Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

December 26, 1991

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Jewell A. Harper
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, NE
Atlanta, GA 30365

Dear Ms. Harper:

Re: Lee County Solid Waste Energy Recovery Facility
Mass Burn - New Facility
Federal Number: PSD-FL-151

Enclosed for your review and comment is a copy of the Technical Evaluation and Preliminary Determination for the above referenced project. Please submit any comments or questions within 30 days to Tom Rogers or Barry Andrews at the above address or call (904)488-1344 at your earliest convenience.

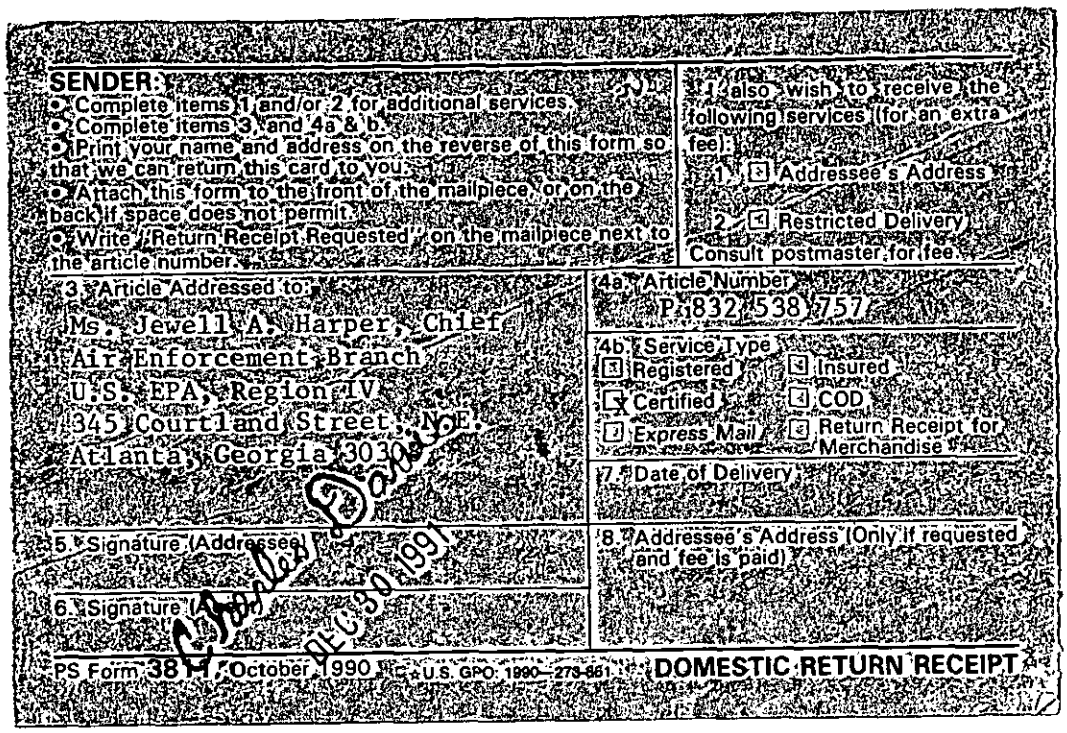
Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/MH/mh

Enclosure

c: David Knowles, South Dist.
Tom Rogers, BAMA
Chris Shaver, NPS
David Dee, CFWES&C, P.A.



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Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30308

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Technical Evaluation
and
Preliminary Determination

Lee County Solid Waste Energy Recovery Facility
Mass Burn MSW Facility
Lee County, Florida

Permit No. PSD-FL-151

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Regulation

December 26, 1991

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State of Florida Department of Environmental Regulation
Lee County Solid Waste Energy Recovery Facility Electric Power Plant Site Certification Review Case No. PA 90-30

I. SUMMARY

Facilities Overview

Lee County has requested certification of a power plant site that would have an ultimate capacity of 50 megawatts (MW), consisting of three 600 tons per day (tpd), mass burn solid waste-to-energy resource recovery units. The facility would use municipal solid waste as fuel. The first phase of the Lee County Solid Waste Energy Recovery Facility would have a capacity of 1,200 tpd and an installed generating capacity of approximately 35 megawatts(MW). The second phase would include another 600 tpd waste burning unit and an ultimate generating capacity of approximately 50 MW. The generating units would be tied into the FPL transmission network using a new 138 kV transmission line to FPL's existing Buckingham Substation located approximately one-half mile north of the site. Municipal solid waste would be trucked to the site. Ash from the facility would be disposed of off site in a licensed landfill.

Approximately 155 acres would be required for the waste-to-energy facility and associated transmission line.

Air Impacts

Based on the proposed air pollutant control technologies, it is expected that the Lee County Solid Waste Energy Recovery Facility (SWERF) would use the Best Available Control Technology to limit both stack and fugitive air emissions. Analysis of the predicted effects of the proposed facilities emissions indicates that no significant ambient air quality impacts would occur, and all applicable specific emission limiting standards would be met.

With respect to other possible adverse environmental effect, the possible adverse effects of the bio-accumulation of mercury in fish and wildlife is the principal concern. To address this concern the Department is recommending that state-of-the-art emissions control for mercury (carbon adsorption) be installed at the facility. In addition, Lee County will be initiating a county-wide battery collection program. Batteries are the principle source of mercury in the waste stream. As such, the Lee County facility will emit less mercury to the atmosphere than any similar facility in the state.

VI. FACILITY SPECIFIC CONCERNS

A. Air Quality

1. Selected Fuel

The primary fuel for the Lee County SWERF is municipal solid waste. Propane will be used during startup, shutdown, and when required for temperature maintenance.

2. Air Quality Impact Analysis

a. Introduction

The proposed Lee County Energy Recovery Facility (ERF), will emit in PSD-significant amounts eleven pollutants. These pollutants include the criteria pollutants carbon monoxide (CO), lead (Pb), nitrogen oxides (NOx), ozone (O_3) (as volatile organic compounds), particulate matter (PM and PM_{10}), and sulfur dioxide (SO_2), and the non-criteria pollutants beryllium (Be), fluoride (F), mercury (Hg), and sulfuric acid mist (H_2SO_4).

The air quality impact analysis required by the PSD regulations for these pollutants includes:

* An analysis of existing air quality;
* A PSD increment analysis (NO_2, PM, and SO_2 only);
* An Ambient Air Quality Standards (AAQS) analysis;
* An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality impacts; and
* A "Good Engineering Practice" (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected with EPA-approved methods. The AAQS analysis depends on the air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on the required analyses, the Department has reasonable assurance that the proposed sources at the Lee County ERF, as described in this report and subject to the conditions of approval proposed herein, would not cause or contribute to a violation of any ambient air quality standard or PSD increment. A discussion of the modeling methodology and required analysis follows.

b. Modeling Methodology

For the screening modeling analysis, model results were calculated for a range of operating conditions for which the maximum ground-level impacts would be expected to occur. A total of 14 operating conditions for waste throughput and waste heat content were considered. On the basis of the modeling results, two worst-case operating conditions were selected for the prediction of maximum air quality impacts. These operating conditions were:

* 1,800-tpd throughput with a refuse heat content of 5,000 Btu/lb (design capacity, or 100 percent of the design heat release) for long-term (annual average) periods; and

* 1,650-tpd throughput with a refuse heat content of 6,000 Btu/lb for short-term (24 hours or less) periods. (This condition results in minimum flue gas flow rate which was coupled with the maximum emission rates calculated at 110 percent of the design heat release.)

