

**Covanta Lake, Inc.**  
A Covanta Energy Company  
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Tel 352 365 1611  
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November 11, 2011

Mr. Yousry Attalla  
Chemicals & Combustion Key Industry Group  
Office of Permitting & Compliance  
Florida Department of Environmental Protection  
Bob Martinez Center  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

**RE:    *Response to August 26, 2011 Request for Additional Information  
Covanta Lake II, Inc. – Lake County Resource Recovery Facility  
Permit No. 0690046-011-AC***

Dear Mr. Attalla:

Covanta Lake II, Inc. (Covanta) is submitting this response to the Request for Additional Information (RAI) dated August 26, 2011 regarding the construction permit application for Covanta's Lake County Resource Recovery Facility (Lake County facility) in Okahumpka, Florida. The construction permit application was submitted for the proposed leachate injection into the two (2) municipal solid waste (MSW) combustors (EU001 and EU002) at the Lake County facility. As identified during the conference call on October 10, 2011, Covanta is proposing to implement a different use of leachate at the Lake County facility than identified in the initial construction permit application. This operation change description requested by the DEP is included in the updated construction permit application submitted by Covanta under separate cover via the Electronic Permit Submittal and Processing (EPSAP) system (Application No. 2945-2). The updated construction permit application provides the additional information for the use of leachate in the dilution water for the existing scrubber system at the Lake County facility.

For this response letter, Covanta has identified the specific DEP information requests in italic font and the information provided in response is included or referenced after each question.

- 1. What is the typical or expected sulfur content of the landfill leachate, and is it of sufficient quantity to impact MSW acid gas emissions, considering the additional chloride (Cl) that will also be added via leachate injection?*



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DIVISION OF AIR  
RESOURCE MANAGEMENT

The historical analyses conducted on leachate samples obtained for the Astatula landfill (located in Lake County) identifies a maximum sulfide content (identified as total sulfur) of 66 mg/L.<sup>1</sup> With an insignificant amount of sulfide (and total sulfur content) in the leachate compared to chlorides, Covanta assumes the sulfur dioxide (SO<sub>2</sub>) emissions generated in the MSW combustor scrubbers will not significantly increase due to the use of leachate as part of the dilution water.<sup>2</sup>

As identified in the updated permit application, leachate is currently included with the MSW combusted at the Lake County facility and constitutes a larger content of the total MSW materials during the summer season (due to higher rain and moisture content in the MSW). The only proposed operation change with this project at the Lake County facility is the leachate direct injection into the MSW combustor scrubbers.

As a major Prevention of Significant Deterioration (PSD) source for the combustion of MSW, the PSD Significant Emission Rate (SER) for MSW acid gases as well as SO<sub>2</sub> cannot be exceeded for the net emission increase associated with the proposed operation change to avoid PSD permitting. The MSW acid gases include both SO<sub>2</sub> and hydrogen chloride (HCl) emissions. The PSD SER for both MSW acid gases and SO<sub>2</sub> (individually) emissions is 40 tons per year (tpy).

The potential increase in SO<sub>2</sub> emissions is insignificant due to the minimal sulfur content of the leachate that will be directly injected into the MSW combustor scrubbers. Any increase in MSW acid gas emissions is assumed to be primarily HCl emissions due to the higher concentration of chlorides, compared to sulfides (and thus sulfur), in the leachate samples analyses. The proposed trial period identified in Question #6 will be utilized for confirming the actual HCl emissions from the MSW combustors to demonstrate that the MSW acid gas emissions increase will remain below the PSD SER. Additionally, total SO<sub>2</sub> emissions from Florida's ambient air will be reduced due to less truck traffic (and associated diesel combustion) by transporting the leachate in Lake County only as opposed to transferring the leachate to Jacksonville for treatment in a wastewater plant.

