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BUREAU OF AIR REGULATION

June 22, 2006

Mr. Scott Sheplak, P.E.  
Air Permitting Section  
Bureau of Air Regulation  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, FL 32399

Subject: Hillsborough County Resource Recovery Facility  
DEP File No. 0570261-007-AC  
Supplemental Comments to Draft Permit

Dear Mr. Sheplak:

On behalf of Hillsborough County ("County"), CDM is submitting the following additional comments about the draft PSD permit ("Draft Permit") that the Department of Environmental Protection ("Department of DEP") prepared for Unit 4 of the County's Resource Recovery Facility ("Facility")

#### Steamflow Limitation

Section III, Item 7 of the Draft Permit states that "the maximum steam production rate shall not exceed 164,000 pounds steam per hour (on a 4-hour block arithmetic average)." The County's application evaluated capacity of the new Unit 4 on an MMBtu/hr basis, not on a steam production rate basis. Relating steam production rate (in pounds per hour) to heat release rate (in MMBtu) is difficult given the varying heat content of the fuel (MSW) and the relatively wider operating window that municipal waste combustors operate within. This is recognized by the USEPA in that Subpart Eb establishes the maximum steam load as 110% the maximum demonstrated steam load during the most recent dioxin/furan performance test.

The County is not opposed to establishing a never to be exceeded value for steamflow, however, the preliminary specifications provided by the boiler vendors suggest that 16 lbs/hr is too low. The maximum steamflow should be 190,000 lb/hr. This is equivalent to 288 MMBtu per hour input used in our air quality analyses.



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### Mass Emission Limitations

Specific Conditions 14 through 21 of the Draft Permit establish lb/hr limitations for many of the regulated pollutants emitted from Unit 4. The emission limitations established as BACT and imposed through NSPS standards are expressed on a concentration basis (either mg/dscm or ppm<sub>dv</sub>). Past Department practice has been to establish "equivalent emissions" (in ton/yr) based on the requisite concentration limitation. However, this Draft Permit establishes an actual mass limitation rather than an equivalent emission.

From discussions with you, it is our understanding that the EPA requires a mass emission limitation to be imposed when a PSD threshold is triggered. As you know, the concentration limitations have varying averaging periods associated with them. For instance, SO<sub>2</sub> concentration is regulated on a 24-hr geometric mean average and CO concentration is regulated on a 4-hr block arithmetic average. In order to avoid confusion over differing averaging periods, and to satisfy EPA's mass emission limitation requirements, we suggest that the Department establish a ton/year limitation rather than a lb/hour limitation. Such an approach will preserve operating flexibility, avoid confusion, and embody EPA's PPSD increment-consumption requirements. With the flow CEM it will be possible to accurately determine compliance with an annual mass emission limitation.

### Miscellaneous

Specific Condition No. 29)a. authorized three hours in any 24-hr period of excess emissions. Specific Condition No. 29)c. provisionally allows up to 15 hours for certain types of malfunctions resulting in CO emissions. For clarity, we suggest that the language in 28)a. reference the special provisions of 29)c.

Thank you for your consideration of these additional comments. If you would like to discuss these further, please do not hesitate to contact me at (813) 281-2900.

Very truly yours,

Jason M. Gorrie, P.E.

Principal

Camp Dresser & McKee Inc.

c: Tom Smith, Hillsborough County  
David Dee, Young Van Assenderp, P.A.



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Mr. Thomas Smith, Manager  
Hillsborough County  
Department of Solid Waste  
PO Box 1110  
Tampa, FL 33601

Reference : DEP File No. 0570261-007-AC (PSD-FL-369, PA 82-19A)

Dear Tom:

Attached are Covanta's comments as the County's operator for the Hillsborough County Resource Recovery Facility Expansion Project. It is our understanding that these comments will be submitted to FDEP along with the County's in a timely manner relative to the date of publication of the Proposed Notice.

Thank you for the ability to participate.

