinction" for all three Class I areas (Okefenokee, Chassahowitzka, and St. Marks) were exactly the same and values of f(RH) were very similar with respect to each other.

Therefore, due to the proximity of the Bradwell Bay Class I area to the other three Class I areas, the relative humidity adjustment factor information for the closest Class I area to Bradwell Bay was used for the CALPUFF-lite screening modeling for Bradwell Bay. The closest Class I area was St. Marks, which is approximately 30 km east of Bradwell Bay. Figure 6-1 (also shown below) from the July 27, 2005 SAC report shows the location of St. Marks with respect to Bradwell Bay as well as the locations of all Class I areas evaluated relative to SAC.

Figure 6-1. Location of Class I Areas Relative to SAC



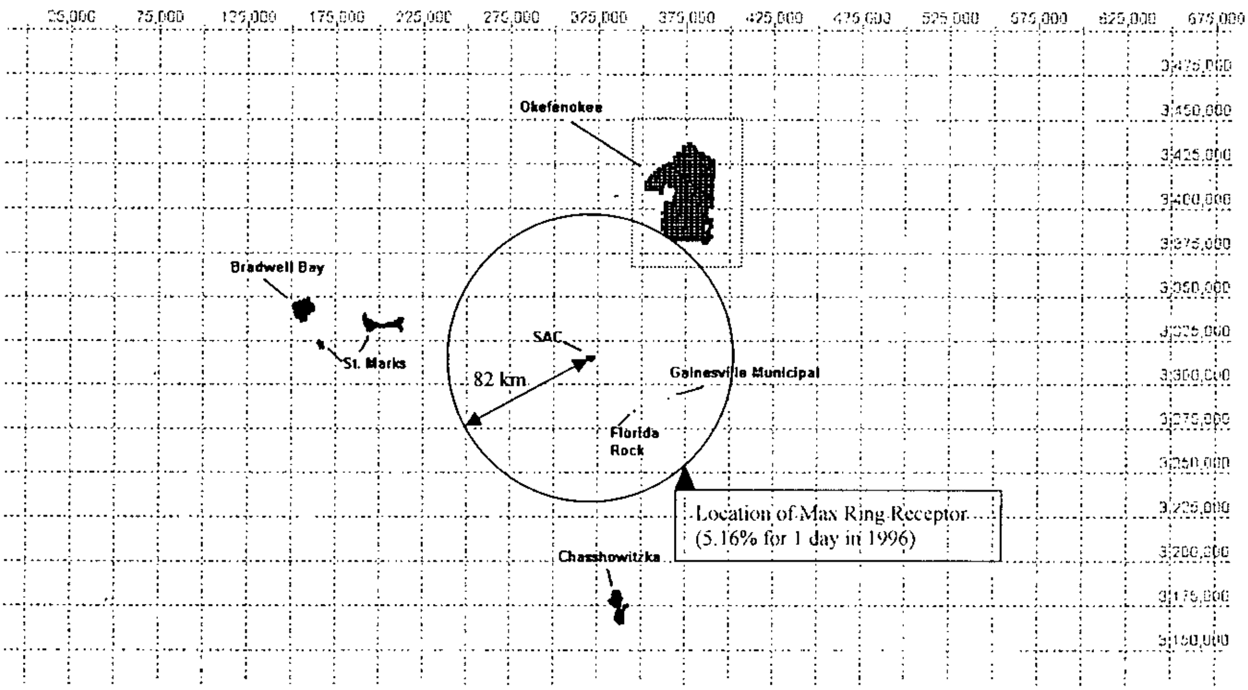
f) The final FLAG report suggests that a cumulative visibility analysis be conducted if a predicted percent change in extinction equals or exceeds 5%. An exceedance of the 5% threshold was predicted at the Okefenokee Class I area (5.16%). Instead of conducting the suggested cumulative analysis, SAC isolated the Class I area receptors at Okefenokee and re-ran Calpuff only at the Class I area receptors (previous, the analysis was conducted using the FLAG recommended ring of receptors). The results were shown to be less than 5% using this limited receptor grid. The IWAQM Phase 2 final recommendations warn against the use of this type of limited receptor grid as input to screening modeling. Why was this method used to refine visibility impacts? Consider completing the ring of receptors recommended by the FLAG report for determining the maximum impact on visibility in the Class I area.

SAC _did_ complete the visibility analysis using the ring of receptors as recommended by the FLAG report for determining the maximum impact on visibility in the Okefenokee Class I area (as well as the other three Class I areas – Chassahowitzka, St. Marks and Bradwell Bay). Based on the results of the ring analysis (shown in Table 6-5 of the July 27, 2005 SAC report), there was one year (1996) during which one day (Julian Day 365) showed a maximum percent change in extinction coefficient just slightly greater than 5.0% (5.16%). This occurred at the Okefenokee Class I area. Okefenokee is located 82 km northeast of SAC between 16 and 46 degrees (0 degrees being north). This maximum value (5.16%) occurred on the ring at 138 degrees, which is more than 90 degrees away (along the ring) from the actual location of Okefenokee (refer to the supplemental figure below).

Because the only visibility impairment occurred at a location remote to Okefenokee, an additional analysis (in addition to the ring of receptors) was performed to evaluate the specific receptors that comprise the Okefenokee Class I area. These receptors were obtained from the National Park Service, Air Resources Division (ARD). These receptors were subsequently modeled independently to evaluate the visibility impacts, using the same methodology as previously completed for the ring of receptors. The results of this analysis are presented in Table 6-6 of the SAC report dated July 27, 2005. The results show that for the specific Okefenokee Class I receptors, the increased SAC emissions have a visibility impairment of less than 5.0 % over a 24-hour period for each year and that the maximum impact for 1996 was well below 5.0% (1.55%). Thus, the visibility impact analysis for these Class I areas using the CALPUFF-lite modeling methodology demonstrated that the impacts on this Class I area were less than the FLAG recommended evaluation criterion of a 5 percent change over the natural background extinction. This additional analysis was provided as supplemental information for discussions with the FLM. The intent was to show that there was only one day where the modeled maximum percent change in extinction coefficient was slightly greater than 5.0% and occurred at a ring receptor not in the vicinity of the Okefenokee Class I area.

