



4014 NW 13th STREET
GAINESVILLE, FL 32609-1923
352/377-5822 ▪ FAX/377-7158

RECEIVED

FEB 19 2009

KA 624-08-04
February 18, 2009

BUREAU OF AIR REGULATION

Mrs. Trina Vielhauer
Bureau of Air Regulation
Department of Environmental Protection
2600 Blair Stone Road, MS # 5500
Tallahassee, Florida 32399-2400

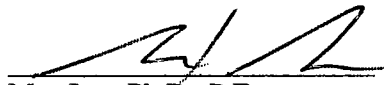
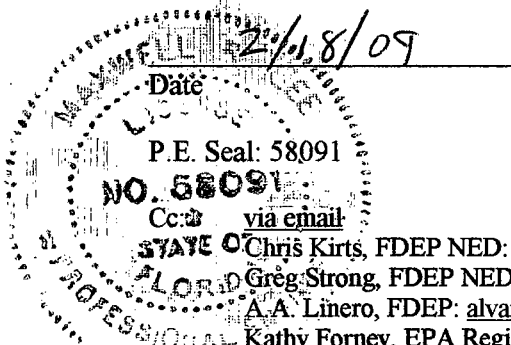
SUBJECT: Response to Request for Additional Information (RAI) dated February 13, 2009
Suwannee American Cement – Branford, Suwannee County
DEP File No. 1210465-016-AC (PSD-FL-259G)
Alternative Fuel Materials Testing – SAC Cement Kiln
P.E. Certification

Dear Mrs. Vielhauer:

This letter provides the RAI response information requested by your letter to Tom Messer of Suwannee American Cement dated February 13, 2009 regarding the subject permit application. In accordance with Rule 62-4.050(3), I have sealed this letter with enclosure as certification by a professional engineer. Enclosed please find four (4) copies of this RAI response. I trust this response addresses the information of your request and appreciate your expedited review.

Please feel free to contact me at (352) 377-5822 or mlee@kooglerassociates.com if you have any questions regarding this submittal.

Sincerely,


Max Lee, Ph.D., P.E.

P.E. Seal: 58091

NO. 58091

Cc: via email

Chris Kirts, FDEP NED: christopher.kirts@dep.state.fl.us

Greg Strong, FDEP NED: greg.strong@dep.state.fl.us

A.A. Linero, FDEP: alvaro.linero@dep.state.fl.us

Kathy Forney, EPA Region 4: forney.kathleen@epa.gov

Heather Abrams, EPA Region 4: abrams.heather@epa.gov

Joe Horton, SAC: jhorton@vcnainc.com

Celso Martini, SAC: cmartini@suwanneecement.com

Tom Messer, SAC: tomm@suwanneecement.com

Krishna Cole, SAC: krishnac@suwanneecement.com

Enclosure: 4 copies-AC Permit Application RAI Response

1. The Department would like additional information on the Quality Assurance (QA) and Quality Control (QC) procedures that are planned during the handling and processing of the ASR at SAC. For instance, does SAC plan on testing ASR for material properties, especially heavy metals, prior to introduction into the kiln? Does SAC plan on awaiting the ASR test results before introducing the ASR into the kiln system?

The Quality Plan beginning on page 6 of 20 in the RAI Response dated January 14, 2009 provides the Quality Assurance (QA) and Quality Control (QC) procedures planned during handling and processing of the ASR at SAC. As stated in the RAI Response,

The Quality Plan establishes the following:

- a) Sampling Location(s)
- b) Sample size
- c) Minimum frequency
- d) Who collects
- e) Sample preparation
- f) Who analyzes (external/internal)
- g) Type of analysis
- h) Analysis method
- i) Validation of process
- j) Material Traceability
- k) Requirements in the event of a non-conformity

The Quality Plan previously submitted addresses all of these items and provides accountability of the material and ensures that the main goal of this test trial, which is to determine the potential long term impact to air emissions when using alternative fuels such as ASR, is successfully achieved. The Plan achieves this goal by ensuring that sufficient data is collected so that an analysis of the tested physical and chemical composition ranges will identify the potential variability of this material. It will also likely be the most comprehensive study of ASR as a fuel in cement kilns to date.