For the reverse osmosis (RO) brine reject proposed to be injected into the MSW combustors via the SNCR injection ports, Covanta expects no significant increase in MSW acid gases or HCl emissions. A sample analysis for the RO brine reject identified chloride content of 308 mg/L and sulfate content of 7,831 mg/L. This chloride content is significantly less than the chloride content in the leachate material, and therefore insignificant HCl emissions increase is expected in the MSW combustors. Despite the significantly higher sulfate content in the RO brine reject compared to the maximum sulfate content of the leachate material, any increased SO<sub>2</sub> emissions formed due to increased sulfur content in the MSW combustors is assumed by Covanta to be efficiently controlled by the scrubbers. Covanta currently uses the RO brine reject as dilution water for the scrubbers and the proposed operation change is only a different location for use in

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<sup>1</sup> Sulfide analysis from sample dated December 13, 2000, from Astatula Landfill, from a total of 21 different samples analyzed for sulfide content.

<sup>2</sup> The maximum sulfur content of 66 mg/L is less than 0.2% of the average chloride content in the leachate materials sampled and analyzed.

the process. As previously identified for the leachate material, the proposed trial period identified in Question #6 will be utilized for confirming the actual HCl emissions from the MSW combustors to demonstrate that the MSW acid gas emissions increase will remain below the PSD SER.

2. *What is the temperature in the selective non-catalytic reduction (SNCR) zone where the landfill leachate will be injected? What will be the impact on dioxin/furan formation potential from injecting the Cl and organic matter into the temperature zone versus injecting it into the MSW combustion zone?*

The temperature range in the SNCR zone where the RO brine reject will be injected is 1,600 – 1,800 °F. Dioxin/furan formation is affected by two primary factors concerning combustion of MSW: 1) combustion conditions in the MSW combustion zone for each unit; and 2) the efficiency of the air pollution control systems for the exhaust from the process.

Since dioxin/furan emissions are generated in the MSW combustion zone for each unit, Covanta assumes that the injection of RO brine reject in the SCNR zone, which is located after each MSW combustion zone, will not affect the combustion of MSW in either unit at the Lake County facility. Covanta does not anticipate a direct increase in dioxin/furan emissions due to the minor increase in chloride content after the combustion zone from the RO brine reject.

Since the leachate will be injected into the scrubbers at a temperature between 420 – 435 °F, no dioxin/furan formation is expected to occur due to the low temperature range in the scrubbers. Furthermore, the existing baghouses and activated carbon usage will not be affected by the operation change and these controls will retain the same destruction efficiency for dioxin/furan formed in the MSW combustion process.

3. *Are the landfill leachate storage tanks going to be new tanks? Will these new tanks be subject to any federal or state rules?*

Covanta proposes to utilize a temporary tank during the trial period identified in Question #6, below. This temporary tank will be new and will be utilized during the trial period only. After the trial period is completed, Covanta will construct a new permanent leachate storage tank for direct unloading of leachate from trucks.

NSPS Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Vessels*, regulates storage vessels with a capacity greater than 75 cubic meters (m<sup>3</sup>) (19,813 gallons) that are used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984. NSPS Subpart Kb is not applicable to a storage vessel with capacity less than 75 cubic meters (m<sup>3</sup>) (19,813 gallons). The proposed temporary tank for the trial period and proposed permanent tank for storage of leachate will include storage capacities

less than 19,813 gallons. NSPS Subpart Kb will not apply to these proposed tanks based on the storage capacities.

The proposed leachate storage tanks will be exempt from SIP permitting under the Generic Emission Unit Exemption per Rule 62-210.300(3)(b)(1), F.A.C. (identified in underlined text).

1. Generic Emissions Unit or Activity Exemption. Except as otherwise provided at subsection 62-210.300(3), F.A.C., above, an emissions unit or pollutant-emitting activity that is not entitled to a categorical or conditional exemption pursuant to paragraph 62-210.300(3)(a), F.A.C., shall be exempt from any requirement to obtain an air construction permit or non-Title V air operation permit, or to use an air general permit pursuant to Rule 62-210.310, F.A.C., if it meets all of the following criteria.
  - a. It would not be subject to any unit-specific limitation or requirement.