<u>Supplemental Figure</u>

Maximum Receptor Location for Visibility Impairment Analysis at the Okefenokee Class I Area



Additionally, it is stated in both the FLAG and IWAQM guidance that the screening procedures are deemed to be conservative and that the screening analysis is an approach which encourages the results to be higher than would be estimated using a fully developed CALMET and CALPUFF analysis. Therefore, based on [1] the conservative nature of the screening analysis; [2] the fact that the ring of receptors approach showed only one day out of five years where the modeled maximum percent change in extinction coefficient was only slightly greater 5.0% (5.16%) occurring at a ring receptor not in the vicinity of the Okefenokee Class I area; and [3] that the results of modeling the *actual* receptors of the Okefenokee Class I area showed a maximum percent change in extinction coefficient of only 2.66% over the five years modeled, SAC has shown that the proposed project will not have an adverse impact on the Class I areas evaluated in this analysis and that a cumulative analysis is not necessary. This issue was discussed with the FLM during a July 27, 2005 conference call between the FLM, SAC, and EQ at which time no objections were presented.

ENCLOSURE A

PLANT LAYOUT SHOWING POINT SOURCE LOCATIONS AND PLANT BOUNDARIES

ENCLOSURE B

REVISED PAGES TO SAC MODELING REPORT DATED JULY 27, 2005

TABLE 3-6. PROCESS-RELATED FUGITIVE SOURCE CHARACTERISTICS AND TOTAL PM_{10} EMISSIONS

Source Identification in ISCST3 Model	Source Description	East, m	North, M	Base Elevation, m	Release Height, m	Initial Horizontal Dispersion Coefficient, M	Initial Vertical Dispersion Coefficient, m	PM_{10} Emission Rate, lb/hr
UP19	Crusher Loading at the Quarry	322298.63	3315139.25	17.4	4	10.72	1.86	0.5560
UP20	Baserock Loadout	321785.44	3315758.5	17.9	3	9.3	1.4	0.0120
SP2	Base Rock Pile	321838.69	3315723.25	18	3.05	28.93	2.83	0.1890
SP1	Stone Pile	322266.41	3315097.75	16.5	3.05	28.93	2.83	0.2190
SP345FR1	Limestone, Sand & Iron Ore Storage; Raw Material Storage Building	321496.18	3315788.34	17.8	4.1	24	12.5	0.1630
FQ1_CRSH	Quarry Crusher Area: Loading & Primary Crusher Operations	322314.84	3315235.75	17.1	7	0.7	3.26	0.2400
FQ1_B01	Quarry Crusher Area: Conveyor B01	322297.13	3315253.75	17.3	2	0.47	0.93	0.0300
FQ1_B02	Quarry Crusher Area: Conveyor B02	322281	3315273.75	17.5	2	0.47	0.93	0.0300
FQ1_B03	Quarry Crusher Area: Conveyor B03	322264.78	3315294	17.4	2	0.47	0.93	0.0300
FQ1_B04	Quarry Crusher Area: Conveyor B04	322248.44	3315314	17.4	2	0.47	0.93	0.0300
FQ1_B05	Quarry Crusher Area: Conveyor B05	322232.34	3315334	17.1	2	0.47	0.93	0.0300
FQ1_B06	Quarry Crusher Area: Conveyor B06	322216.19	3315354	17.1	2	0.47	0.93	0.0300
FQ1_B07	Quarry Crusher Area: Conveyor B07	322199.97	3315374.25	16.9	2	0.47	0.93	0.0300
FQ1_B08	Quarry Crusher Area: Conveyor B08	322183.5	3315394.5	16.9	2	0.47	0.93	0.0300
FQ2_B08	Quarry Conveyors: B08 to B20	322168.69	3315415	17.8	2	0.47	0.93	0.0300
FQ2_B20	Quarry Conveyors: B20 to B21	322166.56	3315583.5	17.1	2	0.47	0.93	0.0300

Source Identification in ISCST3 Model	Source Description	East, m	North, M	Base Elevation, m	Release Height, m	Initial Horizontal Dispersion Coefficient, M	Initial Vertical Dispersion Coefficient, m	PM_{10} Emission Rate, lb/hr
FQ2_B21	Quarry Conveyors: B21 to B22	322072.34	3315584.25	16.8	2	0.47	0.93	0.0300
FQ2_B22	Quarry Conveyors: B22 to B24 & B22 to B40	321905.56	3315631	17.9	2	0.47	0.93	0.0010
FQ2_B24	Quarry Conveyors: B24 to B27	321910.81	3315683	17.9	2	0.47	0.93	0.0010
FQ2_B27	Quarry Conveyors: B27 to Radial Stacker	321838.88	3315724	18	2	0.47	0.93	0.0010
FQ2_B40	Quarry Conveyors: B40 to C01	321705.63	3315663	17.9	7	0.47	3.26	0.0014
SP6_FR2	Ash Storage; Fly Ash Storage Building	321426.38	3316017.05	18	10.35	12.88	9.63	0.0454
SP7	Gypsum Storage	321425.9	3315597.77	16.8	6.1	6.48	5.67	0.0090
SP8_FF1	Coal Storage; Coal Handling	321386.56	3315708.25	16.8	6.1	6.55	5.67	0.0200
FR3A_01	Raw Storage Bins (Existing)	321359.93	3315891.13	17.6	4.57	2.46	2.13	0.0136
FR3B_02	Raw Storage Bins (New)	321325.03	3315891.34	17.4	4.57	2.46	2.13	0.0146
FR4	Gypsum Transfer	321367.59	3315627.25	16.8	0.3	0.47	0.47	0.0040

TABLE 5-5. CLASS II PM_{10} INCREMENT RESULTS – 1992-1996

Year	SAC Highest Annual Concentration, $\mu g/m^3$	Receptor Location		All PSD Highest Annual Concentration, $\mu g/m^3$	Receptor Location	
		East, m	North, m		East, m	North, m
1992	6.5	321,234	3315168	6.5	321,234	3315168
1993	6.5	321,234	3315168	6.6	321,234	3315168
1994	6.6	321,234	3315168	6.7	321,234	3315168
1995	6.5	321,234	3315168	6.6	321,234	3315168
1996	6.4	321,639	3315177	6.5	321639	3315177