The EPA-approved Industrial Source Complex Short-Term (ISCST) dispersion model was used in all phases of the air quality impact analysis. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition and transformation. The ISCST model allows for the separation of sources, building wake downwash, and various other input and output features.

Initially, a rectangular "coarse" receptor grid was developed based on the screening modeling results, and on guidance contained in Guidelines on Air Quality Models (EPA, 1986). The grid was extended outward from the stack location to 10 km in each of the four directions. Screening modeling had indicated the maximum impacts were likely to occur within 5 km. Half-kilometer spacing of gridlines in each direction was initially used. Receptor points were placed at each gridline crossing, for a total of 1,681 receptors. Terrain elevations were selected for each receptor point from the appropriate U.S. Geologic Survey topographic maps (7.5-minute quadrangles) of the area. The maximum terrain within 250 meters of each receptor was assigned to that receptor.

Fine resolution grids (with 100 meter resolution) were centered around receptor locations where the highest, and the highest of the second-highest ground-level impacts for each pollutant averaging period occurred for each of the five years modeled. Fine grids spanned at least a 1.1 km square area centered on each coarse-grid receptor.

Additional discrete receptors were positioned at the nearest boundary of the Everglades National Park PSD Class I area, located 88 km from the proposed facility. Receptors were also placed at the nearest boundary of the Big Cypress National Preserve, 61 km from the proposed facility. Even though the Big Cypress National Preserve is not a PSD Class I area, it is considered to be an area that is sensitive to air quality impacts because of its pristine nature and the presence of unusual or endangered plant species.

Meteorological data used in the modeling consisted of five years (1982-1986) of hourly surface data taken at Ft. Myers, Florida. Mixing heights used in the modeling were based on upper air data from Ruskin (near Tampa), Florida.

Table 1 lists the significant and net emission rates for the proposed facility. Table 2 lists the stack parameters and emission rates for the proposed facility for the operating conditions that produced the highest ground-level concentrations (110% load for short-term operation).

Table 1. Significant and Net Emission Rates (Tons per Year)

Pollutant	Significant Emission Rate	Existing Emissions	Proposed Maximum Emissions	Net Emissions	PSD Applicable Pollutant (Yes/No)
CO	100	0	324	324	Yes
NO_2	40	0	959	959	Yes
SO_2	40	0	490	490	Yes
PM	25	0	64	64	Yes
PM_{10}	15	0	64	64	Yes
O_3 (VOC)	40	0	69	69	Yes
Lead	0.6	0	2.0	2.0	Yes
Be	4.0E-4	0	4.4E-4	4.4E-4	Yes
Hg	0.1	0	2.0	2.0	Yes
Fluoride	3.0	0	11.5	11.5	Yes
H_2SO_4	7	0	118	118	Yes
HCl	NA	0	212	212	NA
Dioxins	NA	0	8.3E-5	8.3E-5	NA
As	NA	0	0.03	0.03	NA

Table 2. Stack Parameters and Emission Rates for Proposed Sources.

	Short-term Case	Annual Case
Building Height (m)	33.53	33.53
Max. Projected Width (m)	>33.53	>33.53
GEP Stack Height (m)	83.82	83.82
Modeled Stack Height (m)	83.82	83.82
Stack Exit Diameter (m)	3.26	3.26
Stack Exit Velocity (m/s)	21.6	19.8
Stack Exit Temp. (K)	389	389
SO_2 Emissions (g/s)	19.36	14.08
NOx Emissions (g/s)	30.35	27.59
CO Emissions (g/s)	41.03*	10.26*
PM Emissions (g/s)	2.01	1.83
PM_{10} Emissions (g/s)	2.01	1.83
VOC Emissions (g/s)	2.18	1.98
Pb Emissions (g/s)	0.063	0.057
F Emissions (g/s)	0.364	0.331
H_2SO_4 Emissions (g/s)	3.72	3.38
HCl Emissions (g/s)	6.69	6.08
Hg Emissions (g/s)	0.084	0.076
Be Emissions (g/s)	1.41E-5	1.28E-5
As Emissions (g/s)	9.46E-4	8.60E-4
Dioxin Emissions (g/s)	1.70E-7	1.50E-7

* For CO the short-term emission rate is a 1-hour emission rate at 110 percent load. The "annual" emission rate is an 8-hour emission rate at 110 percent load. CO does not have an annual air quality standard.

c. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review. In general, one year of quality assured data using an EPA reference, or the equivalent monitor must be submitted. Sometimes less than one year of data, but no less than four months, may be accepted when Departmental approval is given.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined by air quality modeling, is less than a pollutant-specific "de minimus" concentration. In addition, if current monitoring data exists and these data are representative of the proposed source area, then at the discretion of the Department these data may be used.

The predicted ambient impact of the proposed facility for those pollutants subject to PSD review are listed in Table 3. Sulfuric acid mist, As, HCl, and dioxins are not listed in this Table 3 because there are no de minimus levels for these pollutants. However, these pollutants were modeled and their respective predicted impacts are less than their acceptable ambient concentrations, as defined by the Department (See Section "e" AAQS Analysis for details). Based on the modeling results and the fact there are no known industrial sources of these pollutants within 10 km of the proposed facility no additional monitoring was required for these pollutants.

The predicted maximum impacts for CO, NO_2, PM, PM_{10}, SO_2, VOC, Pb, Be, Hg, and F are less than their respective de minimus impact levels. Therefore, no additional monitoring is required for these pollutants.

Table 3. Maximum Air Quality Impacts for Comparison to the Significant Impact and De Minimus Ambient Levels.

Pollutant	Avg. Time	Predicted Impact (ug/m3)*	Sign. Impact Level (ug/m3)	De Minimus Level (ug/m3)
CO	1-hour	46.92	2000.0	N/A
	8-hour	4.03	500.0	575.0
NO_2	Annual	0.36	1.0	14.0
PM	24-hour	0.33	5.0	10.0
	Annual	0.024	1.0	N/A
PM_{10}	24-hour	0.33	5.0	10.0
	Annual	0.024	1.0	N/A
SO_2	3-hour	12.46	25.0	N/A
	24-hour	2.52	5.0	13.0
	Annual	0.19	1.0	N/A
Pb	3-month	0.012*	N/A	0.1
Be	24-hour	2.79E-6*	N/A	0.001
Hg	24-hour	0.017*	N/A	0.25
F	24-hour	0.072*	N/A	0.25
VOC	Annual	69 TPY	N/A	100 TPY

* For Pb, Be, Hg, and F the applicant chose to list the highest predicted impact instead of the highest, second-highest as is permitted.

d. PSD Increment Analysis (NO_2, PM, PM_{10}, and SO_2)

i. Class II Area

The proposed facility is located in a Class II area. This area is also designated as an attainment area for NO_2, PM and SO_2. Therefore, a PSD increment analysis was performed to show compliance with the Class II NO_2, PM, PM_{10}, and SO_2 increments.

The PSD increment represents the amount that new sources in an area may increase ambient ground-level concentrations of a pollutant. At no time, however, can the increased loading of a pollutant cause or contribute to a violation of the ambient air quality standard.

Atmospheric dispersion modeling, as previously described, was performed to quantify the amount of PSD increment consumed. The modeling results are summarized in Table 4.