The temporary and permanent leachate storage tanks will not be subject to NSPS Subpart Kb or any other unit-specific limitation or requirement.

- b. Its emissions, in combination with the emissions of other units and activities at the facility, would not cause the facility to emit or have the potential to emit any pollutant in such amount as to create a Title V source.

The potential emissions will be insignificant from the temporary and permanent leachate storage tanks. Also, the Lake County facility is already classified as a major source with respect to Title V permitting program.

- c. It would neither emit nor have the potential to emit 500 pounds per year or more of lead and lead compounds expressed as lead, 1,000 pounds per year or more of any hazardous air pollutant, 2,500 pounds per year or more of total hazardous air pollutants, or 5.0 tons per year or more of any other regulated air pollutant as defined at Rule 62-210.200, F.A.C.

Covanta estimates the potential emissions from the tanks will be less than 500 pounds per year (lb/yr) of lead emissions, less than 1,000 lb/yr for each hazardous air pollutant (HAP), less than 2,500 lb/yr for total HAP emissions, and less than 5 tons per year (tpy) for other regulated air pollutants, based on TANKS emissions calculated using vapor pressure for water in estimating leachate storage tank VOC emissions (0.14 tpy).<sup>3</sup>

- d. In the case of a proposed new emissions unit at an existing facility, the emissions of such unit, in combination with the emissions of any other proposed new or modified units and activities at the facility, would not result in a modification subject to the

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<sup>3</sup> The assumed maximum working volume for the permanent leachate storage tank is 19,000 gallons.

preconstruction review requirements of subparagraph 62-204.800(11)(d)2., Rule 62-212.400 or 62-212.500, F.A.C.

The insignificant emissions from the proposed storage tanks will not result in the proposed operation change being subject to PSD permitting due to the PSD SER being exceeded for the emissions increase for the project.

- e. In the case of a proposed new pollutant-emitting activity, such activity would not constitute a modification of any existing non-exempt emissions unit at a non-Title V source or any existing non-insignificant emissions unit at a Title V source.

The proposed temporary and permanent leachate storage tanks will not result in a modification of any existing emission units (MSW combustors) at the Lake County facility.

4. *Will the dissolved solids in the landfill leachate yield particulate matter (PM), PM<sub>10</sub> or PM<sub>2.5</sub> emissions when combusted?*

Covanta has reviewed the potential for PM, PM<sub>10</sub>, and PM<sub>2.5</sub> formation as a result of the total dissolved solids (TDS) in the RO brine reject. However, the TDS content in the RO brine reject will primarily constitute carbonaceous material, which will be oxidized in the high temperature SNCR zone to form CO<sub>2</sub>. As such, the potential for PM emissions as a result of the TDS in the RO brine reject is minimal. The current baghouses controlling each MSW combustor will control any additional insignificant PM loading.

To confirm the PSD permitting applicability for PM, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions, Covanta proposes to complete PM emissions performance testing during the trial period proposed in the Question #6 response.

5. *Please provide any results from testing or other resource recovery facilities where liquid has been injected into the SNCR in a manner consistent with the proposed project. Include if possible any observed effect on emissions resulting from combustion of the liquid or from the liquid's impact on the operation of the combustors or control devices.*

Table 1 includes testing results from the addition of leachate as scrubber diluents for MSW combustors located at the Covanta Hempstead and Huntington facilities (both located in New York). For these two facilities, the leachate is injected as a scrubber diluent and is not directly injected into the MSW combustors in the SNCR zone. The results of performance testing at the two facilities indicate that the PM, HCl, and SO<sub>2</sub> concentrations in the exhaust streams from the MSW combustors did not increase significantly due to the leachate content of TDS, chlorides, and sulfur.