As diagrammed on page 8 of 20 of the RAI Response dated January 14, 2009, SAC will collect grab samples (at Point A) immediately prior to the Schenck feeder system. The reason for this location is that the materials being sampled would be the prepared material ready for injection into the pyroprocessing system. Prior to the Schenck feeding system, SAC will employ a temporary re-shred and separation process to remove material not suitable for injection (i.e. wire, heavy pieces of metal, and pieces of material too large to pass through the blowers) and to reduce the size. Sampling material prior to this location would not be representative of the material introduced into the pyroprocessing system. Also, the Schenck feeder system is temporary and so does not have sufficient capacity to hold material in quantities large enough to support the full length of a

test run. Therefore, SAC does not propose to analyze all of the material entering the kiln prior to injection.

To address the issue of material suitability as a fuel SAC has supplied to the Department, in previous RAI responses, data regarding expected ASR metal concentrations, and understands that those ASR metal concentrations may severely limit future permanent use but these concentrations should not prevent the proposed temporary tests. Based on the material data supplied to the Department, the proposed duration and quantities of alternative fuel material consumed during this temporary test trial will not cause SAC to exceed any of its already permitted limits, nor will it trigger PSD.

In summary, SAC will be testing the alternative fuel material every 4 hours during operating days. An operating day, being defined for purposes of this test trial, is any day that alternative fuel is fed to the pyroprocessing system. These grab samples will be composited into one daily sample and analyzed internally for the following minimum fuel properties:

- %Sulfur
- %Moisture
- %Ash
- Particle Size
- Higher Calorific Value [Btu/lb] - Dry Basis
- Volatility

The daily samples would be composited into a weekly sample and analyzed for total metals concentrations (i.e. cadmium (Cd), lead (Pb), mercury (Hg), and thallium (Tl)). SAC does not have the laboratory facilities onsite to conduct this analysis and therefore would send them to a qualified independent laboratory. The mercury data from this analysis would be used in the monthly mercury material balance required by SAC's air operating permit (Permit No. 1210465-006-AV).

2. *What is the wet versus dry British thermal unit (Btu) values of the ASR? Does SAC plan on using dry or wet ASR as an alternative fuel in the kiln system?*

SAC plans to inject ASR as received (wet) into the pyroprocessing system. SAC does not plan to dry ASR prior to injection into the pyroprocessing system. RAI #1 Response dated November 7, 2008 provided a range of ASR measured heat values of 6,901 to 12,870 btu/lb and the moisture content values were measured to range from 2.6 to 23.7 percent (page 6 of 34 of the RAI Response). SAC knows that the heat input to the kiln is very important to satisfactory operation of a kiln. Thus, as stated in the RAI Response dated November 7, 2008, SAC plans to collect ASR samples every 4 hours of

an operating day, composite these samples daily and measure the heat content of daily composite samples. Over time, the heat input data will provide SAC a much more accurate data set of the heat values of which will allow SAC to finely control ASR heat substitution to the kiln. During the test trial SAC proposes to track the heat input by using the most recent seven day rolling average or the most recent average of all the data if less than seven days of data is available. SAC shall make and maintain records of heat input to the pyroprocessing system on a block-hour basis, starting at the beginning of each hour, by multiplying the hourly average fuel-firing rate by the average heating value.

3. *Because of the high mercury content of the ASR, does SAC plan on reducing the amount of high carbon fly ash fed into the kiln system during testing to offset the ASR mercury content?*

SAC is aware of this concern and will eliminate the use of high carbon fly ash (HCFA) fed into the kiln system during testing as needed to comply to the current permit mercury limit of 97 lb/yr.

4. *If testing of ASR as an alternative proves successful, would SAC be willing to reduce its current mercury limit of 97 pounds per year to a lower limit in any resulting final permit resulting from alternative fuel testing program?*

SAC has not requested any change to any of its existing limits including mercury for this test trial. During the temporary period necessary to conduct this test trial SAC will continue to operate within the confines of all existing permitted limits and regulations.