Sincerely,

Joseph R. Treshler

Vice President  
Covanta Hillsborough, Inc.

Cc.	Jason Gorrie	CDM
	Dan Strobridge	CDM
	Brian Bahor	Covanta Energy, Inc.
	John Phillips	Covanta Energy, Inc.

## Comments on Draft Permit PSD-FI-339

### Executive Summary

The following sections provide detailed comments on Draft Permit PSD-FI-339. There are two key points to be highlighted: 1) the Draft Permit cites an incorrect maximum steam rate that must be changed to enable the facility to operate at full load as presented in the Applicant's permit applications, and 2) the Draft Permit contains NO<sub>x</sub> and ammonia (NH<sub>3</sub>) emission limits that are (a) significantly more stringent than those in the Applicant's NO<sub>x</sub> BACT analysis and (b) not supported by technical data from any waste-to-energy (WTE) facility in the world.

The steam rate is a major issue because the Draft Permit mistakenly provides for a maximum steam production rate of 164,000 pounds per hour (4 hour block) in a variety of conditions. The correct maximum steam production rate is 190,000 pounds per hour (4 hour block). This change is necessary for the facility to operate at its rated capacity as identified in the permit application. It is important to note that the Applicant's environmental impact analysis was premised on the operation of a municipal waste combustor with the ability to generate steam at a rate of 190,000 pound per hour (4 hour block average), thus the correction requires no additional analysis by the Applicant or Department.

The Applicant's NO<sub>x</sub> BACT analysis was based on factual information (CEM and stack test data) which recognized that the removal of NO<sub>x</sub> emissions with selective noncatalytic reduction (SNCR) creates ammonia slip which can subsequently form ammonium chloride. The inter-relationship between these three constituents was considered in the environmental impact component of the Applicant's NO<sub>x</sub> BACT analysis which yielded a set of emission limits that could all be met on a continuous and simultaneous basis. The Department's evaluation was based on general information gleaned from a variety of sources (vendor literature, internet references, etc.) not of sufficient caliber to establish an enforceable emission limit... and none of these sources considered the requirement for continuous compliance of NO<sub>x</sub> and NH<sub>3</sub> on a simultaneous basis.

Covanta, which operates 31 WTE facilities, operates a variety of NO<sub>x</sub> control systems at its U.S. facilities and also monitors the performance of NO<sub>x</sub> control systems at WTE facilities overseas designed by our technology partner Martin, GmbH, including the Brescia, Italy WTE facility cited by the Department as the basis of its findings. A full accounting of the NO<sub>x</sub> and NH<sub>3</sub> data from Brescia (and not just the NO<sub>x</sub> data, as was the exclusive focus of the Department's analysis) directly refutes the Department's basis for the proposed NO<sub>x</sub> and NH<sub>3</sub> emission limits in the Draft Permit and indicates that the proposed limits can not be met under all conditions at all times from the outset, and further, that one or both will likely be periodically exceeded as proposed, despite best operating practices and optimum performance of selective non-catalytic reduction of NO<sub>x</sub>. It is not in the interests of the operator, the County or the Department to be exposed to the immediate potential for dispute despite optimum performance of the

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operator and the NOx reduction controls, simply due to, in our view, incomplete review of available data.

In conclusion, the analysis performed by the Applicant was based on good science and facts that yielded a set of emission limits than can be met on a continuous basis, whereas the Department's analysis did not provide any factual evidence that its new and more stringent limits could be met on a continuous basis. Covanta has always guaranteed compliance with key environmental permit conditions and provided technical assurances by contract to its Florida WTE client communities that emissions limits based on demonstrated performance can and will be met. However, the unprecedentedly low and unsupportable NOx and NH3 limits proposed for the Hillsborough County Expansion, means that for the first time in our history and in Florida history, proposed NOx/NH3 emission limits will not be guaranteed by either Covanta or the NOx control equipment provider. These limits will also have an unintended chilling effect on the consideration of new WTE capacity as a proven renewable energy source and alternate to land filling. The result will be increased landfill greenhouse gas emissions and continued higher dependents on other fossil fuel generated electricity – both contrary to the State environmental and energy goals.