**TABLE 1. HEMPSTEAD FACILITY PERFORMANCE TESTING RESULTS**

Pollutant	Unit No. 1 – No Leachate	Unit No. 1 – Leachate	Unit No. 2 – No Leachate	Unit No. 2 – Leachate	Unit No. 3 – No Leachate	Unit No. 3 – Leachate
PM	4.89 mg/m <sup>3</sup>	1.17 mg/m <sup>3</sup>	1.37 mg/m <sup>3</sup>	1.86 mg/m <sup>3</sup>	1.97 mg/m <sup>3</sup>	0.91 mg/m <sup>3</sup>
HCl	15.3 ppm	6.4 ppm	22.2 ppm	13.3 ppm	22.4 ppm	6.1 ppm
SO <sub>2</sub>	6.4 ppm	3.4 ppm	16.0 ppm	9.9 ppm	22.1 ppm	13.8 ppm

**TABLE 2. HUNTINGTON FACILITY PERFORMANCE TESTING RESULTS**

Pollutant	Unit No. 1 – No Leachate	Unit No. 1 – Leachate	Unit No. 2 – No Leachate	Unit No. 2 – Leachate	Unit No. 3 – No Leachate	Unit No. 3 – Leachate
PM	3.03 mg/m <sup>3</sup>	2.10 mg/m <sup>3</sup>	3.41 mg/m <sup>3</sup>	10.9 mg/m <sup>3</sup>	3.35 mg/m <sup>3</sup>	3.82 mg/m <sup>3</sup>
HCl	4.50 ppm	3.99 ppm	2.97 ppm	2.34 ppm	2.22 ppm	2.94 ppm
SO <sub>2</sub>	2 ppm	1 ppm	2 ppm	1 ppm	2 ppm	3 ppm

The “no leachate” performance test results include the highest concentration for each pollutant from 2007-2008 for the Hempstead facility and 2006-2007 for the Huntington facility. The performance testing with leachate injected in the scrubber was completed in 2009 for the Hempstead facility and 2008 for the Huntington facility. The testing results with leachate for each of the three units at each facility were in compliance with the respective permitted limits.

Use of the leachate as dilution water in the acid gas scrubbers for the lime injection slurry at the Hempstead and Huntington facilities displaced the use of groundwater as the dilution water. The leachate was injected via nozzle directly into the acid gas scrubbers. The temperature ranges from approximately 315 °F – 550 °F in the scrubber system where the leachate is directly injected at these facilities.

- If the Department’s permit included a trial period for leachate injection, what meaningful emissions or operating parameters could be measured in a cost-effective manner to demonstrate that the projected emissions increase from combusting the leachate is less than the significant emission rates for the prevention of significant deterioration rules? How long should the trial period last to allow for initiating leachate injection, stabilizing operation, measuring impacts and reporting results?*

Covanta will accept a trial period for the proposed operation changes at the Lake County facility. As described in the response to Question #1 in the RAI, Covanta proposes to complete performance testing during the trial period for PM (filterable content only – EPA Method 5 as required in Specific Condition A.45 of current Title V permit) and HCl emissions to confirm the PSD SER for PM, MSW acid gases, and SO<sub>2</sub> is not exceeded. The SO<sub>2</sub> emissions during the performance testing period will be obtained via the SO<sub>2</sub> CEMS currently installed for each MSW combustor. The performance testing and CEMS results will be utilized to estimate the projected actual emissions (PAE) for comparison to the baseline actual emissions (BAE) for each MSW combustor (EU001 and EU002) to determine the emissions increase associated with the operation changes.

Covanta requests that the trial period construction permit include a report submittal for the MSW acid gases, SO<sub>2</sub>, and PM emissions increase comparison to the respective PSD SER. The demonstration of compliance using performance testing data for not exceeding the respective PSD SER is requested to enable Covanta to implement the operation changes for the entire effective period of the trial period construction permit. The requested effective date of the trial period construction permit is one (1) year to allow for initiating leachate injection into the scrubbers, RO brine reject injection via the existing SNCR injection ports, stabilizing operation, completing performance testing to measure impacts, and submit the aforementioned PSD permitting applicability report.

