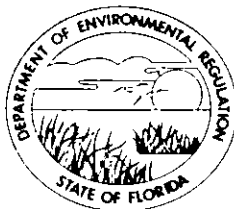


STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 17, 1986

The Honorable Stanley R. Billick
Mayor, City of Naples
735 8th Street South
Naples, Florida 33940

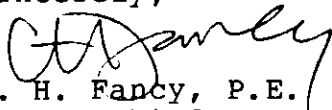
Dear Mayor Billick:

RE: Preliminary Determination - Collier County Board of
County Commissioners, Solid Waste Energy Recovery Facility

I wish to bring to your attention that the Collier County Board of County Commissioners proposes to construct a solid waste energy recovery facility in Collier County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

Please also be aware that the attached Public Notice announcing the preliminary determination, the availability of pertinent information for public scrutiny and the opportunity for public comment will be published in the near future in a newspaper of general circulation in Collier County. This notice has been mailed to you for your information and in accordance with regulatory requirements. You need take no action unless you wish to comment on the proposed construction. If you have any questions, please feel free to call Mr. Bill Thomas or myself at (904)488-1344.

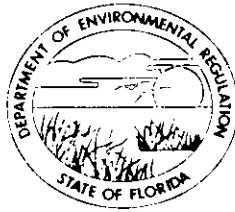
Sincerely,


C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa
Enclosure

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 17, 1986

Mr. Jack Morehead, Superintendent
Everglades National Park
Post Office Box 279
Homestead, Florida 33030

Dear Mr. Morehead:

RE: Preliminary Determination - Collier County Board of
County Commissioners, Solid Waste Energy Recovery Facility

I wish to bring to your attention that the Collier County Board of County Commissioners proposes to construct a solid waste energy recovery facility in Collier County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

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Sincerely,

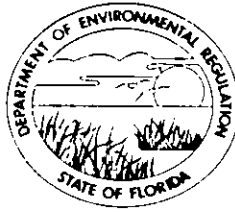
C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

January 17, 1986

Mr. Max Osceola
Superintendent of Seminole Agency
Bureau of Indian Affairs
Department of the Interior
6075 Sterling Road
Hollywood, Florida 33024


Dear Mr. Osceola:

RE: Preliminary Determination - Collier County Board of
County Commissioners, Solid Waste Energy Recovery Facility

I wish to bring to your attention that the Collier County Board of County Commissioners proposes to construct a solid waste energy recovery facility in Collier County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

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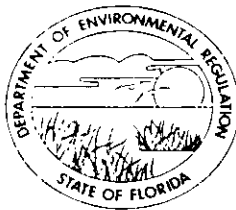
Sincerely,


C. H. Rancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa
Enclosure

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 17, 1986

Mr. Paul Swartz
Southeast Regional Office
National Park Service
75 Spring St. SW
Atlanta, Georgia 30303

Dear Mr. Swartz:

RE: Preliminary Determination - Collier County Board of
County Commissioners, Solid Waste Energy Recovery Facility

I wish to bring to your attention that the Collier County Board of County Commissioners proposes to construct a solid waste energy recovery facility in Collier County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

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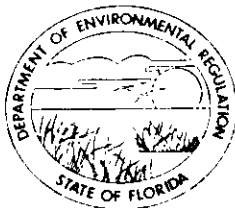
Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 17, 1986

Mr. Wayne E. Daltry
Executive Director
Southwest Florida Regional
Planning Council
2121 West First Street
Ft. Myers, Florida 33902

Dear Mr. Daltry:

RE: Preliminary Determination - Collier County Board of
County Commissioners, Solid Waste Energy Recovery Facility

I wish to bring to your attention that the Collier County Board of County Commissioners proposes to construct a solid waste energy recovery facility in Collier County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

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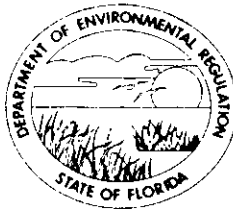
Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 17, 1986

Mr. Ron Fahs
State A-95 Coordinator
Florida State Planning and
Development Clearinghouse
Office of Planning and Budget
The Capitol
Tallahassee, Florida 32301

Dear Mr. Fahs:

RE: Preliminary Determination - Collier County Board of
County Commissioners, Solid Waste Energy Recovery Facility

I wish to bring to your attention that the Collier County Board of County Commissioners proposes to construct a solid waste energy recovery facility in Collier County, Florida, and that emissions of air pollutants will thereby be increased. The Florida Department of Environmental Regulation, under the authority delegated by the U.S. Environmental Protection Agency, has reviewed the proposed construction under Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21) and reached a preliminary determination of approval, with conditions, for this construction.