Year	SAC Highest 24-Hour Concentration, $\mu g/m^3$	Receptor Location		All PSD Highest 24-Hour Concentration, $\mu g/m^3$	Receptor Location	
		East, m	North, m		East, m	North, m
1992	31.5	321234	3315168	31.5	321234	3315168
1993	31.0	321639	3314767	31.0	321639	3314767
1994	39.5	321687	3315178	39.7	321687	3315178
1995	37.0	321758	3315179	37.0	321758	3315179
1996	37.4	321758	3315179	37.5	321758	3315179

Year	SAC Highest Second Highest 24-Hour Concentration, $\mu g/m^3$	Receptor Location		All PSD Highest Second Highest 24-Hour Concentration, $\mu g/m^3$	Receptor Location	
		East, m	North, m		East, m	North, m
1992	29.2	321,234	3315168	29.3	321,234	3315168
1993	26.4	321663	3315177	26.5	321,663	3315177
1994	28.3	321806	3315180	28.3	321806	3315180
1995	28.8	321639	3315177	28.9	321639	3315177
1996	29.7	321643	3315022	29.8	321643	3315032

TABLE 5-6. PM_{10} PSD INCREMENT CONSUMPTION- SUMMARY

Averaging Period	Combined SAC and Other Source PM_{10} Concentrations, $\mu g/m^3$					Highest Five-Year Concentration, $\mu g/m^3$	Allowable PSD Increment, $\mu g/m^3$
	1992	1993	1994	1995	1996		
Annual Maximum	6.5	6.6	6.7	6.6	6.5	6.7	17
24-hr Highest Second High	29.3	26.5	28.3	28.9	29.8	29.8	30

a Included Line 1 and 2 sources for all potential emissions. Also included the contributions from other nearby increment consuming sources.

5.3 PM_{10} NAAQS Analysis

The PSD rules require that a demonstration be provided showing that the proposed source emissions when modeled with other sources in the area and adding background do not exceed the NAAQS. Dispersion modeling for a NAAQS impact assessment was required for PM_{10}, which exceeded the SIL for the proposed SAC sources beyond the fence line. Other major sources existing in and near the significant impact area were included in the modeling. The criteria outlined in Section 3 were used whereby the FDEP selects the applicable sources to include in this NAAQS analysis. This included the comparison of the source emissions for each source within about 75 km to the 20D distance. These results are presented in Appendix B, with the sources failing the 20D screening being included in the analysis. The sources remaining after 20D were described and presented in Section 3.

A summary table of the maximum concentration impacts of PM_{10} for all sources included in the NAAQS modeling is presented in Table 5-7 for each year of meteorological data. The maximum annual, highest 24-hour, and highest second-highest 24-hour concentrations are shown in the tables as appropriate. Table 5-8 shows a summary of the highest year impacts (maximum for annual and highest second-high for short-term) combined with the background concentrations. Overall, the impacts for each year for each averaging period for PM_{10} are less than the applicable NAAQS.

ENCLOSURE C

LETTER OF UNDERSTANDING FOR MODELING FOR AIR QUALITY IMPACTS FOR SUWANNEE AMERICAN CEMENT PROPOSED EXPANSION SUBMITTED OCTOBER 28, 2004

Suwannee American Cement
SAC
Branford, Florida, USA

P.O. Box 410
Branford, Fl 32008

October 28, 2004

Cleve Holladay
Division of Air Resource
Department of Environmental Protection
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

Subject: Follow-up to October 20th Meeting

Dear Mr. Holladay:

Thank you for taking the time to meet with George Schewe and myself last week. It was very helpful for us to discuss modeling information with you as well as get your guidance. Attached is a letter prepared by Mr. Schewe for me, which summarizes the points we discussed in the meeting. This letter outlines Suwannee American Cement's (SAC) understanding of the methodology and procedures for the modeling that would be acceptable to the Department. If you should note any potential problems or errors in Mr. Schewe's letter please contact me or Mr. Schewe so we may correct immediately.

Additionally I would like to invite you and any of your staff out to visit the site. As I mentioned everyone here is very proud of our plant and I look forward to showing you our facilities. Please let me know anytime you are available to visit and we can arrange a meeting here at the plant.

If you should have any questions please feel free to contact me at (386) 935-5039 or at jbhorton@suwanneecement.com.

Sincerely,

Suwannee American Cement

Joe Horton
Environmental Manager

Cc: Celso Martini – Plant Manager, SAC
George Schewe – EQM

Environmental Quality Management, Inc.
1800 Carillon Boulevard
Cincinnati, Ohio 45240
(513) 825-7500
fax (513) 825-7495
www.eqm.com

October 28, 2004

Mr. Joe Horton
Environmental Manager
Suwannee American Cement
P.O. Box 410
Branford, Florida 32008

Re: Summary of Proposed Florida DEP Requirements for Air Quality Impact Assessment for the Suwannee American Cement Proposed Expansion

Dear Mr. Horton:

I was pleased to attend the meeting with you and Cleve Holladay of the Florida Department of Environmental Protection (FDEP) to discuss the requirements, assumptions, methods, and extent of dispersion modeling and its associated air quality impacts for the proposed Suwannee American Cement (SAC) plant expansion. As we have discussed I have prepared this follow up letter as a point of reference for the items discussed, the direction given by Mr. Holladay, and the agreements made on other issues, models, parameters and application techniques. I conclude this letter with a short list of the materials, inventories, and other information that Mr. Holladay indicated he would provide. I have divided this letter into several categories to allow consideration in logical data groups. The following categories refer to those which we concurred with Mr. Holladay.