Therefore, in the view of the most experienced WTE operator in both the State of Florida and the United States, the Department should reconsider the coincident limits of NOx and NH3 set forth in the Draft Permit and issue a final permit that reflects such limits in a manner consistent with the Applicant's BACT Analysis. Doing so will help to assure that the Hillsborough Expansion is capable of achieving the most stringent NOx permit limit for a WTE facility in the United States.

### **General Comments**

1. The following comments are provided on Draft Permit PSD-FI-339 issued to the Hillsborough County Department of Solid Waste, herein referred to as the Applicant.
2. Pollutant concentrations identified as parts per million, dry gas basis, referenced to 7 % O<sub>2</sub>, are abbreviated herein as ppm<sub>dv7</sub>.

### **1.0 Section I Facility Information**

The second paragraph of the "Project" section incorrectly cites a maximum steam production of 163,780 lbs/hour at 288 MMBtu/hour. The correct value is 190,000 lbs / hour at 288 MMBtu/hour.

It is important to recognize the need to modify the Draft Permit language. The revised condition in Section I Facility Information should read "The nominal design rate capacity is 600 tons MSW per day, with a nominal heat input of 288 MMBtu per hour and maximum steam generating production of 190,000 pounds per hour".

A similar correction occurs in a number of sections of the Draft Permit and we are submitting correction where appropriate, however in the event that an error is not

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identified – please note that the correct proportion is 190,000 pound of steam per hour (4 hour block) at 288 MMBtu per hour of nominal heat input.

## **2.0 Section II Administrative Requirements**

### **Item 2. Compliance Authority.**

We agree that the FDEP Southwest District is the appropriate compliance authority for Permit Number PSD-FL-369 however, for the purpose of clarifying this point, we are requesting that the Hillsborough County Environmental Protection Commission be removed from the Power Plant Site Certification to make the PSD and PPSA consistent with each other.

## **3.0 Section III Emissions Unit Specific Conditions**

### **3.1 Emissions Unit 107 – Steam Capacity**

This table mistakenly identifies the Steam Capacity as follows “The maximum steam production rate is 164,000 pounds per hour (4-hour block average). The nominal heat input to achieve this load is approximately 288 MMBtu/hour”. The correct maximum steam production rate at a nominal heat input of 288 MMBtu/hour is 190,000 lbs/hour (4 hour block average).

Therefore, the language in the table should be revised to read “The maximum steam production rate is 190,000 pounds per hour (4-hour block average). The nominal heat input to achieve this load is approximately 288 MMBtu/hour.”

### **3.2 Emissions Unit 107 - Continuous Monitors**

The equipment scope listed in under Continuous Monitors includes a continuous flue gas flow rate monitor. Continuous flue gas flow rate monitors have been applied to 40 CFR Part 75 sources; however, they have not been required or applied to large municipal waste combustors because EPA Method 19 has met all of the RATA requirements without introducing additional capital and O&M costs.

If the Department is interested in monitoring long-term mass emission rates, EPA method 19 is recommended because of its successful history and because it does not introduce additional cost.

Given their incremental cost without the provision of any net environmental benefit, Covanta recommends that the requirement for flue gas flow rate monitors be amended to allow the Applicant the opportunity to select either a flue gas monitor or to use EPA Method 19. In either case, the mass emission rate will be subject to the same data quality as determined by the Relative Accuracy Test Audit.

### **3.3. Condition 7 – Permitted Capacity**

The Permitted Capacity is incorrectly reflected in the statement “The maximum steam production rate shall not exceed 164,000 pounds steam per hour (on a 4-hour block

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arithmetic average).” As stated previously, the correct maximum steam production rate is 190,000 lbs/hour (4 hour block average) at a nominal heat input of 288 MMBtu per hour.