Based on these modeling results, the impacts from the proposed facility will not violate any of the Class II increments.

Table 4. PSD Class II Increment Analysis

Pollutant	Averaging Time	Max. Pred. Impact (ug/m^3)	Allowable Increment (ug/m^3)
SO_2	3-hour	12.46	512
	24-hour	2.52	91
	Annual	0.19	20
NOx	Annual	0.36	25
PM	24-hour	0.33	37
	Annual	0.02	19
PM_{10}*	24-hour	0.33	30*
	Annual	0.02	17*

* EPA proposed maximum allowable increases (increments) for PM_{10}.

ii. Class I Area

A proposed source subject to PSD review must conduct a dispersion modeling analysis of its impacts on any PSD Class I areas located within a 100 km radius. In this case, there is one applicable Class I area, the Everglades National Park, located 88 km south-southeast of the proposed facility. Though not required, the applicant performed a similar analysis for the Big Cypress National Preserve, a Class II area located 61 km southeast of the proposed facility. As a conservative

comparison, highest annual and highest short-term impacts at both areas were compared to the Class I PSD increments. Table 5 summarizes the PSD increment consumption at the Everglades National Park.

Table 5. PSD Class I Increment Analysis

Pollutant	Averaging Time	Max. Pred. Impact (ug/m^3)	Allowable Increment (ug/m^3)
SO_2	3-hour	0.802	25
	24-hour	0.120	5
	Annual	0.006	2
NOx	Annual	0.012	2.5
PM	24-hour	0.016	10
	Annual	0.001	5
PM_{10}*	24-hour	0.016	8
	Annual	0.001	4

* Proposed maximum allowable increases (increments) for PM_{10}.

Based on these modeling results, the impacts from the proposed facility will not violate any Class I increment. In addition, all predicted impacts for the Big Cypress National Preserve are also below the PSD Class I allowable increment levels. A complete listing of this later analysis can be found in the proposed facility's application package.

e. AAQS Analysis

Given existing air quality in the area of the proposed facility, emissions from the proposed facility are not expected to cause or contribute to a violation of an AAQS. The results of the AAQS analysis are summarized in Table 6.

Of the pollutants subject to review, only CO, NO_2, Pb, PM, PM_{10}, SO_2 and O_3 have an AAQS. Except for O3, dispersion modeling was performed as detailed earlier for the proposed facility. The modeling results indicate that for each of these pollutants the maximum predicted impacts were less than the significant impact levels defined in Rule 17-2.100 (170), FAC (Table 3). As such, no modeling of other sources were necessary for these pollutants.

For each of the pollutants subject to an AAQS review, the total impact on ambient air is obtained by adding a "background" concentration to the maximum modeled concentration. This "background" concentration takes into account all sources of a particular pollutant that are not explicitly modeled. The "background" concentrations are taken from areas that are much

more industrialized than the proposed facilities location. Therefore, these background values are considered to be conservative. The 1989 monitoring results for monitors closest to the proposed site were used to determine the background concentrations.

Table 6. Ambient Air Quality Impact

Pollutant and Averaging Time		Maximum Impact of Proposed Project (ug/m^3)	Predicted Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
CO	(1-hour)	46.92	10351.90	40000
	(8-hour)	4.03	6874.00	10000
NO_2	(Annual)	0.36	42.36	100
Pb	(3-month)	0.01	0.21	1.5
SO_2	(3-hour)	12.46	214.46	1300
	(24-hour)	2.52	50.52	260
	(Annual)	0.19	8.19	60
PM	(24-hour)	0.33	58.33	150
	(Annual)	0.02	31.02	60
PM_{10}	(24-hour)	0.33	58.33	150
	(Annual)	0.02	31.02	50

There is currently no acceptable method to model VOC's for ozone formation. Consequently, the control of the VOC emissions are addressed in the BACT review.

Dioxins, Hg, Be, F, H_2SO_4, As, and HCl do not have an AAQS. However, these pollutants were modeled and the results were compared to the Department's acceptable ambient air concentrations (No Threat Levels). Table 7 summarizes the results of this analysis. The predicted concentrations for each of these pollutants is less than their respective No Threat Levels.

Table 7. No Threat Level Analysis (Direct Inhalation Risk)

Pollutant	Averaging Time	Max. Pred. Impact (ug/m^3)	No Threat Level (ug/m^3)
Hg	8-hour	0.041	0.5
	24-hour	0.017	0.12
Be	Annual	1.7E-7	4.0E-4
F	8-hour	0.177	25
H_2SO_4	8-hour	1.81	10
	24-hour	0.74	2.4
As	Annual	1.1E-5	2.0E-4
HCl	Annual	0.08	7
Dioxins	Annual	1.0E-9	2.2E-8

f. Additional Impacts Analysis

i. Impacts on Soils and Vegetation

The maximum ground-level concentration predicted to occur for each pollutant as a result of the proposed project, including a background concentration, will be below the applicable AAQS including the national secondary standard developed to protect public welfare-related values. As such, this project is not expected to have a harmful impact on soils and vegetation.

ii. Mercury accumulation in Fish

An issue of public concern in recent years is the high concentration of mercury being found in fish and wildlife in various parts of Florida. This problem has been especially acute in the South Florida area near the Everglades where fish consumption advisories have been issued by HRS. Limited advisories have also been issued for many of the other lakes and streams throughout the state. Because of this mercury contamination the Department has initiated several research and assessment studies to better understand the problem and to help direct the Department in addressing its solution.

The Lee County facility will emit mercury to the atmosphere as a result of the combustion of mercury-containing waste. The complex nature of mercury cycling in the environment makes it difficult to accurately quantify source-receptor relationships. Therefore, accurate estimates of the amount of mercury emitted from the Lee County facility that will end up in edible fish in nearby lakes and streams cannot be made. However, reasonable analogies between the Lee County area and other areas of the state with local mercury emissions sources can be made. For example, the Tampa Bay area contains many more sources of

mercury, including three municipal solid waste facilities and two large coal-burning power plants. Mercury concentrations in the lakes and streams near the Tampa Bay area are similar to those in remote areas of Florida which are far from any known man-made sources of mercury.

The Lee County facility will emit less mercury to the atmosphere than any similar facility in the state. The Department is requiring that state-of-the-art emissions control for mercury (carbon adsorption) be installed at the facility. In addition, Lee County will be initiating a county-wide battery collection program. Batteries are the principle source of mercury in the waste stream. The Department is reasonably assured that mercury emissions from the proposed facility will not significantly increase mercury concentrations in edible fish in local lakes and streams.