General Modeling Considerations

Class II Modeling

Receptor grid – use a 50m spacing around the plant fence line; other receptors at the discretion of the modeler

Model selection – use the Industrial Source Complex Model, Version 3

Meteorology – use the most recent five year data set for Gainesville, Florida surface data and Waycross, Georgia for the upper air data using the PCRAMMET program to generate such data

Source characteristics – stack modeled as point sources; fugitive emissions as appropriate modeled as area or volume sources

Contacts – Cleve will provide all guidance and interfacing

Impact levels – use significant impact levels, PSD increments, and NAAQS

Class I Modeling

Receptors – Federal Land Managers (FLM) have standard set they will provide for each applicable Class I area

Meteorology – use the 1990 MM4 data set and the 1992 and 1996 MM5 data sets available from the FDEP for the detailed modeling if required and use the same five year data set from PCRAMMET as used in the Class II modeling for the screening Class I modeling

Model selection – use the CALPUFF model in its screening mode with the standard PCRAMMET meteorology data sets

Source characteristics – same as in Class II modeling

Impacts – must be below Class I increment impacts at Okefenoke

Contacts – EQ/SAC should try to establish FLM contacts for each potentially affected nearby Class I area; these include Okefenoke, St. Marks, Chassahowitka, and Bradwell Bay

Air quality related values – impacts analysis will include a Class I impacts analysis, nitrate and sulfate deposition and haze via extinction coefficients, visual ranges, and color

Schedule

The permit will be turned in by January, 2005

Secondary Impacts Analysis

Growth – NO_x and other pollutant growth must be addressed since 1977

Soils and vegetation – compare to 1980 PSD guidance; should not be a problem

VOCs – less than 100 tpy so should not require any modeling

Visibility – will be carried out under the CALPUFF analysis

Background Concentrations

PM_{10} – use the data collected at the SAC monitors
NO_x – use the data available on the FDEP website in the Air Quality Technical Quick Look Reports

Class I backgrounds – Ammonia and ozone will be obtained from the FLMs

Other Items Discussed

Air Toxics – none will be emitted from the plant in sufficient quantities to warrant modeling; SAC/EQ will demonstrate the emissions

Mercury – Deposition modeling was performed previously with insignificant impacts; SAC is reviewing the emissions associated with the proposed plant expansion and it is likely that Mercury emissions will not increase due to this project.

Particle size distribution – none will be included in this analysis as air concentration estimates will be conservative without such consideration and size distributions are not readily available

Documentation – proposed a format that is typically used by EQ including sections on background and regulatory review (for air quality impacts), proposed source and emission characteristics, modeling methodology, results and comparison to air standards and guideline values, and electronic submittal; Cleve agreed that this level of documentation would be acceptable

In addition to the items discussed above, several requests were made for information that Mr. Holladay agreed to provide. These include:

- previous secondary growth analysis discussion from a previous modeling analysis
- a discussion of how fugitive emissions have been handles at other facilities and including how they were modeled previously at SAC if such files for SAC can be located
- a revised and updated PM_{10} inventory in the vicinity that will be considered in modeling
- a revised and updated NO_x inventory in the vicinity that will be considered in modeling

- Cleve will interface with Tom Rogers group on behalf of SAC to obtain the three years worth of meteorological data; EQ will provide an appropriately formatted hard drive

- Cleve will try to provide a copy of the summary document concerning Florida rules and regulations and any citations regarding dispersion modeling

I believe this covers all items discussed at the meeting in terms of modeling, emissions, guidance, model selection, etc. If you or Cleve should require any further information, I will be glad to be the interface on SAC's behalf with the Department. If you have any questions or comments, please feel free to contact me at (513) 825-7500 or at gschewe@eqm.com.

Sincerely,
Environmental Quality Management

George J Schewe

George J. Schewe, CCM, QEP
Vice President

Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

August 4, 2005

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Joe Horton
Suwannee American Cement, LLC
P.O. Box 410
Branford, FL 32008

Re: Request for Additional Information
DEP File No. 1210465-014-AC (PSD-FL-352)
Proposed New Kiln at the Branford Cement Plant in Suwannee County, Florida

Dear Mr. Horton:

On August 4, 2005, we briefly discussed remaining air modeling issues in a phone conversation. Attached are detailed descriptions of each item. As we mentioned, we would like you to work directly with Dr. Howard Ellis, President of Enviroplan Consulting. He is working with us on this evaluation. He can be reached at Edgewater Commons II, 81 Two Bridges Road, Fairfield, NJ 07004; Telephone: 973-575-2555; and Fax: 973-575-6617. If you have any questions, please call me at 850/921-9536.

Sincerely,

Jeffery F. Koerner, P.E.
Bureau of Air Regulation, Permitting North

cc:

Tom Messer, Plant Manager - SAC
Stephanie Brooks, P.E., Brooks and Associates
Chair, Suwannee County Board of County Commissioners
Kent Berry, CAA Program Manager, Environmental Quality Management
Mark Latch, DEP - FPS
Albert Gregory, DEP - FPS
Don Forgione, DEP - FPS
Chris Kirts, NED
John Bunyak, NPS
Jim Little, EPA Region 4

Note: Tables referred to in text are provided at the end of this letter.

Limitation 1. The (x,y) coordinates for point sources used in the SAC Report are incorrect based on measurements made using the plant site map provided by SAC. Table 1 compares the coordinates in the SAC Report for the five existing and five new point sources at the plant with the greatest PM10 emissions to those coordinates measured from the plant site map. This table shows that the measured (x,y) location of these ten point sources vary by 26 to 60 meters from the locations specified in the SAC Report and used in the SAC air quality modeling. Since the closest distance of a plant source to the plant fence line is only about 325 meters, these measurement errors are unacceptable.

We digitally overlaid the source map based on the UTM spatial coordinates of each modeled source given in the input data to the ISC Model on the plant site map showing each source and each road segment both as provided by SAC. A visual inspection of the plant road segments from this overlay indicates that the coordinates on the plant site map provided by SAC do not match the road segment coordinates used in the ISC modeling.

Also, we compared the Existing and New plant road locations and shapes based on the ISC Model input data coordinates with those based on the plant site map provided by SAC. Figure 1 shows the plant road locations and shapes based on the ISC Model input data coordinates. The plant site map indicates that the Existing Road forks into an eastern and western branch before merging again at the plant fence line. However, the Existing Road based in the ISC Model coordinates has no fork. Possibly, the trucks do not travel on the western fork of the Existing Road.

Conclusion: Recheck all point and area source coordinates used in the modeling study to determine their accuracy and provide corrected coordinate information to the Department. Confirm the actual truck traffic patterns on the western and eastern forks of the Existing Road.

Limitation 2. SAC reported the results of its measurement program of silt content. It found an average silt content of 0.25 grams per square meter on the plant paved road before sweeping. A 40% broom sweeping collection efficiency was applied to this to come up with the 0.15 g/m2 silt loading used in the emissions modeling. The predicted maximum PM10 concentrations from the road segments are directly proportional to the road silt loading.