Covanta will submit a subsequent Title V permit revision application to revise the current Title V permit for continuous leachate injection as proposed in the construction permit application.

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If you have any questions or require additional regarding the RAI response information provided, please do not hesitate to contact me at (352) 365-1611, ext. 226, or Mr. Brad James, Trinity Consultants, at (407) 514-2632.

Sincerely,

COVANTA LAKE II, INC.



Gary Main  
Facility Manager

Attachment

cc: Mr. Jason Gorrie, Covanta  
Mr. Viet Ta, Covanta  
Mr. Brad James, Trinity Consultants

**ATTACHMENT 1 – STORAGE TANK POTENTIAL EMISSIONS ESTIMATE**

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**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Tank Identification and Physical Characteristics**

**Identification**

|                      |                                 |
|----------------------|---------------------------------|
| User Identification: | Leachate Tank                   |
| City:                | Orlando                         |
| State:               | Florida                         |
| Company:             | Covanta Lake II                 |
| Type of Tank:        | Vertical Fixed Roof Tank        |
| Description:         | Permanent leachate storage tank |

**Tank Dimensions**

|                          |   |              |
|--------------------------|---|--------------|
| Shell Height (ft):       |   | 23.00        |
| Diameter (ft):           |   | 12.00        |
| Liquid Height (ft) :     |   | 22.46        |
| Avg. Liquid Height (ft): |   | 18.00        |
| Volume (gallons):        |   | 19,000.00    |
| Turnovers:               |   | 276.63       |
| Net Throughput(gal/yr):  |   | 5,256,000.00 |
| Is Tank Heated (y/n):    | N |              |

**Paint Characteristics**

|                    |             |
|--------------------|-------------|
| Shell Color/Shade: | White/White |
| Shell Condition:   | Good        |
| Roof Color/Shade:  | White/White |
| Roof Condition:    | Good        |

**Roof Characteristics**

|                         |      |      |
|-------------------------|------|------|
| Type:                   | Dome |      |
| Height (ft)             |      | 0.50 |
| Radius (ft) (Dome Roof) |      | 0.00 |

**Breather Vent Settings**

|                          |       |
|--------------------------|-------|
| Vacuum Settings (psig):  | -0.03 |
| Pressure Settings (psig) | 0.03  |

Meteorological Data used in Emissions Calculations: Orlando, Florida (Avg Atmospheric Pressure = 14.75 psia)

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Liquid Contents of Storage Tank**

Leachate Tank - Vertical Fixed Roof Tank  
 Orlando, Florida

| Mixture/Component | Month | Daily Liquid Surf. Temperature (deg F) |       |       | Liquid Bulk Temp (deg F) | Vapor Pressure (psia) |        |        | Vapor Mol. Weight | Liquid Mass Fract. | Vapor Mass Fract. | Mol. Weight | Basis for Vapor Pressure Calculations |
|-------------------|-------|----------------------------------------|-------|-------|--------------------------|-----------------------|--------|--------|-------------------|--------------------|-------------------|-------------|---------------------------------------|
|                   |       | Avg.                                   | Min.  | Max.  |                          | Avg.                  | Min.   | Max.   |                   |                    |                   |             |                                       |
| Leachate          | All   | 74.32                                  | 68.84 | 79.80 | 72.34                    | 0.4253                | 0.3508 | 0.5041 | 18.0100           |                    |                   | 18.01       | Option 1: VP70 = .3631 VP80 = .5069   |

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Detail Calculations (AP-42)**