Due to the prevailing trade winds, the predominate windflow in the Lee County area is from east to west. On an annual average the majority of the mercury emitted from the SWERF will be transported west away from the Everglades and the Big Cypress Swamp. Due to the distance from the Everglades to the proposed facility, deposition of air pollutants in the Everglades will be extremely small on any given day. Since regional meterology would result in winds towards the Everglades for a small percentage of days in any year, the Department therefore concludes the SWERF will have minimal adverse impacts on the Everglades.

iii. Impact on Visibility

Visual Impact Screening and Analysis (EPA 450/4-88-015) known as VISCREEN (Nov. 22, 1988), the EPA-approved Level I visibility computer model was used to estimate the impact of the proposed facility's stack emissions upon visibility in the Everglades National Park and the Big Cypress National Preserve. Results of the Level I visibility impairment analysis for each area demonstrate that all contrast parameters have values much less than the 0.05 threshold value. Thus, emissions from the proposed facility will not have a significant impact on visibility at either of these areas.

iv. Growth-Related Air Quality Impacts

The proposed facility is not expected to significantly change employment, population, housing or commercial/industrial development in the area to the extent that an air quality impact will result.

v. GEP Stack Height Determination

Good Engineering Practice (GEP) stack height means the greater of: (1) 65 meters or (2) the maximum nearby building height plus 1.5 times the building height or width,

whichever is less. Of the boiler building designs likely to be proposed, the shortest one is 110 feet (33.53 meters) tall. This structure is expected to be a squat building, one for which the height is the lesser dimension in comparison with the width. Therefore, the GEP stack height equation, as applied to this facility, is two and one-half times the building height. The GEP stack for this building is calculated to be 275 feet (83.82 meters.

3. Best Available Control Technology

On June 29, 1990, Lee County filed a Power Plant Siting Act application with the Department to build a mass-burn energy recovery facility. On May 1, 1991, the county decided to proceed with a facility smaller than originally proposed. The current proposal is to build a facility initially with two units, with a permitted capacity of 660 ton/day, per unit, (the design/rated capacity is 600 tons/day, per unit), based on a heat input of 5,000 Btu/lb of MSW, and capable of generating 15 Mw, per unit. At a future date, the facility as currently proposed will have an ultimate permitted capacity of 1980 tons/day and a total electrical generating capacity of approximately 45 megawatts (net) from all three units. Lee County has selected Ogden Martin as the vendor for the construction and operation of the facility. Ogden Martin has proposed to initially install two stoker water wall combustion steam generation units. The site for the proposed energy recovery facility is approximately two and one half miles east of the intersection of Interstate 75 and state road 82.

Projected Emissions:

Table 8 represents a list of pollutants and estimated emissions along with the respective PSD significant emission rates. The mass burn units will have a combined heat input of 750 MMBtu/hr for three 660 TPD units. Each unit will be permitted to operate at 27.5 tons/hour and 8760 hours/year. However, the plant is expected to operate about 85% of the time. Auxiliary burners fired by propane gas will be used during startup, shutdown, and when required for temperature maintenance. The 10% capacity factor as determined by 40 CFR 60.44b(d) will not be exceeded.

Table 8
Lee County Energy Recovery Facility

Pollutant	Emission Rate tons/yr	PSD Significant Emission Rate tons/yr
Particulate (PM)	64	25
Sulfur Dioxide (SO_2)	490	40
Nitrogen Dioxides (NO_2)	959	40
Carbon Monoxide (CO)	324	100
Hydrocarbons (VOC)	69	40
Lead (Pb)	2.0	0.6
Arsenic (As)	0.03	Any Amount
Mercury (Hg)	2.0	0.1
Beryllium (Be)	4.4×10^{-4}	4.0×10^{-4}
Fluoride (as HF)	11.5	3
Sulfuric Acid (H_2SO_4)	118	7
Hydrogen Chloride (Hcl)	212	-
Dioxin/Furans	8.3×10^{-5}	-

BACT Determination Requested by the Applicant

The applicant has proposed a dry scrubber followed by a fabric filter (baghouse) for the control of particulates, acid gases and metals. NOx emissions will be controlled by the selective non-catalytic reduction (SNCR) process in which a nitrogen containing reagent, such as ammonia or urea is brought into contact with flue gas NOx in the boiler through the use of injectors located in the boiler's wall. Overall mercury emissions will be reduced by at least 70% first by injecting activated carbon, sodium sulfide, or a combination of both into the flue gas prior to the dry scrubber and/or baghouse and secondly, the county will operate a household battery collection program. According to the applicant, the proposed mercury control exceeds BACT, and is not proposed as BACT by the applicant. BACT for VOC's, CO and organics was determined by the applicant to be proper furnace design and operation and combustion control techniques.

The applicant has requested BACT emission rates on a pollutant-by-pollutant basis as shown below. This combination of controls and emission rates represents the state of the art for energy recovery facilities.

a) PM (Total Suspended Particulate Matter)

0.010 grains/dry standard cubic foot
corrected to 7% oxygen or
0.019 lbs/MBTU

b) PM_{10}

0.010 grains/dry standard cubic foot corrected to 7% oxygen or 0.019 lbs/MBTU

c) SO_2

Least stringent of 30 ppmdv corrected to 7% O_2 or 80% removal efficiency and not to exceed 66 ppmdv at 7% O_2 (24 hour daily geometric average)

d) NOx

180 ppmvd @ 7% O_2
or 0.292 lb NOx per MMBtu (24 hr daily block avg.)

e) CO

100 ppmdv @ 7% O_2
or 0.099 lb CO per MMBtu (4 hr block avg)

f) VOC (Hydrocarbons)

37.3 ppmdv @ 7% O_2
or 0.0210 lbs VOC/MMBtu (1 hr avg)

g) HCl

Least stringent of 25 ppmdv at 7% O_2
or 0.0643 lb HCl/MMBtu

h) H_2SO_4

0.0358 lb/MMBtu

i) F (Fluorides)

5.0 ppmdv @ 7% O_2
or 0.0035 lb HF/MMBtu

j) Pb (Lead)

0.0006 lbs of Pb/MMBtu

k) Be (Beryllium)

1.35×10^{-7} lbs of Be/MMBtu

l) Hg (Mercury)

8.0×10^{-4} lb Hg/MMBtu

m) As (Arsenic)

9.1×10^{-6} lbs As/MMBtu

n) Dioxins and Furans

Total tetra-octa dioxins/furans
30 ng/NM^3 @ 7% O_2
Equivalent to
2.54×10^{-8} lb/MMBtu

BACT Determination Procedure:

According to DER rules, a BACT determination requires the Department to consider for each pollutant emitted, on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, and determine the maximum degree of reduction which is acheivable through application of production processes and available methods, systems and techniques. The applicable regulations also require the Department to consider:

a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant, to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

b) All scientific engineering and technical material and other information available to the Department.

c) The emission limiting standards or BACT determinations of any other state.

d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in

question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique, technical, environmental, or economic objections. Emissions from resource recovery facilities can be grouped into categories based upon what control equipment and techniques that are available to control emissions from these facilities. Using this approach, the air emissions can be classified as follows:

- Combustion products (Particulates and Heavy Metals) Controlled generally by particulate control devices.

- By-products of incomplete combustion (CO, VOC, toxic organic compounds). Control is largely achieved by proper combustion techniques

- Acid Gases (SO_2, NOx, HCl, F, H_2SO_4) Controlled generally by gaseous control devices.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "nonregulated" air pollutants is considered in potentially imposing a more stringent BACT limit on "regulated" pollutants (i.e., particulates, SO_2, fluorides, sulfuric acid mist, etc)., if a reduction in "nonregulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants. This policy was reaffirmed by the EPA Administrator in a 1986 remand of a PSD permit for the North County Resource Recovery Facility in San Marcos, California. Two additional similar remands for resource recovery PSD permits occurred in EPA Region V.