The silt content on an unswept road may also vary as a function of the traffic volume on the road. We are not advocating a study of this relationship because it is not evident whether increased traffic volume will increase or decrease the amount of silt on the road. However, we wanted you to be aware of this possible influence on silt loading.

Conclusion. What is the frequency of broom sweeping needed to obtain a 40% collection efficiency of silt loading on a paved road?

Limitation 3. Emissions from unpaved roads (segments 19 and 20) are not included in the modeling input data.

Conclusion: Add road segments 19 and 20 to the modeling input data used for the air quality modeling.

Limitation 4. We used the June 2005 SAC Report and PDF files submitted by SAC to verify the emission rate calculations for the new and existing point sources, process fugitive emission sources and road segments.

We reviewed the accuracy of a large sample of the emission units in each source category (28 of 52 road segments, 22 of 26 process fugitive emission sources, one of 21 new point sources and two of 22 existing point sources). We were unable to evaluate the accuracy of the emission rates for other point sources because information on the way in which these emission rates were determined was not provided.

We reviewed the accuracy of the emission factors in terms of appropriateness and the calculations using these emission factors. The large majority of emission factors were from U.S. EPA's AP-42 document. Emission factors for the new and existing Source ID E21_01 and 02 (Kiln/Raw Mill Baghouse Stack) and the existing Source ID K15_01 Clinker Cooler ESP Stack were based on Best Available Control Technology determinations by FDEP.

Emission rates were calculated using these emission factors and the activity level by emission unit in the SAC Report and the PDF files.

All emission rates were determined to be correct except for the following total PM10 emission rates (existing plus new) for the two process fugitive sources in Table 2. For these sources, the calculated emission rates were 9% to 90% less than the emission rates in the SAC Report.

In addition, the use of a constant emission rate for each source over the 24-hour period assumes that there is no large hourly variation to truck traffic into and out of the plant site and no large hourly variation in production rate, e.g. not operating certain shifts of the day. SAC should confirm that this is the case. If there is significant variation by hour in production rates or truck traffic, then representative hourly emission rates should be used instead of constant emission rates since the highest fence line concentrations are expected to occur under light wind stable conditions, which typically occur at night time.

Conclusion: Revise the total emission rates for these two sources before the final air quality modeling run. Provide information to permit the verification of the accuracy of the emission rates for the other point sources or at least those point sources with the highest emission rates in the SAC Report. Confirm whether there is significant hourly variation in the truck traffic or production rates at the plant, and if so, obtain representative hourly variation in emission rates for use in the air quality modeling.

Limitation 5. Many maximum activity levels were used to calculate the Potential to Emit emission rates employed in the air quality modeling. Table 3 lists the maximum activity levels used by SAC to calculate the Potential to Emit emission rates for existing sources at the plant. These emission rates were then used in SAC's air quality modeling. Table 4 provides the same information for the proposed SAC new sources at the plant.

Conclusion. Please verify the maximum activity levels for the sources in these tables.

Limitation 6. We compared the receptors used in the air quality modeling in the July 2005 SAC Report with the fence line locations given on the SAC plant site map. Receptors used in the air quality modeling are not located at the fence line based on UTM coordinates measured using the SAC plant site map.

Furthermore, the highest predicted 24-hour PM10 concentrations are expected to occur at locations adjacent to the plant roads as they exit from the plant property. Such receptors are expected to capture the maximum 24 hour PM10 concentrations from the new plant modification when the winds blow parallel to the relatively straight Existing and/or New Roads sweeping up the PM10 emissions of the road surfaces from successive road segments. No receptors were located at these locations in the SAC modeling.

It is useful to examine the predicted source contributions in the SAC output files to the highest predicted 24-hour PSD increment consumption (29.4 ug/m3 at (x,y) =(321,234.1, 3,315,167.8)). This receptor is located about 53 meters from the edge of the closest road segment.

Plant point sources contribute only 3 ug/m3 to this 24-hour concentration. The remainder is from plant volume sources and the area sources representing the road segments. The SAC output files did not provide separate source contributions for the road segments versus the volume sources. However, we expect that the majority of the 26 ug/m3 predicted concentration from these sources comes from the roads because of their closer proximity to this receptor. This illustrates how potentially important the plant road segments are to determining the maximum 24-hour PSD increment consumption.

Table 5 provides the locations of four receptors that should be included in the final air quality modeling by SAC.

Conclusion. Include the four receptors in Table 5 in the final air quality modeling by SAC. Position additional receptors at 25 meter intervals along the fence line using the eastern most (REC_3) and western most (REC_2) of these four receptors as the starting point. Also include one receptor where the highest 24-hour PSD increment consumption was predicted in the SAC July Report.

Limitation7.

The following identifies the outstanding questions identified to date with regard to the Calpuff modeling analysis.

a) A comparison of Section 6 to the SAC reports of June 23 and July 27 shows that the predicted concentrations of SO2, NO2 and PM10 have changed at each Class I area. The worst-case concentrations continue to be predicted at Okefenokee and overall the SILs continue to be less than the threshold for cumulative analysis by at least a factor of 2. Given that the stack release parameters and emissions rates show no change, we believe that this is due to the issues mentioned in paragraphs b) and c) below (i.e., chemical transformation reactions). Any additional changes to background ozone and/or ammonia based on the comments below will further impact these results. Please discuss.

b) Section 6.1 of the July 27 report indicates that daily ozone concentrations (1-hour and 8-hour) were obtained from four FDEP monitor sites considered by SAC as representative of the ambient conditions at each Class I area. Maximum 8-hour ozone concentrations were identified for each day, and were averaged on a monthly basis to produce twelve (12) monthly background ozone concentrations that were input to Calpuff. Is this the method that was used?

c) Constant monthly ammonia background concentrations of *0.5 ppb* were input to Calpuff. This constant concentration is reflective of a forested area, as indicated in the final FLAG document, and is the recommended default value unless there is specific data available for the modeling domain. This notwithstanding, FLAG also specifies *a default value of 10 ppb for grasslands.* Since a value of 10 ppb was used in the June 2005 Class I modeling, and presuming no specific data are available for each Class I area, it is unclear why the background ammonia has changed. Given the importance of the background ammonia concentration towards chemical transformation and the creation of sulfates and nitrates, which are hygroscopic and have a profound impact on visibility and the percent change in extinction coefficients, SAC should justify choosing a default value of 0.5 ppb instead of 10 ppb. Such could be based on an analysis of the predominant land-use type (forest or grassland), as found within each Class I area.