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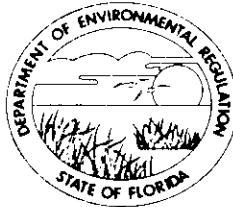
Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 10, 1986

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Robert E. Fahey, Director
Solid Waste Department
3301 Tamiami Trail East
Naples, Florida 33962

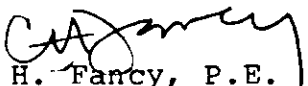
Dear Mr. Fahey:

Attached is one copy of the Technical Evaluation and Preliminary Determination, and proposed permits to construct two 425 ton per day incinerators at the Naples Sanitary Landfill in Collier County, Florida.

Before final action can be taken on your draft permits, you are required by Florida Administrative Code Rule 17-103.150 to publish the attached Notice of Proposed Agency Action in the legal advertising section of a newspaper of general circulation in Collier County no later than fourteen days after receipt of this letter. The department must be provided with proof of publication within seven days of the date the notice is published. Failure to publish the notice may be grounds for denial of the permits.

Please submit, in writing, any comments which you wish to have considered concerning the department's proposed action to Mr. Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

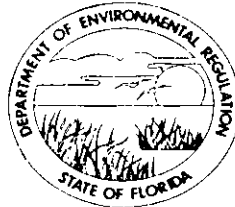

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa
Attachments

cc: Mr. David Buff, P.E.
Mr. Peter Cunningham
Mr. David Knowles
Mr. Bruce Miller

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 10, 1986

Chief, Permit Review and Technical
Support Branch
National Park Service - AIR
Post Office Box 25287
Denver, Colorado 80225

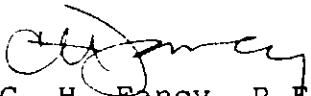
Dear Sir:

RE: Preliminary Determination - Collier County Board of
County Commissioner, Solid Waste Energy Recovery
Facility, PSD-FL-111

Enclosed for your review and comment are the Public Notice,
Preliminary Determination, and draft permits for the above
referenced Prevention of Significant Deterioration permit
application.

Since the proposed facility is within 100 kilometers of the
Everglades National Park, please review the application and
submit any comments or questions to Max Linn at the above address
or at (904)488-1344 no later than February 14, 1986.

Sincerely,


C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

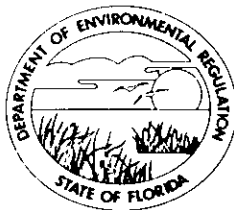
CHF/pa

Enclosure

cc: National Park Service, Southeast Regional Office
Everglades National Park

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

January 10, 1986

Mr. Bruce P. Miller
Acting Chief
Air Programs Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Miller:

RE: Preliminary Determination - Collier County Board of
County Commissioner, Solid Waste Energy Recovery
Facility, PSD-FL-111

Enclosed for your review and comment are the Public Notice,
Preliminary Determination, and draft permits for the above
referenced Prevention of Significant Deterioration permit
application.

Please inform my office by February 14, 1986, if you have
comments or questions regarding this determination.

Sincerely,

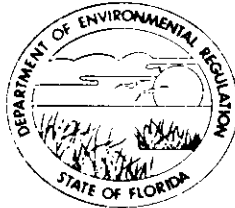
C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

Enclosure

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

January 10, 1986

Frances Black
Assistant Director
Collier County Public Library
650 Central Avenue
Naples, Florida 33940

Dear Ms. Black:

RE: Preliminary Determination - Collier County Board of
County Commissioners, Solid Waste Energy Recovery
Facility

The Bureau of Air Quality Management needs to make the enclosed information available for public inspection pursuant to Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21, Paragraph (q)). A notice directing people to the library will be published in a local newspaper in the near future.

The information must be available upon request for a period of at least 30 days from the notice date. At the end of the period, we will forward to you a Final Determination on the permit application which must be available for an additional 30 days.

We appreciate your help in providing this valuable public service. Should you have any questions, please call me at (904)488-1344.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/pa

Enclosure

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of)
Application for Permits by:)
)
Collier County Board of) DER File No. AC 11-109642
County Commissioners) AC 11-109643
3301 Tamiami Trail East)
Naples, Florida 33962)

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its Intent to Issue, and proposed order of issuance for, permits pursuant to Chapter 403, Florida Statutes, for the proposed project as detailed in the applications specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Collier County Board of County Commissioners, applied on September 10, 1985, to DER for permits to construct two 425 ton per day incinerators that will burn municipal solid waste, tires, and wood wastes at the Naples Sanitary Landfill in Collier County, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes and Florida Administrative Code Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The applicant was officially notified by the Department that air construction permits were required for the proposed work.