BACT Analysis

Combustion Products:

The estimated emissions from this facility exceeds the PSD significant rate for particulates and heavy metals as contained in Rule 17-2.500, Table 500-2, F.A.C. In addition, since the charging rate of Municipal Solid Waste (MSW) is greater than 250 tons per day for each unit, the recently promulgated Subpart Ea of the New Source Performance Standards would also apply. Based on information now available, vendors can use either electrostatic precipitator or fabric filter (baghouse) technology to achieve grain loadings of 0.010 grains/dscf corrected to 7% O_2. This level for particulates is currently

in use in several states and is considered to be the best availaable control technology.

The use of dry scrubbers employing hydrated lime has been shown to effectively remove heavy metals except mercury in combination with a fabric filter. Enhanced control of heavy metals results from a reduction in the flue gas temperature caused by the dry scrubbers allowing the metals to cool and condense onto the particulate matter. To control mercury emissions the facility has proposed an overall removal efficiency of 70%, first by injecting activated carbon, sodium sulfide or a combination of both, into the flue gas prior to the dry scrubber and/or baghouse, and secondly the county will operate a household battery collection program.

Products of Incomplete Combustion:

Carbon monoxide is a product of incomplete combustion resulting from insufficient air. Incomplete combustion will also cause the emission of solid carbon particulates in the form of smoke or soot, and unburned and/or partially oxidized hydrocarbons. Incomplete combustion also results in the loss of heat energy to the boiler thus producing less steam and power for sale.

Hydrocarbon emission, like carbon monoxide emissions, result from incomplete oxidation of carbon compounds. Control of CO and HC can be mutually reinforcing processes.

Toxic organic compounds such as dioxins/furans (tetra-through octa-chlorinated dibenzo-p-dioxixns and dibenzofurans) and polycylic organic matter are considered to be hazardous to some animal species and may pose a threat to public health. Recent studies have shown that the emissions of toxic compounds such as dioxins/furans can be adequately controlled by proper combustion practices and maintaining proper temperatures in the combustion and post-combustion zones.

This reliance on good combustion serves as part of the basis for Subpart Ea of the New Source Performance Standards (NSPS) which contains emission limitations for both carbon monoxide and toxic organic compounds. For carbon monoxide the standard is equivalent to that proposed as BACT by the applicant (100 ppmv, 4 hour block average). This level is also consistent to that established as BACT for other waste-to--energy facilities, and is judged to represent BACT for the Lee County facility.

The applicant has proposed, and the EPA now requires that emissions not exceed 30 ng/dscm (measured as total dioxins/furans) corrected to 7 percent oxygen. As this is the

case, BACT for the Lee County facility will be established as meeting the NSPS.

Acid Gases:

Emissions of sulfur dioxide, nitrogen oxides, fluorides, hydrogen chlorides and sulfuric acid mist as well as other acid gases which are not "regulated" under the PSD rule, represent significant potential pollutants which must be subjected to appropriate control.

Sulfur dioxide emissions from resource recovery facility facilities are directly related to the sulfur content contained in the refuse incinerated. MSW components that appear to be major contributors of sulfur include rubber, plastics, food wastes, yard wastes and paper. Some of the sulfur dioxide emitted from the combustion of the sulfur containing refuse is oxidized to SO_3 which then combines with water vapor to produce sulfuric acid mist.

Hydrogen chloride, according to the applicant, is the predominant equilibrium chlorine product from the combustion of refuse. The excess quantity of hydrogen present during the combustion process readily reacts with the chlorine in the refuse to form hydrogen chloride. Chlorinated plastics and bleached paper products are major contributors of chlorine in refuse and, therefore, have been considered as the primary sources of HCl emissions at refuse-burning facilities.

Fluoride emissions from refuse combustion are primarily from fluorinated plastics and other fluorocarbon products such as teflons, polyvinyl fluoride films, and fluorinated aerosol propellants. The mechanism which govern fluorine release and HF formation from refuse combustion are considered much the same as HCl due to the chemical similarities between fluorine and chlorine.

Nitrogen oxides (NOx) are products of all air-oxidized combustion processes including refuse combustion. The predominant form of NOx which is produced during combustion is nitric oxide (NO). Nitrogen dioxide (NO_2) is also produced in lesser amounts. Upon exiting the stack essentially all of the NO formed during the combustion is further oxidized to form NO_2. The resulting NO_2 is a brownish-red gas which in the presence of sunlight and hydrocarbons, can react to form ozone (photochemical smog) and other secondary pollutants.

The facility proposes to use a dry scrubber (hydrated/slaked lime) to control SO_2 and other acid gas emissions and to install a selective noncatalytic reduction (SNCR) process by injecting ammonia to control the NOx emissions. The "Good Combustion Practices" shall include a

design roof temperature (to be specified by the vendor) at fully mixed height; overfire air capacity (to be specified by the vendor); and the number of separately adjustable plenums for underfire air control (to be specified by the vendor) to control the CO, VOC's and NOx emissions.

The Department agrees that this control strategy represents BACT provided that the NSPS for these pollutants is acheived. The NSPS levels are 80 percent control or 30 ppmv (24 hour daily geometric average) for sulfur dioxide, 95% control or 25 ppmv for hydrogen chloride based on a stack test, and 180 ppmv (24 hour daily block average) for nitrogen oxides, each corrected to 7 percent oxygen.

Energy Impacts:

According to the applicant, the total energy required for the dry scrubber system for SO_2 removal along with reduction of other acid gases including HCl consists of: a) I.D. fan to overcome the pressure drop across the dry scrubber, b) the compressed air for the atomizing system and, c) the motors required for the lime handling and atomizing systems. The power consumption of dry scrubber systems designed to achieve 90% SO_2 removal is about 924 kw.

Economic Impacts:

The applicant estimates the annual capital and operating costs for dry scrubbing systems which include a) amortized (20 years at 9%) installed capital equipment cost with bond burden included; b) consumption of power, water and lime; c) preventive maintenance; and, d) scrubber related disposal costs designed to achieve a 90% SO_2 removal is about $3,929,700. With regard to economic impacts, the Department believes that the applicant is using the best control technology available, thereby dismissing the need to evaluate the cost of higher efficiency controls.

Environmental Impacts:

According to the applicant, the use of a dry scrubber has positive environmental impacts. It greatly reduces the SO_2, NOx, HCl, HF, and other acid gases. The dry scrubber operation will also ensure that the facility will not cause or contribute to a violation of the NAAQS, the PSD allowable increments and the PSD significance levels for applicable acid gas pollutants and SO_2. Here again, the Department believes the applicant is using the best control technology available and no additional measures can be taken to reduce environmental impacts from the facility.

BACT Determination by DER

The Department has determined that a thermal DeNOx (SNCR) along with a dry lime scrubber followed by a fabric filter (baghouse) represents BACT for this facility. In addition, "proper combustion practices" will minimize the dioxin/furan emissions. Mercury emissions shall be controlled by injecting activated carbon, sodium sulfide or a combination of both into the flue gas prior to the dry scrubber and baghouse. In accordance with Rule 17-2.500(5)(f) and (g), F.A.C., the Department may require the owner or operator of the proposed facility to provide it with preconstruction and post construction "Air Quality Monitoring and Analysis." The Department has determined that the highest predicted ground-level air pollutant impacts from this facility are below de minimis monitoring levels, and that sufficient background monitoring data exists to exempt the facility from pre-construction ambient air monitoring. The Department recommends stack testing within 120 days of completion of construction and operation and annually thereafter. Pursuant to Rule 17-2.700(b), F.A.C., when the Department, after invetigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in this permit is being violated, it may require the owner or operator of the source to conduct compliance tests which identify the nature and quantity of pollutant emissions from the source and to provide a report on the results of said tests to the Department. Compliance and monitoring issues and good combustion practices will be addressed in the draft permit's specific conditions.