This condition should be revised to read as “The maximum steam production rate shall not exceed 190,000 pounds steam per hour (on a 4-hour block arithmetic average).”

#### 3.4 Condition 14 - Emission Standards

The following comments focus on the NO<sub>x</sub> and NH<sub>3</sub> emission limits of Condition 14 in light of the Department having established new and more stringent NO<sub>x</sub> and NH<sub>3</sub> emission limits than those identified by the Applicant’s BACT analysis. These comments analyze the Department’s BACT Evaluation, and the new NO<sub>x</sub> and NH<sub>3</sub> emission limits, pursuant to the same standards that the Applicant had to meet – particularly in the context of a technology being demonstrated and that emission limits must be continuously achievable within the known and expected variations of a process. In brief – the Applicant’s NO<sub>x</sub> BACT analysis considered CEM and stack test data on an international basis, when considering continuous compliance with three separate but related environmental conditions (NO<sub>x</sub>, NH<sub>3</sub> and ammonium chloride). The Department’s BACT Evaluation did not address simultaneous compliance but instead focused on NO<sub>x</sub> information available in general literature (no coincident stack or CEM data was provided by the Department to support its conclusion). Unfortunately, the Department’s BACT Evaluation did not meet standard regulatory criteria in that it did not consider whether a proposed emission limit was continuously achievable within known variations, and further, it failed to consider ammonia slip and ammonium chloride within the context of the requisite environmental impact analysis.

Despite the Department having determined that the Applicants BACT NO<sub>x</sub> analysis was correct relative to the proposed daily limit of 110 ppm<sub>dv7</sub>, the Department has also decided that there is “overwhelming evidence that suggests that a long-term value of 90 ppm<sub>dv7</sub> can be met with the planned design and minimal visible emissions” (See page 26, Section 4.3 of the Technical Evaluation and Preliminary Determination). That evidence has never been shared with either Covanta or the Applicant. At the same time that the Departments BACT Evaluation did not directly consider ammonia slip in the BACT analysis (because it is not a PSD regulated pollutant) it nevertheless assigned a not-to-exceed ammonia slip limit of 15 ppm<sub>dv7</sub>. This determination was flawed because the NO<sub>x</sub> BACT analysis did not, but should have considered two environmental impacts associated with a new and lower NO<sub>x</sub> limit; 1) ammonia slip as an absolute value, and, 2) its potential to form ammonium chloride.

Covanta’s operating experience has demonstrated that the Applicant’s NO<sub>x</sub> BACT determination of 110 ppm<sub>dv7</sub> is achievable on a daily basis. Fuel Tech, a leading international supplier of SNCR systems also believes that 110 ppm<sub>dv7</sub> is achievable, largely due to operating experience at the Babylon Waste-to-Energy facility, a modern large municipal waste combustor facility operated by Covanta. While Fuel Tech has provided guarantees for the NO<sub>x</sub> limit of 110 ppm<sub>dv7</sub>, neither Covanta nor Fuel Tech has guaranteed simultaneous compliance with both the proposed NO<sub>x</sub> and NH<sub>3</sub> limits (NO<sub>x</sub> of 90 ppm<sub>dv7</sub> and NH<sub>3</sub> at 15 ppm<sub>dv7</sub>) at a new MWC unit.

The Department's BACT evaluation was dependent upon various sources of information; however, it has not provided any certified data (CEM or stack data) to support its NOx and NH3 related conclusions. Information used by the Department includes 1) vendor guarantees from other projects, 2) technical brochures and papers by vendors and 3) selected citations from internet sources. Despite the fact that each of these sources must be considered relative to the critical BACT requirements, and that a technology must be demonstrated and that the proposed limit must be continuously achievable, none were.