d) The final FLAG report recommends using a Rayleigh scattering coefficient of 10 Mm^{-1} as input to the Calpost visibility modeling, but SAC used a value of 12 Mm^{-1} for each Class I area. Please discuss why the modeling does not reflect the FLAG recommended value.

e) Table 2.B-1 of Appendix 2.B to the Final FLAG report does not contain relative humidity adjustment factor information for the Bradwell Bay Class I area. SAC instead used the seasonal information presented in Table 2.B-1 for the St. Marks Class I area. Please discuss why the St. Marks' data was used as a surrogate for Bradwell Bay.

f) The final FLAG report suggests that a cumulative visibility analysis be conducted if a predicted percent change in extinction equals or exceeds 5%. An exceedance of the 5% threshold was predicted at the Okefenokee Class I area (5.16%). Instead of conducting the suggested cumulative analysis, SAC isolated the Class I area receptors at Okefenokee and re-ran Calpuff only at the Class I area receptors (previous, the analysis was conducted using the FLAG recommended ring of receptors). The results were shown to be less than 5% using this limited receptor grid. The IWAQM Phase 2 final recommendations warn against the use of this type of limited receptor grid as input to screening modeling. Why was this method used to refine visibility impacts? Consider completing the ring of receptors recommended by the FLAG report for determining the maximum impact on visibility in the Class I area.

TABLE 1: COMPARISON OF (X,Y) COORDINATES IN SAC REPORT TO PLANT SITE MAP MEASURMENTS FOR FIVE EXISITING POINT SOURCES AND FIVE NEW POINT SOURCES WITH GREATEST PM10 EMISSIONS

Origin UTM Coord. System														
x	321234.1													
y	3315167.8													
								Calculated	SAC	Diff x	Calculated	SAC	Diff y	Distance Difference between the Calculated and SAC Report Locations (m)
ID	**distance (on map) (cm)**	**distance (m)**	**angle (degrees)**	**sin**	**cos**	**dx**	**dy**	**x**	**x**		**y**	**y**		
New														
E21_02	49.5	603.504	81.5	0.989016	0.147809	89.20357	596.875	321323.30	321329.84	-6.54	3315764.68	3315801.25	-36.57	**37.15**
G07_02	46.5	566.928	81.5	0.989016	0.147809	83.79729	560.7008	321317.90	321323.66	-5.76	3315728.50	3315766.04	-37.54	**37.98**
N09_02	28.5	347.472	68.5	0.930418	0.366501	127.3489	323.2941	321361.45	321368.94	-7.49	3315491.09	3315515.75	-24.66	**25.77**
N12_02	27.7	337.7184	67	0.920505	0.390731	131.9571	310.8714	321366.06	321382.38	-16.32	3315478.67	3315535.75	-57.08	**59.37**
S17_02	40	487.68	73	0.956305	0.292372	142.5838	466.3707	321376.68	321384.96	-8.28	3315634.17	3315671.46	-37.29	**38.20**
Existing														
E21_01	44.6	543.7632	77.5	0.976296	0 21644	117.6919	530.8738	321351.79	321359.01	-7.22	3315698.67	3315731.44	-32.77	**33.55**
N09_01	27.8	338.9376	72.5	0.953717	0.300706	101.9205	323 2505	321336.02	321341.97	-5.95	3315491.05	3315516.75	-25.70	**26.38**
N12_01	26.9	327.9648	71	0.945519	0.325568	106.7749	310.0968	321340.87	321354.63	-13.76	3315477.90	3315536 00	-58.10	**59.71**
P11_01	28.7	349.9104	57.5	0.843391	0.5373	188.0067	295.1114	321422.11	321435.09	-12.98	3315462.91	3315489.69	-26.78	**29.76**
S17_01	39.1	476.7072	74.5	0.96363	0.267238	127.3945	459.3696	321361.49	321373.45	-11.96	3315627 17	3315659.12	-31.95	**34.11**