This intent to issue shall be placed before the Secretary for final action unless an appropriate petition for a hearing pursuant to the provisions of Section 120.57, Florida Statutes, is filed within fourteen (14) days from receipt of this letter or


publication of the public notice (copy attached) required pursuant to Rule 17-103.150, Florida Administrative Code, whichever occurs first. The petition must comply with the requirements of Section 17-103.155 and Rule 28-5.201, Florida Administrative Code (copy attached) and be filed pursuant to Rule 17-103.155(1) in the Office of General Counsel of the Department of Environmental Regulation at 2600 Blair Stone Road, Tallahassee, Florida 32301.

Petitions which are not filed in accordance with the above provisions are subject to dismissal by the Department. In the event a formal hearing is conducted pursuant to Section 120.57(1), all parties shall have an opportunity to respond, to present evidence and argument on all issues involved, to conduct cross-examination of witnesses and submit rebuttal evidence, to submit proposed findings of facts and orders, to file exceptions to any order or hearing officer's recommended order, and to be represented by counsel. If an informal hearing is requested, the agency, in accordance with its rules of procedure, will provide affected persons or parties or their counsel an opportunity, at a convenient time and place, to present to the agency or hearing officer, written or oral evidence in opposition to the agency's action or refusal to act, or a written statement challenging the grounds upon which the agency has chosen to justify its action or inaction, pursuant to Section 120.57(2), Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition, may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of

CERTIFICATION

This is to certify that the foregoing Intent to Issue and all copies were mailed before the close of business on 10 Jan, 1986.



C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management
2600 Blair Stone Road
Tallahassee, Florida 32301

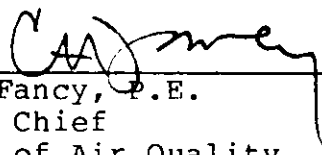
FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to
§120.52(9), Florida Statutes, with
the designated Department Clerk,
receipt of which is hereby acknow-
ledged.

Patricia B. Adams Jan. 10, 1986
Clerk Date

Administrative Hearings, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

Executed the 10 day of January, 1986, in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION



C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

Copies furnished to:

Mr. Robert E. Fahey
Mr. David Buff, P.E.
Mr. Peter Cunningham
Mr. David Knowles
Mr. Bruce Miller

State of Florida
 Department of Environmental Regulation
 Notice of Proposed Agency Action
 on Permit Application

The Department of Environmental Regulation gives notice of its intent to issue permits to Collier County Board of County Commissioners to construct two 425 ton per day incinerators that will burn municipal solid waste, tires, and wood wastes. The project is located at the existing Naples Sanitary Landfill site on State Road 84 near Golden Gate, Florida. A determination of best available control technology (BACT) was required.

This application was reviewed under Florida Administrative Code Rule 17-2.500, Prevention of Significant Deterioration. Emissions of air pollutants, in tons per year, will increase by the following amounts:

<u>PM</u>	<u>SO₂</u>	<u>NO_x</u>	<u>CO</u>	<u>HC</u>	<u>Pb</u>	<u>F1</u>	<u>Be</u>
80	409	703	657	73	2.2	3.4	0.0083

The maximum percentages of allowable PSD increments consumed by the proposed project will be as follows:

	<u>Annual</u>	<u>24-Hour</u>	<u>3-Hour</u>
<u>Class I</u>			
PM	2	2	N/A
SO ₂	5	40	28
<u>Class II</u>			
PM	<<5	3	N/A
SO ₂	<5	9	7

Persons whose substantial interests are affected by the department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this preliminary statement. Therefore, persons who may not object to the proposed agency action may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Model Rule 28-5.207 at least five (5) days before the final hearing and be filed with the hearing officer is one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009, Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32301. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Regulation
South Florida District
2269 Bay Street
Ft. Myers, Florida 33901

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Collier County Public Library
650 Central Avenue
Naples, Florida 33940

Any person may send written comments on the proposed action to Mr. Bill Thomas at the department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the department's final determination.