Based on the information presented in the preceeding analysis, and information obtained from other states for similiar facilities, the emission limits for each pollutant are established as follows:

PM (Particulate Matter):

0.010 grains/dry standard Ft^3; corrected to 7% O_2, or 5.34 lbs/hour, per unit and 64 tons/yr from all three units.

PM_{10}:

0.010 gr/dscf, corrected to 7% O_2

* VE (Visible Emission):

Visible emissions from each stack shall not exceed 10% opacity. (6 minute average)

SO_2:

30 ppmdv corrected to 7% O_2, (24 hour daily geometric average), or 80% removal efficiency, or 40.98 lbs/hr, per unit and 490 tons/yr from all three units.

NOx:

180 ppmdv @ 7% O_2 (24 hour daily block average, midnight to midnight), or 80.3 lbs/hr, per unit and 959 tons/yr from all three units.

* CO:

100 ppmdv at 7% O_2 (4-hour block avg, at midnight) or 27.23 lbs/hr; per unit and 324 tons/year from all three units.

* VOC: (Hydrocarbons)

0.0210 lbs/MMBtu or 5.80 lbs/hr, per unit, and 69 tons/yr. from all three units and 37.3 ppmdv at 7% O_2.

HCl:

25 ppmdv corrected to 7% O_2, or 17.68 lbs/hr, permanent and 212 tons/yr from all three units, and 95% removal efficiency.

H_2SO_4 (Mist):

0.0358 lbs H_2SO_4/MMBtu, or 9.85 lbs/hr/unit and 118 tons/yr from all 3 units.

* Fluorides:

5.0 ppmdv corrected to 7% O_2
or 0.0035 lb HF/MMBtu, or 0.96 lbs/hr/unit and 11.5 tons/year from all three units.

* Lead (Pb):

0.0006 lbs of Pb/MMBtu, or 5.80 lbs/hr/unit and 69 tons/year from all these units.

*Beryllium (Be):

1.35×10^{-7} lb of Be/MMBtu, or 3.7×10^{-5} lbs/hr/unit and 4.4×10^{-4} tons/yr from all these units.

* Mercury (Hg):

6.0×10^{-4} lbs/MMBtu, or 0.165 lbs/hr/unit and 2.0 tons/yr from all three units.

Arsenic (As):

9.1×10^{-6} lbs As/MMBtu, or 2.5×10^{-3} lbs/hr/unit and 0.03 tons/yr from all three units.

*Dioxins/Furans:

Total (tetra-octa)
30 ng/dscm @ 7% O_2 (total dioxins/furans), or 7.0×10^{-6} lbs/hr/unit and 8.3×10^{-5} tons/yr from all three units.

Ammonia (NH_3):

Ammonia slip from exhaust gases shall not exceed 50 ppmv.

*Pursuant to Rule 17-4.080 F.A.C., for good cause and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions (for the pollutants CO, VOC, Pb, Be, Hg, dioxins/furans and visible emissions). The Department shall allow the permittee a reasonable time to conform to the new or additional conditions and on application of the permittee the Department may grant an additional time.

B. Availability of Water

During normal operation, water will be supplied to the energy recovery facility from public sources. Process cooling water will be treated wastewater effluent (reclaimed water) drawn from the City of Fort Myers Central Advanced Wastewater Treatment Plant. The wastewater treatment plant is located approximately four miles west of the site. Cooling tower blowdown water will be used in the facility, for ash quenching, lime slaking, and other miscellaneous uses. Potable water will be obtained from the Lee County Utilities. It will be used for process and drinking purposes. An on-site well will be used for back-up cooling water needs. No process or sanitary wastewater will be discharged to surface water or groundwater bodies.

The central AWT plant has a capacity of 11 million gallons per day (mgd). Since the cooling tower for an 1,800 ton per day facility will require 1.1 mgd of cooling

9/30/91

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

LEE COUNTY SOLID WASTE ENERGY RECOVERY FACILITY
CASE NO. PA 90-30

CONDITIONS OF CERTIFICATION

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Department and SFWMD.

B. Environmental Control Program

An environmental control program shall be established under the supervision of a Florida registered professional engineer to assure that all construction activities conform to applicable environmental regulations and the applicable Conditions of Certification. If a violation of standards, harmful effects or irreversible environmental damage not anticipated by the application or the evidence presented at the certification hearing are detected during construction, the Permittee shall notify the South District Office as required by Condition II.

C. Reporting

1. Notice of commencement of construction shall be submitted to the South District Office within 15 days of initiation. Starting three (3) months after construction commences, a quarterly construction status report shall be submitted to the South District Office. The report shall be a short narrative describing the progress of construction.

2. Upon or immediately prior to completion of construction of the Energy Recovery Facility or a phase thereof and upon or immediately prior to completion of all necessary preparation for the operation of the off-site landfill, the South District Office will be notified of a date on which a site or facility inspection can be performed in accordance with Condition V.

XIV. OPERATION

A. Air

The operation of the Solid Waste Energy Recovery Facility shall be in accordance with all applicable provisions of Chapter 17-2, 17-256, and 17-702, Florida Administrative Code.

The construction of the Lee County Solid Waste Energy Recovery Facility in Fort Myers, Florida shall consist of three mass-burn Municipal Waste Combustors (MWC) with two units to be constructed initially and the third unit to be installed in the future. These mass-burn units shall be of Stoker Waterwall Combustor design (or equivalent) with a maximum heat input of 275 MMBtu per hour per unit or a total heat input for the facility of 825 MMBtu per hour based on a municipal solid waste average heating value of 5000 Btu per pound.

Each combustor unit is designed to produce a maximum of

152,000 pounds of steam per hour at 865 psig and 830°F. Each combustor shall be equipped with auxiliary burners to be fired by propane gas only. Emissions from each combustor shall be controlled by a slaked lime scrubber followed by a baghouse. NO_x emissions shall be controlled by a Selective Non-Catalytic Reduction (SNCR) system. Mercury emissions shall be controlled

by injecting activated carbon and/or sodium sulfide or other appropriate reagent. This facility shall be allowed to operate continuously (8,760 hrs/yr).

The permittee shall submit at least four copies of complete information as to the make and model numbers of Municipal Waste Combusters, all pollution control and continuous emissions monitoring devices and related equipment, to the Bureau of Air Regulation prior to purchase and installation. The permittee shall also submit detailed stack drawings showing sampling locations, operation and maintenance manuals and calibration procedures at least 90 days prior to commencing operations to the Bureau of Air Regulation.

In addition to the foregoing the Permittee shall comply with the following specific Conditions of Certification:

1. Emission Standards

a. Based on a permitted capacity of 275 MMBtu/hr. and a Btu content of 5000 Btu/lb of MSW, per unit, the stack emissions from each unit shall not exceed any of the following limitations:

(1) Particulate matter: Particulate emissions from the baghouse shall not exceed 0.010 grains/dry standard ft^3, corrected to 7% O_2; 5.34 lbs/hr per unit, and 21.3 tons/year per unit.

(2) PM_{10}: 0.010 gr/dcsf, corrected to 7% O_2 for the fraction of particles less than 10 microns in diameter; 5.34 lbs/hr per unit, and 21.3 tons/year per unit.