FIGURE 1. EXISTING AND NEW PLANT ROAD LOCATIONS AND SHAPES BASED ON THE ISC MODEL INPUT DATA COORDINATES

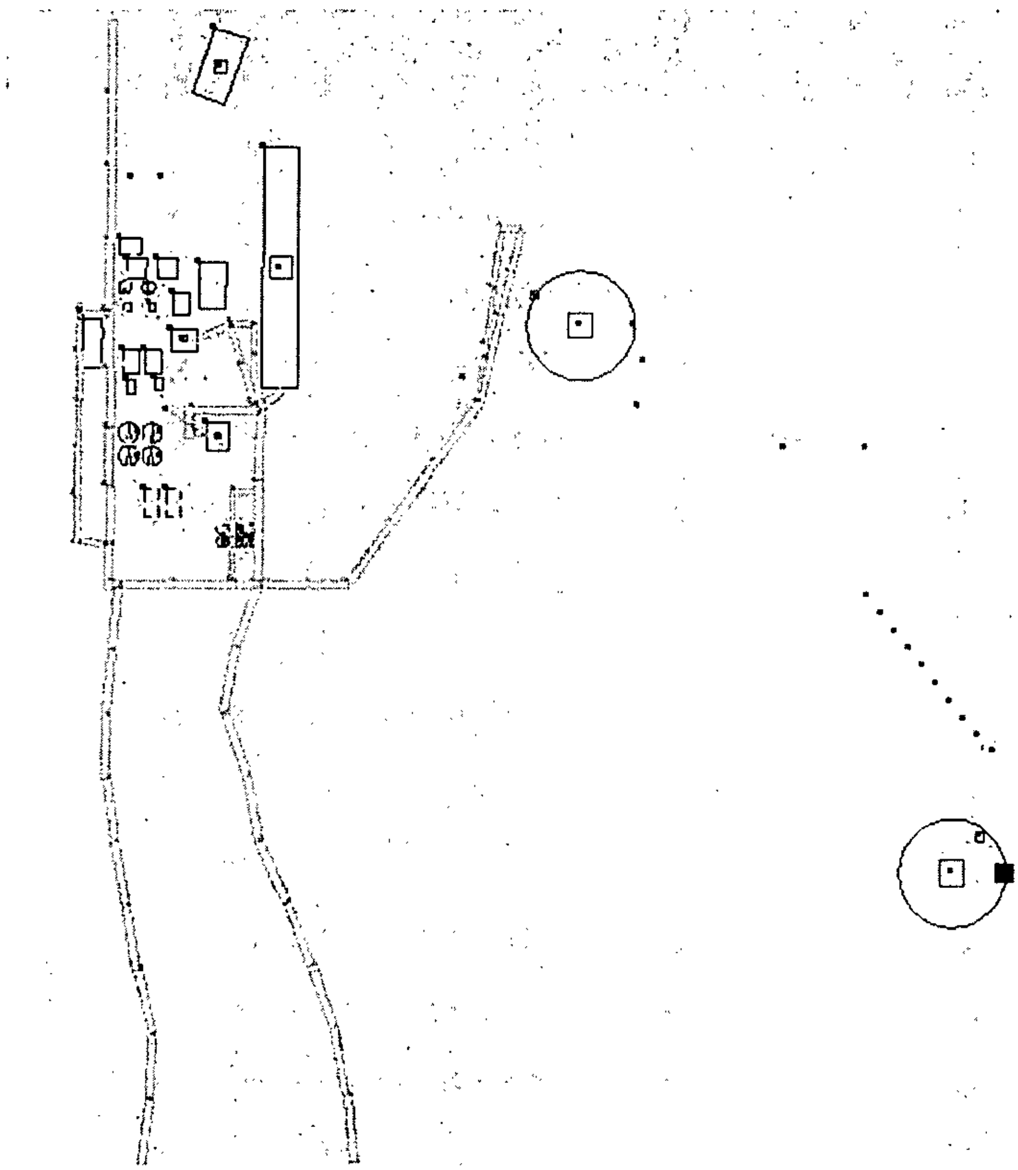


TABLE 2. SOURCES FOR WHICH CALCULATED TOTAL PM10 EMISSIONS (EXISTING PLUS NEW) FOR PROCESS RELATED FUGITIVE SOURCES DIFFER FROM THE PM10 EMISSION RATES IN THE JUNE 2005 SAC REPORT

Source Identification in ISCST3 Model	Source Description	PM_{10} Emission Rate from 6/05 Report (lb/hr)	PM10 Emission Rate calculated (lb/hr)	Differ-ence (lb/hr)	% Differ-ence
FQ2_B40	Quarry Conveyors:B40 to C01	0.0290	0.0029	0.0261	-90%
SP6_FR2	Ash Storage: Fly Ash Storage Building	0.0510	0.0466	0.0044	-9%

TABLE 3. MAXIMUM ACTIVITY LEVELS USED BY SAC TO CALCULATE THE POTENTIAL TO EMIT EMISSION RATES FOR EXISTING SOURCES AT THE PLANT

Material	Source ID	Existing Throughput (tons/yr)	Original Permit Condition
Limestone crushed	FQ1	1,679,000	yes
Base Rock		44,384	no
Limestone - raw material		1,634,616	no
Sand		31,956	no
Iron Ore		31,956	no
Fly Ash		199,728	no
Raw Material Total		1,898,257	no
Coal Total	FF1	127,896	yes
Coal Auxiliary Storage		19,184	no
Raw Mill - Kiln 1		1,352,728	no
Kiln 1 Preheater Feed	E21-01	1,427,880	yes
Clinker - Kiln 1	K15-01	839,500	yes
Gypsum		75,000	no
Cement - Mill 1		1,191,360	yes

TABLE 4. MAXIMUM ACTIVITY LEVELS USED BY SAC TO CALCULATE THE POTENTIAL TO EMIT EMISSION RATES FOR NEW SOURCES AT THE PLANT

Material	Unit ID	Proposed Throughput	Draft Permit Condition	Comments
		(tons/yr)		
Limestone crushed	FQ1	3,450,000	yes	Revised permit limit is 1,981,860 tons per year, however, the emissions are calculated based on 3,450,000 tons per year
Base Rock		100,000	no	
Limestone - raw material		3,350,000	no	
Sand		72,000	no	
Iron Ore		72,000	no	
Fly Ash		450,000	no	
Raw Material Total		3,944,000	no	
Coal Total	FF1	277,896	yes	Revised permit limit is 160,300 tons per year, however, the emissions are calculated based on
Coal Auxillary Storage		37,500	no	
Raw Mill - Kiln 1		1,352,728	no	
Raw Mill - kiln 2		1,695,060	no	
Kiln 1 Preheater Feed	E21-01	1,427,880	yes	
Kiln 2 Preheater Feed	E21_02	1,789,230	yes	Revised permit limit is 1,684,578 tons per year, however, the emissions are calculated based on
Total Kiln Feed		3,217,110		
Clinker - Kiln 1	K15-01	839,500	yes	
Clinker - Kiln 2		1,055,467	yes	Revised permit limit is 965,425 tons per year, however, the emissions are calculated based on
Total Clinker		1,894,967		
Gypsum		150,000	no	
Cement - Mill 1		1,191,360	yes	
Cement - Mill 2		1,191,360	yes	Permit has not been revised to reflect the new cement production rate of 2,382,720 tons per year.
Total Cement		2,382,720		

TABLE 5. LOCATIONS OF FOUR RECEPTORS AT THE INTERSECTION OF THE PLANT ROADS WITH THE FENCE LINE THAT SHOULD BE INCLUDED IN THE FINAL AIR QUALITY MODELING

Receptor Location	Receptor ID	x	Y
Existing road (right edge)	REC_1	321331.7	3314729.0
Existing road (left edge)	REC_2	321307.4	3314729.0
New Road (right edge)	REC_3	321562.9	3314729.0
New Road (left edge)	REC_4	321547.8	3314729.0

Note to Table 5: The distance from the right edge to the left edge of the New Road consists of the road width (9m) plus 3 m from the edge of each road, i.e. 9.14+3+3=15.14m. The distance from the right edge to the left edge of the Existing Road is the same as for the new road except that the two branches of the Existing Road merge at the plant fence line so the distance is 3+9.14+9.14+3=24.3m.