Technical Evaluation
and
Preliminary Determination

Collier County Board of County Commissioners
Collier County
Naples, Florida

Solid Waste Energy Recovery Facility, Units 1 and 2

Permit Numbers: AC 11-109642
AC 11-109643
PSD-FL-111

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

January 10, 1986

I. PROJECT DESCRIPTION

A. Applicant

Collier County Board of County Commissioners
Solid Waste Department
3301 Tamiami Trail East
Naples, Florida 33962

B. Project

The applicant proposes to construct two 425 ton per day refuse derived fuel, tire, and wood waste fired boilers which will each generate approximately 12 megawatts of electricity. The proposed solid waste energy recovery facility (SWERF) will be located at the existing Naples Sanitary Landfill site on State Road 84 near Golden Gate, Collier County, Florida. The universal transverse mercator (UTM) coordinates of the sources are: Zone 17, 434.5 km East and 2893.0 km North.

C. Sources Reviewed

This application has been submitted for the following sources:

<u>Source</u>	<u>Permit Number</u>
Solid Waste Energy Recovery Facility Unit 1	AC 11-109642
Solid Waste Energy Recovery Facility Unit 2	AC 11-109643

D. Standard Industrial Classification Code (SIC)

The facility is classified as:

Major Group No. 49: Electric, Gas, and Sanitary Services
Industry No. 4953: Municipal Incineration

E. Facility Category

The Collier County SWERF is classified as a major emitting facility for the air pollutants sulfur dioxide, nitrogen oxides, and carbon monoxide.

F. Application Completeness Date

(i) Application Received: September 10, 1985
(ii) Application Deemed Complete: November 5, 1985

G. Process and Controls

The proposed Collier County SWERF will consist of two 425 ton per day fluidized bed boilers which will combust refuse

derived fuel, tires, and wood wastes. Each boiler will produce steam to generate approximately 12 megawatts of electrical power. The operating hours of each unit will be limited to 8245 hours per year. Acid gas will be controlled in the fluidized bed and particulate matter will be controlled by a baghouse filter.

II. RULE APPLICABILITY

Emissions from the proposed Collier County SWERF will consist of particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide, volatile organic compounds, lead, mercury, beryllium, fluoride, sulfuric acid mist, inorganic arsenic, and hydrogen chloride.

The proposed project will be located in Collier County. Collier County is designated attainment for all pollutants, FAC Rule 17-2.420.

The proposed project is subject to the federal New Source Performance Standards Subpart E - Standards of Performance of Incinerators, 40 CFR 60.

The project is also subject New Source Review provisions of FAC 17-2.500, Prevention of Significant Deterioration. The project is classified as a new major facility for the pollutants sulfur dioxide, nitrogen oxides and carbon monoxide, FAC Rule 17-2.500(2)(d)2.b. In addition, the emissions of particulate matter, volatile organic compounds, lead beryllium, mercury, and fluoride are above the Significant Emissions Rates listed in Table 500-2 of FAC Rule 17-2.500. The allowable emissions of the major and significant air pollutants will be determined by Best Available Control Technology.

III. SUMMARY OF EMISSIONS AND AIR QUALITY ANALYSIS

A. Emission Limitations

The proposed Collier County SWERF will be comprised of two 425 ton per day incinerators which will be fueled by refuse derived fuel, wood waste and tires. The total charging rate at the facility is limited to 850 tons per day and a maximum of 8,245 hours per year. Emissions from the proposed units and the entire facility are summarized as follows:

	Unit 1 or Unit 2			Facility Total ton/year
	lb/ton	lb/hr	ton yr	
Particulate Matter	0.543	9.65	39.8	79.6
Sulfur Dioxide*	2.8	49.6	204.4	408.8
Nitrogen Oxides	5.0	88.55	351.55	703.1
Carbon Monoxide*	4.5	79.7	328.55	657.1
Volatile Organics*	0.50	8.85	36.5	73.0
Lead	0.015	0.265	1.1	2.2
Beryllium	56x10 ⁻⁶	0.0010	0.0042	0.0083
Fluoride	0.023	0.405	1.7	3.4
Sulfuric Acid Mist	0.008	0.135	0.55	1.1

*The emission rates in the chart are the 30 day average values. Emissions are not to exceed 5.6 pounds per ton (99.2 pounds per hour) for sulfur dioxide, 8.8 pounds per ton (155.8 pounds per hour) for carbon monoxide and 1.6 pounds per ton (28.3 pounds per hour) for volatile organic compounds.

In addition, mercury emissions from the entire facility are limited to 3200 grams per day. Hydrogen chloride emissions, though not regulated, will be controlled by the fluidized bed which will reduce the potential emissions by 90%. Visible emissions will be limited to 15% opacity.