As to the vendor guarantee information cited by the Department, it was provided by Burns and Roe for the Lee County project. EPA's NSR procedures do not consider a vendor guarantee alone to be sufficient justification that a control option will work, and in any case – there has never been any type of guarantee provided for 90 ppm<sub>dv7</sub> NOx and 15 ppm<sub>dv7</sub> NH3.

With respect to technical brochures, general literature and internet data – this information is less credible than a vendor guarantee because it does not provide any real, quantifiable information that the Applicant can use in making a decision on what can be continuously achievable. This is especially true when considering the need for coincident compliance with three related emissions. Specific examples of where and how vendor literature was erroneously used are cited below;

Page	Department Position	Covanta Comment
12	FGR gives around 20 % NOX reduction but has given 25 to 35 % when combined with computational fluid dynamics	No reference is cited and there is no NOx or NH3 data provided.
15	A 2003 presentation by a vendor, Seghers, is used as the technical basis for determining the effectiveness of FGR in controlling NOx and NH3 slip.	This information was not long-term, it was not a guarantee from a vendor, and it did not present any NOx results below 90 ppm <sub>dv7</sub> or NH3 data.
17	Martin Gmbh has successfully installed SNCR systems in Europe and attained guaranteed NOx values ~ 50 ppm <sub>dv7</sub> with <u>low ammonia slip upstream</u> of the flue gas cleaning system. (1)	No guarantee values for NH3 were provided and Martin Gmbh has not offered a guarantee for this project and would not guarantee the Draft permit conditions.

(1) Emphasis added by FLDEP.

It is apparent from these and other citations that the Department has taken technical information on NOx and NH3 from varied sources and generated a hypothetical scenario in which the best NOx and NH3 could occur. However the Department has not presented in its analysis specific examples or sets of operating data from any waste-to-energy facility where low NOx and NH3 data was available on a simultaneous and continuous basis. It is hard to believe that the Department would accept a similarly flawed analysis from an applicant as support for any permit condition. The Department's own statement of "overwhelming evidence suggests that a long-term value of 90 ppm<sub>dv</sub> can be attained"



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is in itself vague and contradictory relative to the ability to meet a permit condition. "Overwhelming" and "suggests" are absolutely inconsistent terms when considering a continuously achievable condition.

The Department's selective use of operating data from Brescia is also troublesome. On page 17, the Department touts the advanced "smart system" and that according to a page taken from a local report, typical stack NOx values are "roughly 20 to 30 ppm<sub>dv7</sub>". However when the Applicant presented actual coincident stack data for NOx and NH<sub>3</sub> from this same facility that demonstrates NH<sub>3</sub> slip above the proposed limits – this data was dismissed by the Department as an over use of ammonia.

The Brescia operating data provided by the Applicant to the Department is evidence that the combination of flue gas recirculation and SNCR can reduce NOx to 90 ppm<sub>dv7</sub>. But of paramount importance, the stack NH<sub>3</sub> slip from this same facility was well above 15 ppm<sub>dv7</sub> (see below). The Applicant has presented a significant amount of data to demonstrate this very point; however, the Department has simply dismissed it without any legitimate technical justification.

While we agree that a 12-month rolling average is more appropriate than a daily average, it does not truly provide any material flexibility. That is because typical daily operations to enable compliance with the 12-month rolling NOx average of 90 ppm<sub>dv7</sub> would be;

Daily Limit	: 90 ppm <sub>dv7</sub>
Compliance margin	: 10 ppm <sub>dv7</sub>
Typical Operations	: 80 ppm <sub>dv7</sub>

For example, if a situation develops that requires a reduction in urea reagent so that the stack limit approaches 110 ppm<sub>dv7</sub>, an offsetting day of 60 to 70 ppm<sub>dv7</sub> would be required to maintain the long-term (90 ppm<sub>dv7</sub>) average. The Brescia data provided by the Applicant to the Department included 44 daily averages over a 3-month period in 2003. NOx ranged from 45 to 60 ppm<sub>dv7</sub> while NH<sub>3</sub> slip varied from 30 to 80 ppm<sub>dv7</sub> with several days at or above 100 ppm<sub>dv7</sub>. It is important to mention that the Department did not consider this ammonia slip data in its environmental impact analysis regarding the potential formation of an ammonium chloride plume. Despite the fact that this phenomenon is well documented by the EPA in its studies and has been discussed at length between the Applicant and the Department, it seems to have been ignored by the Department in its environmental impact analysis.