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Mr. Joe Horton
Suwannee American Cement, LLC
Post Office Box 410
Branford, Florida 32008

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Environmental Quality Management, Inc.

Cedar Terrace Office Park • Suite 250
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Durham, North Carolina 27707
(919) 489-5299
FAX (919) 489-5552
www.eqm.com

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AUG 03 2005

BUREAU OF AIR REGULATION

August 1, 2005

Mr. Cleve Holladay
Air Dispersion Modeler
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Revised Site Maps for the Proposed Suwannee American Cement Expansion in Branford, Florida
PN 050430.0002

Dear Mr. Holladay:

On July 27, 2005, Suwannee American Cement (SAC) submitted a Response to an Additional Information (RAI) request from the Florida Department of Environmental Protection (DEP). Per your request, enclosed are revised site maps that were included as Appendix A to the RAI response. The site maps now include a scale in meters as well as feet.

If you have any questions or comments concerning the files, please give me a call at (919) 489-5299.

Sincerely,

ENVIRONMENTAL QUALITY MANAGEMENT, INC.

Joshua D. Dunbar

JDD/tlp

Enclosures

cc: J. Horton (SAC) – w/o enclosures
J. Koerner (DEP) – w/o enclosures

Department of Environmental Protection

Jeb Bush
Governor

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

Colleen M. Castille
Secretary

July 22, 2005

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Tom Messer, Plant Manager
Suwannee American Cement, LLC
P.O. Box 410
Branford, FL 32008

Re: Application Status Update and Request for Additional Information
DEP File No. 1210465-014-AC (PSD-FL-352)
Proposed New Kiln at the Branford Cement Plant in Suwannee County, Florida

Dear Mr. Messer:

In a letter dated June 10, 2005, the Department requested additional information regarding the construction of a second kiln at the existing cement plant, which is located in Branford at US 27 and CR 49 in Suwannee County. The following describes the information provided to date and the status of our review.

- On June 15, 2005, we emailed you comments from the Fish and Wildlife Service regarding the regional haze (visibility) analysis.
- On June 24, 2005, we received some of the additional information requested in the June 10th letter including: 1) a response regarding CO emissions; 2) a partial response regarding mercury emissions calculations that only provided previously submitted information; 3) a partial response regarding truck traffic issues with no estimates of vehicular fuel combustion from truck traffic as requested; 4) and 5) a partial response regarding the 20D analysis and a revised air quality analysis that did not include the air quality modeling files; and 6) a partial response to our request for larger figures.
- On July 8, 2005, we received the actual air quality modeling files on CD for our review.
- On July 12, 2005, we met with representatives of Suwannee American Cement in Tallahassee to discuss the partial response regarding mercury emissions calculations, the partial response regarding vehicular fuel combustion from truck traffic, the proposed BACT emissions limit for carbon monoxide, and the general status of the application.
- On July 20, 2005, we received an email response giving much more details regarding the requested estimates of mercury emissions and vehicular fuel combustion from truck traffic.

In brief, the application remains incomplete and we are still reviewing the air quality modeling files recently provided. Nevertheless, to further our review, we request the following information:

1. A large, scaled, site map with legend delineating location of each source (equipment, structures, buildings, etc.) including plant roads and fence line. This needs to be on plan-sized paper so that we may make measurements.
2. Dimensions of the exit roads beyond the plant fence line where the trucks travel out to a distance of 150 meters from the fence line.
3. Truck dimensions (height, width, and length) including height of exhaust pipes above the ground.
4. The actual final report on the study conducted to determine the silt loading factor (0.15 grams/m^3). Also, we have not yet received the referenced pages from the EPA Document EPA-450/3-99-008, "Control of Open Fugitive Dust Sources".

5. A refined analysis in the area near the indicated maximum concentration using a smaller grid to determine if there are higher concentrations within the initial grid.

6. Submit the Modeling Protocol dated November 23, 2004. This was identified as "Appendix A" in the original modeling report included with the application.

7. On June 15, 2005, we emailed you the following comments from the Fish and Wildlife Service, "... In reviewing the visibility analysis, it was found that the company had compared the visibility to the background of what was existing prior to the modification and not to the natural background as required by the Federal Land Managers Air Quality Related Values Workgroup (FLAG) guidance. [See Section D.2] The visibility reported was approximately 3%; this number may increase when compared to the natural background. The facility needs to re-run the visibility portion of the analysis and perform any further analysis as required." We have not yet received a response to this issue.

8. We reserve the right to request additional information regarding the air quality modeling analysis through August 7, 2005, which is 30 days after we received the air quality modeling files.

[Rule 62-4.055, F.A.C.; Rule 62-4.070(3), F.A.C.; and Rule 62-212.400, F.A.C.]

We will forward any comments received from other agencies as soon as we receive them. This request for additional information will be sent to the Federal Land Manager and the Department's Florida Park Service for review. Since the application is not complete, an *incomplete application* has been provided to the Federal Land Manager in accordance with Rule 62-212.400(4)(a)2, F.A.C. - Federal Land Manager Participation. The Federal Land Manager is responsible for demonstrating to the Department whether emissions from the facility will have an adverse impact on the air quality-related values (AQRV) including visibility of the Federal Class I Areas. The Department must consider such a demonstration in its Preliminary Determination if it is received within 30 days after the Department sends a complete application to the FLM.

The Department will continue its evaluation of the air quality modeling data and will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. For any material changes to the application, please include a new certification statement by the authorized representative or responsible official. You are reminded that Rule 62-4.055(1), F.A.C. requires applicants to respond to requests for information within 90 days or provide a written request for an additional period of time to submit the information. If there are any questions, please call Bobby Bull at 850-921-9585.

Sincerely,

Jeffery F. Koerner, P.E.
Bureau of Air Regulation, Permitting North

cc:

Joe Horton, SAC
Stephanie Brooks, P.E., Brooks and Associates
Chair, Suwannee County Board of County Commissioners
Kent Berry, CAA Program Manager, Environmental Quality Management
Mark Latch, DEP - FPS
Albert Gregory, DEP - FPS
Don Forgione, DEP - FPS
Chris Kirts, NED
John Bunyak, NPS
Jim Little, EPA Region 4

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Mr. Tom Messer, Plant Manager
Suwannee American Cement, LLC
Post Office Box 410
Branford, Florida 32008

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