It is important to note that the limit of 97 pounds per 12 month period was determined by an Administrative Law Judge Recommended Order (OGC Case No. 99-3096), as adopted by FDEP Final Order, after extensive modeling and evaluations that showed that this limit would essentially have no measurable impact to the surrounding area. According to OGC Case No. 99-3096, the mercury emissions limit of 97 pounds per 12 month period will result in surface water concentrations in the Three Rivers of less than 0.0000000006 milligrams per liter over a 100 year period or 200,000 times lower than the surface water quality standards at the time of this ruling. This limit also remains one of the lowest limits on mercury emissions from cement kilns in the state of Florida and the United States.

Furthermore, the System Removal Efficiency (SRE) test plan specified in the response to the Department's RAI dated December 10, 2008 will require filter dust returns analysis for metals concentration. The filter dust returns mercury concentration data from the SRE test will provide accurate measured data that will greatly assist the Department in its initiative to reduce mercury emissions from cement plants (www.dep.state.fl.us/Air/permitting/construction/cement/Cement.ppt).

Furthermore, if the Department's Hg reduction initiative proves successful, such requested reduction of mercury emissions would be realized through that Department initiative. Thus, SAC is addressing, in a wholly cooperative manner, analysis of mercury reduction potential through its commitment to evaluate filter dust metal concentrations through this test trial of alternative fuels. Fuels that should reduce landfill waste and use of virgin materials among other environmental benefits as previously addressed in the previous RAI responses.

1. ***The Department would like additional information on the Quality Assurance (QA) and Quality Control (QC) procedures that are planned during the handling and processing of the ASR at SAC. For instance, does SAC plan on testing ASR for material properties, especially heavy metals, prior to introduction into the kiln? Does SAC plan on awaiting the ASR test results before introducing the ASR into the kiln system?***

The Quality Plan beginning on page 6 of 20 in the RAI Response dated January 14, 2009 provides the Quality Assurance (QA) and Quality Control (QC) procedures planned during handling and processing of the ASR at SAC. As stated in the RAI Response,

The Quality Plan establishes the following:

- a) Sampling Location(s)
- b) Sample size
- c) Minimum frequency
- d) Who collects
- e) Sample preparation
- f) Who analyzes (external/internal)
- g) Type of analysis
- h) Analysis method
- i) Validation of process
- j) Material Traceability
- k) Requirements in the event of a non-conformity

The Quality Plan previously submitted addresses all of these items and provides accountability of the material and ensures that the main goal of this test trial, which is to determine the potential long term impact to air emissions when using alternative fuels such as ASR, is successfully achieved. The Plan achieves this goal by ensuring that sufficient data is collected so that an analysis of the tested physical and chemical composition ranges will identify the potential variability of this material. It will also likely be the most comprehensive study of ASR as a fuel in cement kilns to date.

As diagrammed on page 8 of 20 of the RAI Response dated January 14, 2009, SAC will collect grab samples (at Point A) immediately prior to the Schenck feeder system. The reason for this location is that the materials being sampled would be the prepared material ready for injection into the pyroprocessing system. Prior to the Schenck feeding system, SAC will employ a temporary re-shred and separation process to remove material not suitable for injection (i.e. wire, heavy pieces of metal, and pieces of material too large to pass through the blowers) and to reduce the size. Sampling material prior to this location would not be representative of the material introduced into the pyroprocessing system. Also, the Schenck feeder system is temporary and so does not have sufficient capacity to hold material in quantities large enough to support the full length of a

test run. Therefore, SAC does not propose to analyze all of the material entering the kiln prior to injection. To address the issue of material suitability as a fuel SAC has supplied to the Department, in previous RAI responses, data regarding expected ASR metal concentrations, and understands that those ASR metal concentrations may severely limit future permanent use but these concentrations should not prevent the proposed temporary tests. Based on the material data supplied to the Department, the proposed duration and quantities of alternative fuel material consumed during this temporary test trial will not cause SAC to exceed any of its already permitted limits, nor will it trigger PSD.