As previously stated, the Brescia stack data supports the Department's determination that the appropriate NOx limit is 90 ppm<sub>dv7</sub>. However, contrary to the Department's position, that very same data indicates that the appropriate NH<sub>3</sub> limit should be well above 15 ppm<sub>dv7</sub>. As to ammonium chloride, there is no process data available to our knowledge at Brescia... so we have no information regarding the Department's assessment of this parameter in its environmental impact analysis.

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In conclusion, the BACT evaluation provided by the Department and its associated derivation of alternative NO<sub>x</sub> and NH<sub>3</sub> limits was purportedly based on "overwhelming evidence that suggests a long-term value of 90 ppm<sub>dv</sub>" yet no data were provided. Therefore, we suggest that absent such evidence the Department be requested to reconsider the Draft Permit limits for NO<sub>x</sub> and NH<sub>3</sub> and re-establish them in a manner consistent with the Applicants BACT analysis. Further, the Department is respectfully requested to provide the following:

1. Stack CEM data where both the NO<sub>x</sub> and NH<sub>3</sub> limits were simultaneously met.
2. Analysis of ammonium chloride formation
3. The environmental impact analysis that considered the net difference of lower NO<sub>x</sub> (110 - 90 = 20 ppm<sub>dv</sub>) with higher NH<sub>3</sub> slip (50 - 15 = 35 ppm<sub>dv</sub>) and any potential ammonium chloride formation.

### 3.5 Condition 15 - Nitrogen Oxides

The condition as written does not provide a clear time-weighted average for the mass emission rate of 79.8 lbs/hr. The following language is proposed to avoid any misunderstanding;

"During the first year of operation, emissions of NO<sub>x</sub> in the stack exhaust gas as measured by the required CEMS shall not exceed 150 ppm<sub>dv</sub> as a daily average and shall not exceed 110 ppm<sub>dv</sub> on a 30-day rolling average. The mass emission rate shall be reported as an annual value.

Thereafter, emissions of NO<sub>x</sub> in the stack exhaust gas as measured by the CEMS shall exceed neither 110 ppm<sub>dv</sub> as a 24 hour daily average and shall not exceed 90 ppm<sub>dv</sub> or on a 12-month rolling average. All mass emission rates are as an annual average."

### 3.6 Condition 16 - Carbon Monoxide

The condition as written does not provide a clear time-weighted average for the mass emission rate of 79.8 lbs/hr. The following language is proposed to avoid any misunderstanding;

"Emissions of CO in the stack exhaust gas as measured by the required CEMS shall not exceed 100 ppm<sub>dv</sub> on a 4-hour block average and shall not exceed 80 ppm<sub>dv</sub> lb/hour, both on a 30-day rolling average. All mass emission rates shall be reported as an annual average."

### 3.7 Condition 19

In order to establish consistency in permit averaging period between Condition 19 and Condition 35, the following is proposed for the third paragraph of Condition 19;

Thereafter, the owner or operator may demonstrate compliance with all Hg limit in this permit with data collected from the required Hg-CEMS as described in Specific Condition 26 *with Hg-CEMS data being reported as a quarterly average*. Otherwise the required quarterly testing for mercury shall continue.

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**3.8 Condition 28 Department Regulations**

In order to facilitate clarity in this condition, the following is proposed for the underlined sentence in the first paragraph; "The Department authorizes 3 hours in any 24 hour period for this emission unit *and allows for the special provisions cited in condition 29.b.c.*"