B. Air Quality Impact Analysis

a. Introduction

The proposed Solid Waste Energy Recovery Facility (SWERF), located in western Collier County, will emit in PSD-significant amounts 11 pollutants. These are the criteria pollutants particulate matter (PM), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), and lead (Pb) and the non-criteria pollutants fluoride, sulfuric acid mist, beryllium (Be), mercury (Hg), and arsenic (As). The pollutant hydrogen chloride (HCl) is not a regulated pollutant but will be discussed within this section.

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

- o An analysis of existing air quality;
- o A PSD increment analysis (for SO₂ and PM only)
- o An Ambient Air Quality Standards (AAQS) analysis;
- o An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality impacts; and
- o A "Good Engineering Practice" (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analysis depend

on air quality dispersion modeling carried out in accordance with EPA guidelines.

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

Table 1
Collier County SWERF
Source Parameters

Source*	UTM-E (km)	UTM-N (km)	Stack Height (m)	Exit Temp. (k)	Exit Velocity (m/s)	Stack Diameter (m)
Unit 1	434.5	2893.0	61	477.6	17.8	2.0
Unit 2	434.5	2893.0	61	477.6	17.8	2.0

*Two 425 TPD incinerators, each discharging through a common stack.

Table 2
Collier County SWERF
Maximum Emission Rates

Pollutant	(lb/ton)	(lb/hr)(1)	(ton/yr)(2)
PM	0.815	28.9	119
SO ₂	6.3	223.1	920
NO _x	7.2	255.0	1051
CO	54.0(3)	1912.5(4)	730
VOC	1.76	62.3	257
Pb	0.3	10.6	43.8
Hg	0.13	0.46	1.9
Be	5.6x10 ⁻⁵	0.002	0.0083
F1	0.23	8.15	33.6
H ₂ SO ₄	0.077	2.73	11.3
HCl	6.2	219.6	905.3
As	0.0088	0.31	1.3

(1) Based upon 850 TPD changing rate

(2) Based upon 8,245 hours per year operation per boiler

(3) The expected average emission factor 4.5 lb/ton

(4) The expected average emission rate is 150.0 lb/hr

B. Modeling Methodology

The EPA-approved Industrial Source Complex Short-Term (ISCST) dispersion model was used in 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 incorporate elements for plume rise, transport by the mean wind, gaussian dispersion, and pollutant removal mechanisms such as deposition or transformation. The ISCST model also allows for the separation of sources, building wake downwash, and various other input and output features. Both screening and refined analyses were completed using this model.

Screening modeling was performed initially using a coarse receptor grid. A radial grid was used with the center of the grid coinciding with the location of the proposed facility. Radials were spaced at 10° increments from 10° to 360°. Receptors were located along each radial from 0.5 km to 3.3 km from the proposed facility, at increments fo 0.4 km. The screening modeling analysis also evaluated at total of seven (7) receptors located along the northern boundary of the Everglades National Park Class I area. This area is located about 35 km from the proposed Collier County SWERF site.

Refined modeling was performed for meteorological conditions which produced maximum short-term concentrations in the vicinity of the proposed facility. The refined receptor grid consisted of seven receptors spaced at 0.1 km intervals along each of three radials. One radial was aligned along the direction of maximum impact, as defined in the screening modeling. The remaining two radials were placed at 2° increments from the first radial.

The meteorological data used in the ISCST model consisted of one year (1975) of hourly surface data taken at Ft. Myers, Florida. Mixing heights used in the model were based on upper air data from Tampa, Florida for 1975 and Ft. Myers surface temperatures data. Because one year of data was used in the analysis, the highest predicted short-term concentrations were used for comparison to the air quality standards.

The flue gas flow rate and stack height used in the modeling are representative of a 600 TPD facility (Table 1). A generic emission rate of 100 lb/hr was used. The results of the modeling were them corrected for actual emission rates for each pollutant based upon a 850 TPD facility (Table 2). This procedure results in worst-case predicted concentrations, regardless if a 600 or an 850 TPD facility is selected by Collier County.

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 department approval is given.

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

The predicted maximum air quality impacts of the proposed SWERF for those pollutants subject to PSD review are given in Table 3. The monitoring de minimus level for each of these pollutants is also listed. Sulfuric acid and arsenic are not listed because there is no de minimus level for either of these pollutants.