**Leachate Tank - Vertical Fixed Roof Tank**  
**Orlando, Florida**

| Annual Emission Calculations                                        |                |
|---------------------------------------------------------------------|----------------|
| Standing Losses (lb):                                               | 12.3225        |
| Vapor Space Volume (cu ft):                                         | 593.8265       |
| Vapor Density (lb/cu ft):                                           | 0.0013         |
| Vapor Space Expansion Factor:                                       | 0.0476         |
| Vented Vapor Saturation Factor:                                     | 0.8942         |
| Tank Vapor Space Volume:                                            |                |
| Vapor Space Volume (cu ft):                                         | 593.8265       |
| Tank Diameter (ft):                                                 | 12.0000        |
| Vapor Space Outage (ft):                                            | 5.2506         |
| Tank Shell Height (ft):                                             | 23.0000        |
| Average Liquid Height (ft):                                         | 18.0000        |
| Roof Outage (ft):                                                   | 0.2506         |
| Roof Outage (Dome Roof)                                             |                |
| Roof Outage (ft):                                                   | 0.2506         |
| Dome Radius (ft):                                                   | 0.0000         |
| Shell Radius (ft):                                                  | 6.0000         |
| Vapor Density                                                       |                |
| Vapor Density (lb/cu ft):                                           | 0.0013         |
| Vapor Molecular Weight (lb/lb-mole):                                | 18.0100        |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia):  | 0.4253         |
| Daily Avg. Liquid Surface Temp. (deg. R):                           | 533.9945       |
| Daily Average Ambient Temp. (deg. F):                               | 72.3167        |
| Ideal Gas Constant R (psia cu ft / (lb-mol-deg R)):                 | 10.731         |
| Liquid Bulk Temperature (deg. R):                                   | 532.0067       |
| Tank Paint Solar Absorptance (Shell):                               | 0.1700         |
| Tank Paint Solar Absorptance (Roof):                                | 0.1700         |
| Daily Total Solar Insulation Factor (Btu/sqft da <sup>0.75</sup> ): | 1,486.6667     |
| Vapor Space Expansion Factor                                        |                |
| Vapor Space Expansion Factor:                                       | 0.0476         |
| Daily Vapor Temperature Range (deg. R):                             | 21.9205        |
| Daily Vapor Pressure Range (psia):                                  | 0.1533         |
| Breather Vent Press. Setting Range (psia):                          | 0.0600         |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia):  | 0.4253         |
| Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):  | 0.3506         |
| Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):  | 0.5041         |
| Daily Avg. Liquid Surface Temp. (deg. R):                           | 533.9945       |
| Daily Min. Liquid Surface Temp. (deg. R):                           | 526.5143       |
| Daily Max. Liquid Surface Temp. (deg. R):                           | 539.4746       |
| Daily Ambient Temp. Range (deg. R):                                 | 20.6167        |
| Vented Vapor Saturation Factor                                      |                |
| Vented Vapor Saturation Factor:                                     | 0.8942         |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia):  | 0.4253         |
| Vapor Space Outage (ft):                                            | 5.2506         |
| Working Losses (lb):                                                |                |
| Working Losses (lb):                                                | 283.7021       |
| Vapor Molecular Weight (lb/lb-mole):                                | 18.0100        |
| Vapor Pressure at Daily Average Liquid Surface Temperature (psia):  | 0.4253         |
| Annual Net Throughput (gallyr.):                                    | 5,256,000.0000 |
| Annual Turnovers:                                                   | 276.8316       |
| Turnover Factor:                                                    | 0.2751         |
| Maximum Liquid Volume (gal):                                        | 19,000.0000    |
| Maximum Liquid Height (ft):                                         | 22.4578        |
| Tank Diameter (ft):                                                 | 12.0000        |
| Working Loss Product Factor:                                        | 1.0000         |
| Total Losses (lb):                                                  | 276.0246       |

**TANKS 4.0.9d**  
**Emissions Report - Detail Format**  
**Individual Tank Emission Totals**

**Emissions Report for: Annual**

Leachate Tank - Vertical Fixed Roof Tank  
Orlando, Florida

| Components | Losses(lbs)  |                |                 |
|------------|--------------|----------------|-----------------|
|            | Working Loss | Breathing Loss | Total Emissions |
| Leachate   | 263.70       | 12.32          | 276.02          |