(3) * Opacity: Visible emission from each baghouse exhaust shall not exceed 10% opacity. (Six minute average)

(4) SO_2: 30 ppmdv corrected to 7% O_2, 24 hour daily geometric average or at least 80% removal efficiency, whichever is least restrictive (not to exceed 0.150 lbs/MMBtu per unit), or 41 lbs/hr/unit, and 163.3 tons/year per unit.

(5) NO_x: 180 ppmdv corrected to 7% O_2, 24 hour daily

block average (midnight to midnight), 0.29 lb/MMBtu, 80 lbs/hr per unit, and 320 tons/yr per unit.

(6) *Carbon Monoxide: 100 ppmdv at 7% O_2, 4-hour block average beginning at midnight, 0.099 lb/MMBtu, 27.23 lbs/hr/unit, and 108 tons/year per unit.

(7) *VOC (Hydrocarbons): 37 ppmdv at 7% O_2, 0.0211 lb/MMBtu, 5.80 lbs/hr/unit and 23 tons/yr. per unit.

(8) HCl: 25 ppmdv at 7% O_2, or at least 95% removal, which ever is least restrictive (not to exeed 0.0644 lb/MMBtu or 17.7 lbs/hr/unit), and 70.7 tons/yr per unit.

(9) H_2SO_4 (sulfuric acid mist): 0.0358 lb/MMBtu, or 9.85 lbs/hr/unit and 39.3 tons/year per unit.

(10) *F (fluoride): 5.0 ppmdv at 7% O_2, 0.0035 lb/MMBtu, or 0.96 lbs/hr/unit, and 3.8 tons/year per unit.

(11) *Pb (lead): Lead emission shall not exceed 0.0006 lbs/MBtu, .165 lbs/hr/unit and .66 tons/yr per unit.

(12) *Be: Beryllium emissions shall not exceed 1.35×10^{-7} lbs/MMBtu, 3.7×10^{-5} lbs/hr/unit, and 1.47×10^{-4} tons/yr per unit.

(13) *Hg: Mercury emissions shall not exceed .0006 lbs/MMBtu, 0.165 lbs/hr/unit, and .66 tons/yr per unit.

(14) As: Arsenic emissions shall not exceed 9.1×10^{-6} lbs/MMBtu, 2.5×10^{-3} lbs/hr/unit, and 0.01 tons/yr per unit.

(15) *Dioxins/Furans: Emissions of total (tetra thru octa-chlorinated dibenzo-p dioxins and dibenzofurans) shall not exceed 30.0 ng/dscm @ 7% O_2, 2.54×10^{-8} lbs/MMBtu, 7.0×10^{-6} lbs/hr/unit, and 2.8×10^{-5} tons/yr per unit.

(16) NH_3: Ammonia slip from exhaust gases shall not exceed 50 ppmv.

(17) There shall be no visible emissions during the lime silo loading operations (i.e., less than 5% opacity).

(18) Visible emissions from the ash handling building baghouse shall not exceed a particulate limit of 0.010 grains/dscf nor visible emissions of 5% opacity.

* Pursuant to Rule 17-4.080 F.A.C., for good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions for the pollutants CO, VOC, F, Pb, Be, Hg, dioxins and visible emissions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time.

2. Stack Testing/Continuous Emissions Monitoring/Record Keeping Requirements

a. Test Methods

Compliance with emission limitation standards mentioned in Specific Condition No. 1 shall be demonstrated using EPA Methods, as contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources), or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants), or any other method as approved by the Department, in accordance with F.A.C. Rule 17-2.700. A test protocol shall be submitted for approval to the Bureau of Air Regulation at least 90 days prior to testing.

EPA Method	For Determination of
1	Selection of sample site and velocity traverses.
2	Stack gas flow rate when converting concentrations to or from mass emission limits.
3	Gas analysis when needed for calculation of molecular weight or percent O_2.
4	Moisture content when converting stack velocity to dry volumetric flow rate for use in converting concentrations in dry gases to or from mass emission limits.
5	Particulate matter concentration and mass emissions.
201 or 201A	PM_{10} emissions.
6, 6C, or 19	Sulfur dioxide emissions from stationary

	sources.
7, 7C, or 19	Nitrogen oxide emissions from stationary sources.
9	Visible emission determination of opacity.
	- At least three one hour runs to be conducted simultaneously with particulate testing for the emissions from dry scrubber/baghouse, and ash handling building baghouse.
	- At least one lime truck unloading into the lime silo (from start to finish).
10	Carbon monoxide emissions from stationary sources.
12 or 101A	Lead concentration from stationary sources.
13A or 13B	Fluoride emissions from stationary sources.
23	Dioxin/furan concentration.
18, or 25,	Volatile organic compounds concentration.
26	HCl emissions or other methods approved by EPA or DER.
101A or 108	Mercury, Antimony, Arsenic, and Cadmium emissions.
104	Beryllium emission rate and associated moisture content.

Note: The weight of MSW being fed to each combustor during the stack test shall be continuously monitored and recorded by a weighing device which is properly calibrated. Stack test shall be conducted upstream and downstream of the applicable control device for the following pollutants, SO_2, Hg and HCl. Soot blowers shall be operated in a mode consistent with normal cleaning requirements of the system during the compliance testing.

b. Continuous Emissions Monitoring

Continuous emission monitors with recorders shall be installed, calibrated, maintained and operated subject to approval by the Department for the following:

Carbon Monoxide, Oxygen, Nitrogen Oxide,

Opacity, and Sulfur Dioxide (for SO_2 one monitor shall be located upstream of the scrubber and one shall be located downstream of the baghouse), as specified in 40 CFR 60, Appendix B; total steam production (lbs/hr, pressure, and temperature) and power generation (MW) for each unit; ammonia injection rate; slaked lime; activated carbon and/or sodium sulfide injection or usage rates; and thermocouple to measure temperature of combustion zone (to be specified by the vendor and one second residence time). The monitoring devices shall meet the applicable requirements of Chapter 17-2, Section 17-2.710, F.A.C. and 40 CFR 60.45, and 40 CFR 60.13, including certification of each device in accordance with 40 CFR 60, Appendix B, Performance Specifications and 40 CFR 60.7 (a)(5). Data on monitoring equipment specifications, manufacturer, type, calibration and maintenance needs, and its proposed location after the economizer or in the air pollution control equipment outlet duct shall be provided to the South District Office for review prior to installation together with and subject to the same provisions as submittal of air pollution control equipment pursuant to paragraph XIII hereof.

c. Testing Frequency

Compliance with emission standards contained in Condition No. XIV.A.1.a. shall be determined by conducting stack tests within 120 days of completion of construction and initial operation and annually thereafter. These tests may be staggered throughout the year with the approval of the Bureau of Air Regulation. Pursuant to Rule 17-2.700(2)(b), when the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in this permit is being violated, it may require the owner or operator of the source to conduct compliance tests which identify the nature and quantity of pollutant emissions from the source and to provide a report on the results of said tests to the Department. Compliance testing for the flyash handling building (baghouse) and the lime silo loading operation (V.E. test) shall be conducted within 90 days of completion of construction and initial operation and annually thereafter. All notification requirements of 40 CFR parts 60 and 61 shall be complied with by the owner/operator of the SWERF.