The EPA document entitled "Ambient Monitoring Guidelines for the Prevention of Significant Deterioration" (EPA-450/4-80-012, 1980) provides guidance in meeting the PSD monitoring requirements. The guideline document states that "no preconstruction monitoring data will generally be required if the ambient air quality concentration before construction is less than the significant monitoring concentrations". The applicant performed an analysis of existing Pb and Fl air quality. Based upon these analyses the department has reasonable assurance that the Pb and Fl air quality at the Collier County site is currently below the de minimus air quality levels. Therefore, the facility is exempt from preconstruction monitoring for these pollutants.

Monitoring for ozone is required for new sources that emit more than 100 TPY of VOC. The nearest ozone monitor to the Collier County SWERF is located in Ft. Myers, Florida. This monitoring data is used to satisfy the monitoring requirement. During the 1984 calendar year, this monitor recorded a maximum ozone observation of .081 ppm. The air quality standard for ozone is 0.12 ppm. This standard is attained when the number of calendar days with concentrations greater than or equal to .125 ppm is not greater than one. The ambient air concentrations of ozone before construction at the proposed facility are expected to be below that of the Ft. Myers site.

The permissible exposure limit for HCl is 7 mg/m³, according to the "Pocket Guide to Chemical Hazards," U.S. Department of Labor, Occupational Safety and Health Administration. This figure is on the order of 100 greater than the ground level concentration predicted for the Collier County SWERF.

Table 3

Collier County Solid Waste Energy Recovery Facility
 Maximum Air Quality Impacts of the SWERF
 For Comparison to the De minimus Ambient Levels

Pollutant and Averaging Time	Predicted Impact (ug/m ³)	De minimus Ambient Impact Level (ug/m ³)
SO ₂ (24-hour)	7.9	13
PM (24-hour)	1.1	10
NO ₂ (Annual)	1.0	14
CO (8-hour)	176.0	575
Pb (24-hour)	0.37	0.1
Fl (24-hour)	0.29	0.25
Be (24-hour)	0.00007	0.0005
Hg (24-hour)	0.016	0.025
VOC	(see note below)	

No monitoring requirement exists for VOC since VOC emissions are of concern only as a precursor of ozone. If VOC emissions exceed 100 TPY, ozone monitoring is required. The Collier County SWERF is projected to have potential VOC emissions of 257 TPY.

D. PSD Increment Analysis

1. Class II Area

The proposed Collier County SWERF is to be located in a Class II area. This area is also designated as an attainment area for both SO₂ and PM. A PSD increment analysis is therefore required to show compliance with the Class II increments.

The PSD increments represent the amount that new sources in the area may increase ambient ground-level concentrations of SO₂ and PM. At no time, however, can the increased loading of these pollutants cause or contribute to a violation of the ambient air quality standards.

All SO₂ and PM emission increases from sources constructed or modified after the baseline date (December 27, 1977) will consume PSD increment. In addition, all SO₂ and PM emission increases associated with construction or modification of major sources which occurred after January 6, 1975, will consume increment. The proposed Collier County SWERF is the only significant source in the area which will consume PSD increment for either SO₂ or PM.

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

results indicate that the concentration increases are within the allowable limits.

Table 4

Collier County SWERF
Comparison of New Source Impacts with PSD Increments

Pollutant and Averaging Time	PSD Class II Increment (ug/m ³)	Predicted Increased Concentration (ug/m ³)	Percent Class II Increment Consumed
SO ₂			
3-hour	512	38	7
24-hour	91	8	9
Annual	20	<1	<5
PM			
24-hour	37	1	3
Annual	19	<<1	<<5

Pollutant and Averaging Time	PSD Class I Increment (ug/m ³)	Predicted Increased Concentration (ug/m ³)	Percent Class I Increment Consumed
SO ₂			
3-hour	25	7	28
24-hour	5	2	40
Annual	2	<<1	5
PM			
24-hour	10	<1	2
Annual	5	<<1	2

2. Class I Area

A Class I area increment analysis is required because the proposed facility is located within 100 kilometers (35 km) of the Everglades National Park, a designated Class I area. The applicant used modeling to estimate the impact on this area. The results indicate that concentration increases are within the allowable limits (Table 4).

E. AAQS Analysis

Given existing air quality in the area of the proposed Collier County SWERF, emissions from the new facility are not

expected to cause or contribute to a violation of an AAQS. The results of the AAQS analysis are contained in Table 5.

Of the pollutants subject to review, only the criteria pollutants PM, SO₂, CO, NO_x, and Pb have an AAQS. Dispersion modeling was performed as detailed in section B, Modeling Methodology, for the proposed facility. The results showed that, with the exception of SO₂ and Pb, the maximum impacts of these pollutants were less than the significant impact levels defined in Rule 17-2.100(170), FAC. As such, no modeling of other sources was necessary for PM, NO_x, and CO. For Pb, there is no significant impact defined in the rule. No further modeling of this pollutant was complete though, because there are no known sources of Pb emissions in Collier County. Likewise, no further modeling of SO₂ was completed because there are no nearby significant sources of SO₂.