In summary, SAC will be testing the alternative fuel material every 4 hours during operating days. An operating day, being defined for purposes of this test trial, is any day that alternative fuel is fed to the pyroprocessing system. These grab samples will be composited into one daily sample and analyzed internally for the following minimum fuel properties:

- %Sulfur
- %Moisture
- %Ash
- Particle Size
- Higher Calorific Value [Btu/lb] - Dry Basis
- Volatility

The daily samples would be composited into a weekly sample and analyzed for total metals concentrations (i.e. cadmium (Cd), lead (Pb), mercury (Hg), and thallium (Tl)). SAC does not have the laboratory facilities onsite to conduct this analysis and therefore would send them to a qualified independent laboratory. The mercury data from this analysis would be used in the monthly mercury material balance required by SAC's air operating permit (Permit No. 1210465-006-AV).

2. *What is the wet versus dry British thermal unit (Btu) values of the ASR? Does SAC plan on using dry or wet ASR as an alternative fuel in the kiln system?*

SAC plans to inject ASR as received (wet) into the pyroprocessing system. SAC does not plan to dry ASR prior to injection into the pyroprocessing system. RAI #1 Response dated November 7, 2008 provided a range of ASR measured heat values of 6,901 to 12,870 btu/lb and the moisture content values were measured to range from 2.6 to 23.7 percent (page 6 of 34 of the RAI Response). SAC knows that the heat input to the kiln is very important to satisfactory operation of a kiln. Thus, as stated in the RAI Response dated November 7, 2008, SAC plans to collect ASR samples every 4 hours of

an operating day, composite these samples daily and measure the heat content of daily composite samples. Over time, the heat input data will provide SAC a much more accurate data set of the heat values of which will allow SAC to finely control ASR heat substitution to the kiln. During the test trial SAC proposes to track the heat input by using the most recent seven day rolling average or the most recent average of all the data if less than seven days of data is available. SAC shall make and maintain records of heat input to the pyroprocessing system on a block-hour basis, starting at the beginning of each hour, by multiplying the hourly average fuel-firing rate by the average heating value.

3. *Because of the high mercury content of the ASR, does SAC plan on reducing the amount of high carbon fly ash fed into the kiln system during testing to offset the ASR mercury content?*

SAC is aware of this concern and will eliminate the use of high carbon fly ash (HCFA) fed into the kiln system during testing as needed to comply to the current permit mercury limit of 97 lb/yr.

4. *If testing of ASR as an alternative proves successful, would SAC be willing to reduce its current mercury limit of 97 pounds per year to a lower limit in any resulting final permit resulting from alternative fuel testing program?*

SAC has not requested any change to any of its existing limits including mercury for this test trial. During the temporary period necessary to conduct this test trial SAC will continue to operate within the confines of all existing permitted limits and regulations.

It is important to note that the limit of 97 pounds per 12 month period was determined by an Administrative Law Judge Recommended Order (OGC Case No. 99-3096), as adopted by FDEP Final Order, after extensive modeling and evaluations that showed that this limit would essentially have no measurable impact to the surrounding area. According to OGC Case No. 99-3096, the mercury emissions limit of 97 pounds per 12 month period will result in surface water concentrations in the Three Rivers of less than 0.0000000006 milligrams per liter over a 100 year period or 200,000 times lower than the surface water quality standards at the time of this ruling. This limit also remains one of the lowest limits on mercury emissions from cement kilns in the state of Florida and the United States.

Furthermore, the System Removal Efficiency (SRE) test plan specified in the response to the Department's RAI dated December 10, 2008 will require filter dust returns analysis for metals concentration. The filter dust returns mercury concentration data from the SRE test will provide accurate measured data that will greatly assist the Department in its initiative to reduce mercury emissions from cement plants (www.dep.state.fl.us/Air/permitting/construction/cement/Cement.ppt).

Furthermore, if the Department's Hg reduction initiative proves successful, such requested reduction of mercury emissions would be realized through that Department initiative. Thus, SAC is addressing, in a wholly cooperative manner, analysis of mercury reduction potential through its commitment to evaluate filter dust metal concentrations through this test trial of alternative fuels. Fuels that should reduce landfill waste and use of virgin materials among other environmental benefits as previously addressed in the previous RAI responses.