d. Sampling Ports

The Permittee shall provide sampling ports in the air pollution control equipment outlet duct or stack and shall provide access to the sampling ports in accordance with Section 17-2.700, F.A.C. Drawings of testing facilities including sampling port locations as required by Section 17-2.700 shall be submitted to the South District Office for

approval at least 60 days prior to construction of the sampling ports and stack.

e. Record Keeping

Lee County Solid Waste Energy Recovery Facility shall maintain a central file containing all measurements, records, and other data that are required to be collected pursuant to the various specific conditions of this permit. This file shall include but not be limited to: i) the data collected from in-stack monitoring instruments, ii) the records on MSW input rate, iii) the amount of propane gas burned per unit, iv) the results of all source tests or performance tests, v) the amount of ammonia, activated carbon, sodium sulfide or other chemicals used for NOx and mercury control, vi) calibration logs for all instruments, vii) maintenance/ repair logs for any work performed which is subject to this permit. All measurements, records, and other data required to be maintained by SWERF shall be retained for at least two years following the date on which such measurements, records, or data are recorded and made available to the Department upon request. The South District office of the Department shall be notified in writing at least 15 days prior to any testing of any instrument to allow witnessing.

3. Miscellaneous Requirements

a. Start-up and Shut-down Procedures

During start-up procedures, propane gas shall be used to preheat the combustion zone to achieve a furnace roof temperature of 1270°F and a minimum temperature of 1800°F above the grate (at a height to be specified by the vendor) prior to the ignition of MSW.

During all shut-down procedures, propane gas shall be used to ensure that the temperature above the grate, as specified above, does not drop below 1800°F and the furnace roof temperature is maintained above 1270° while any MSW is still burning.

b. Operating Procedures

Operating procedures shall include good combustion practices and proper training and certification of all operators. The good combustion practices shall meet the guidelines established in 40 CFR 60, Subpart Ea and procedures as established by the equipment manufacturers. All operators (including supervisors) of air pollution control devices shall be properly trained and certified in accordance with the manufacturers guidelines. A list of all such certified personnel shall be submitted to the South District Office.

Department staff may attend any training sessions related to operation and maintenance of air pollution control devices.

The emission standards for this facility shall apply at all times, except during periods of start-up, shut-down, or malfunctions, provided that the duration of start-up, shut-down, or malfunction shall not exceed 3 hours per occurrence. The start-up period commences when the affected facility begins the continuous burning of MSW and does not include any warm-up period when the affected facility is combusting only propane gas and no MSW is being combusted.During all startups, shutdowns and malfunctions the owner/operator shall use best operational practices to minimize air pollutant emissions. Within 90 days prior to commencing commercial operations of this facility, the permittee shall submit to the South District Office a operational procedures manual that identifies and describes best operational practices that will be used during startup, shutdown, and malfunctions of this facility.

c. Odor Control

No objectionable odors are allowed from this facility pursuant to F.A.C. Rule 17-2.620. The truck access doors to the facility shall remain closed except during normal working shifts when MSW is being received near the storage pit area to allow vehicle passage. To minimize odors at the facility, a negative pressure shall be maintained on the tipping floor and air from within the building will be used as combustion air.

d. Auxiliary Burners

Auxiliary burners for each unit shall be fired only by propane gas and shall not exceed the 10% capacity factor as determined by 40 CFR 60.44b(d).

e. Baghouse Operations

All baghouses (except for lime silo dust collector) shall be equipped with pressure drop monitoring equipment. Baghouses shall have a maximum air to cloth ratio of 4:1.

f. Restriction for Type of Wastes Combusted

No biological waste, medical waste, bio-hazardous waste, sewage sludge or hazardous wastes shall be received or combusted at this facility without obtaining proper modification to the power plant site certification conditions from the Department. The County shall establish a household battery collection program to be specified by the applicant

prior to start of construction, to further minimize mercury emissions. Chromium compounds shall not be used as an additive in the cooling tower water.

g. Fugitive (Unconfined) Emissions

Fugitive emissions at this facility shall be adequately controlled at all times. All roads shall be adequately paved and vacuum swept if appropriate, to keep free of visible dust. Speed limit signs shall be posted. Residue from the grates, grate siftings, and ash from the combustor/ boiler and fabric filter hoppers during normal operations shall be discharged into the ash quenching system so as to minimize visible dust. The ash/residue in the ash handling building shall remain sufficiently moist to prevent dust during storage and handling operations.

h. The height of the boiler exhaust stack shall not be less than 275 feet above grade or the height determined to be Good Engineering Practice.

i. The SWERF's boilers shall not be loaded in excess of their permitted capacity of or 275 x 10^6 Btu per hour, each unit, based on heating value of 5000 Btu/lb of MSW.

j. The combustor boilers shall have a metal name plate affixed in a conspicuous place on the shell showing manufacturer, model number, type waste, and rated capacity.

k. Combustion efficiency shall be calculated by: $\%CE = (1/(1+(CO/CO_2))) \times 100$, and shall be at least 99.5% for an 8 hour average.

4. Emission Control Equipment

a. The combustor's particulate control baghouse shall be designed, constructed and operated to achieve a maximum emission rate of 0.010 grains per dscf corrected to 7% O_2.

b. The facility shall be equipped with dry scrubbers which are designed, constructed and operated to remove SO_2 at an efficiency of 80% by weight or to achieve an emission rate of 30 ppmdv at 7% O_2 which ever is less stringent and to cool the flue gases to an average temperature not to exceed 300°F (3-hour rolling average).

c. The Permittee shall submit to the Bureau of Air Regulation within thirty (30) days after it becomes available, copies of technical data pertaining to the selected emissions control systems. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters.

5. Reporting

a. Two copies of the results of the emissions tests for the pollutants listed in XIV.A.1.a. shall be submitted within forty-five days of the last sampling run to the South District Office.

b. Emissions monitoring shall be reported to the South District Office on a quarterly basis in accordance with Section 17-2.710, F.A.C., 40 CFR, part 60, Subsection 60.7 or 40 CFR part 61 as appropriate.

c. Notice of anticipated and actual start-up dates of each waste combustor boiler shall be submitted to the DER South District Office.

B. Fuel

The SWERF shall utilize refuse such as garbage and trash (as defined in Chapter 17-7, F.A.C.) as its fuel. Use of alternate fuels except for distillate fuel oil or natural gas in start-up burners would necessitate modification of these Conditions of Certification. Refuse as fuel shall not include "hazardous waste" as defined in Chapter 17-30, F.A.C. The alternate fuel, which may be used distillate oil, shall not contain more than 0.3% sulfur by weight and shall not be used more than required during boiler startup or shutdown.

C. Wastewater Disposal

A complete submittal of plans, drawings and specifications for leachate collection systems, pumps, lift stations, sewage collection systems, and wastewater collection systems in accordance with appropriate DER rules shall be furnished to the South District Office for approval at least 90 days prior to start of construction for the particular of such component. In order to obtain approval, the receiving sewage treatment plant shall indicate its ability and willingness to accept the wastewater. Also plans and specifications for connections to off-site sewage and wastewater transmission systems shall be furnished to the South District Office for approval 90 days prior to start of construction. Review shall be accomplished in accordance with Condition XIII.

D. Water Discharges

1. Surface Water

Any discharges from the site stormwater system via the emergency overflow structure which results from an event LESS than a ten-year, 24-hour storm (as defined by the U.S.