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 were not explicitly modeled. For SO₂ monitoring data from Ft. Myers were used to estimate the "background" concentration. These data should overestimate the actual background SO₂ around the proposed facility, since there are some sources of SO₂ in the Ft. Myers area. For Pb, ambient air monitoring has not been conducted in Collier County. The nearest such monitor is in the northwestern portion of Dade County. The Collier County SWERF, because of its remote location, is expected to have lower Pb air quality levels than the Dade County site.

Table 5

Collier County SWERF				
Comparison of Total Impact with the AAQS				
Pollutant and Avg. Time	Max. Impact of Project (ug/m ³)	Existing Background (1) (ug/m ³)	Max. Total Impact (ug/m ³)	Fla. AAQS (ug/m ³)
SO ₂				
3-hour	38	169	207	1300
24-hour	8	64	72	260
Annual	<1(2)	9	10	60
PM				
24-hour	1(2)	--	--	150
Annual	<<1(2)	--	--	60
NO ₂				
Annual	1(2)	--	--	60
CO				
1-hour	583(2)	--	--	40,000
8-hour	176(2)	--	--	10,000
Pb				
3-months	0.35(3)	<0.1	0.45	1.5

(1) Existing background is estimated using the highest monitored concentrations from representation monitors in the region.

(2) Less than significant; no further analysis necessary.

(3) 24-hour maximum used as a conservative estimate.

F. Additional Impacts Analysis

1. Impacts on Soils and Vegetation

The maximum ground-level concentrations predicted to occur for the criteria pollutants as a result of the proposed project, in conjunction with other sources and a background concentration, will be at or below all applicable AAQS including the secondary standards designed to protect public welfare-related values. As such, these pollutants are not expected to have a harmful impact on soils and vegetation.

2. Impact on Visibility

A level-1 visibility screening analysis was performed to determine any impact on the Everglades National Park Class I area. The analysis showed that there was no potential for adverse impact on visibility in this area due to emissions from the proposed SWERF.

3. 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.

4. 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. For the proposed project, a single common stack 61 meters in height is proposed. The proposed stack height is below the maximum GEP stack height of 92.5 m. This being the case, the effects of downwash must be considered. The ground-level concentration increases under the downwash analysis were found to be insignificant.

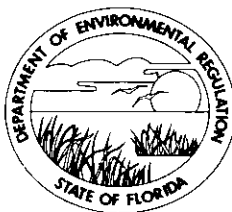
IV. CONCLUSION

The emission limits that will be imposed have been determined to be in compliance with all applicable requirements of FAC Rule 17-2. The permitted maximum allowable emission limits should not cause any violation of Florida's ambient air quality standards.

The General and Specific Conditions listed in the proposed construction permits (attached) will assure compliance with all applicable requirements of FAC Rule 17-2.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Collier County Board of
County Commissioners
3301 Tamiami Trail East
Naples, Florida 33962

Permit Number: AC 11-109642
Expiration Date: September 30, 1989
County: Collier
Latitude/Longitude: 26° 09' 30"N/
81° 39' 00"W
Project: Solid Waste Energy Recovery
Facility Unit 1

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the construction of a 425 ton per day fluidized bed incinerator which will be fueled by refuse derived fuel, wood waste and tires. Particulate matter will be controlled by a baghouse filter.

Construction shall be in accordance with the attached permit application and additional information except as otherwise on pages 5-8, Specific Conditions.

Attachments are follows:

1. Application to Construct an Air Pollution Source DER, Form 17-1.202(1).
2. R. E. Fahey's letter dated September 16, 1985.
3. C. H. Fancy's letter dated October 9, 1985.
4. P. C. Cunningham's letter dated November 5, 1985.
5. P. C. Cunningham's letter dated December 23, 1985.

PERMITTEE:
Collier County Board of
County Commissioners

Permit Number: AC 11-109642
Expiration Date: September 30, 1989

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.
3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.
4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

PERMITTEE:
Collier County Board of
County Commissioners

Permit Number: AC 11-109642
Expiration Date: September 30, 1989

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

- a. Having access to and copying any records that must be kept under the conditions of the permit;
- b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

- a. a description of and cause of non-compliance; and
- b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

PERMITTEE:
Collier County Board of
County Commissioners

Permit Number: AC 11-109642
Expiration Date: September 30, 1989

GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

- (x) Determination of Best Available Control Technology (BACT)
- (x) Determination of Prevention of Significant Deterioration (PSD)
- (x) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

- a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

PERMITTEE:
Collier County Board of
County Commissioners

Permit Number: AC 11-109642
Expiration Date: September 30, 1989

GENERAL CONDITIONS:

- b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.
- c. Records of monitoring information shall include:
- the date, exact place, and time of sampling or measurements;
 - the person responsible for performing the sampling or measurements;
 - the date(s) analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and
 - the results of such analyses.

15. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

1. Hours of operations shall not exceed 8,245 hours per day.
2. The unit shall be fueled only with refuse derived fuel, wood waste or tires, or a combination of refuse derived fuel, woodwaste or tires.
3. The incinerator boilers shall not be loaded in excess of 35,417 pounds per hour (425 tons per day).

PERMITTEE:
Collier County Board of
County Commissioners

Permit Number: AC 11-109642
Expiration Date: September 30, 1989

SPECIFIC CONDITIONS:

4. Stack emissions shall not exceed the following:
 - a. Particulate Matter: 0.02 grains per dry standard cubic foot dry gas corrected to 12% CO₂ (0.543 lb/ton, 9.65 lb/hr or 39.8 ton/yr).
 - b. Sulfur Dioxide: 2.8 lb/ton or 9.65 lb/hr 30 day rolling average not to exceed 5.6 lb/ton or 99.2 lb/hr or 204.4 tons per year.
 - c. Nitrogen Oxides: 5.0 lb/ton, 88.55 lb/hr or 351.55 ton/yr.
 - d. Carbon Monoxide: 4.5 lb/ton or 79.7 lb/hr 30 day rolling average not to exceed 8.8 lb/ton or 155.8 lb/hr or 328.55 tons/yr.
 - e. Volatile Organic Compounds: 0.50 lb/ton or 8.85 lb/hr 30 day rolling average not to exceed 1.6 lb/ton or 28.3 lb/hr or 36.5 tons per year.
 - f. Lead: 0.015 lb/ton, 0.265 lb/hr or 1.1 tons/yr.
 - g. Beryllium: 56×10^{-6} lb/ton, 0.0010 lb/hr or 0.0042 ton/yr.
 - h. Fluoride: 0.023 lb/ton, 0.405 lb/hr or 1.7 tons/yr.
 - i. Sulfuric Acid Mist: 0.008 lb/ton, 0.135 lb/hr or 0.55 ton/yr.
 - j. Mercury: 3200 grams per day for the entire facility.
 - k. Visible Emissions: Opacity shall be no greater than 15% except that visible emissions with no more than 20% opacity may be allowed for up to three consecutive minutes in any one hour except during startup or malfunctions when the provisions of 17-2.250, FAC, shall apply.
 - l. Odor: There shall be no objectionable odor at the site boundary.

PERMITTEE:
Collier County Board of
County Commissioners

Permit Number: AC 11-109642
Expiration Date: September 30, 1989

SPECIFIC CONDITIONS:

5. Compliance tests shall be run at full design capacity.
6. Compliance will be demonstrated by the maximum firing of each permitted fuel.
7. Compliance with the permitted allowable limitations shall be demonstrated in accordance with DER Methods 1, 2, 3, and 9; 40 CFR 60, Appendix A, Methods 5, 7, 8, 10, 13A or 13B and 18; 40 CFR 61, Method 10 and Method 103 or 104. Particulate testing shall include one run during representative soot blowing which shall be averaged proportionally to normal daily operations. Visible emission testing shall be conducted simultaneously with soot blowing and non-soot blowing runs.
8. Fifteen (15) days prior notification of the compliance tests shall be given to South Florida District office.
9. Compliance tests shall be submitted to DER's South Florida District office within 45 days after completion of the tests.
10. The construction shall reasonably conform to the plans and schedule submitted in the application. If the applicant is unable to complete construction on schedule, he must notify the department in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit, FAC Rule 17-4.09.
11. Continuous emission monitors for opacity, oxygen and/or carbon dioxide shall be installed, operated and certified in accordance with 40 CFR 60, Appendix B. Continuous monitors for carbon monoxide and combustion temperature shall be installed and operated.
12. To obtain a permit to operate, the applicant must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with the compliance test results and Certificate of Completion, to the department's South Florida District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date require a valid permit to operate, FAC Rule 17-4.22 and 17-4.23.

PERMITTEE:
Collier County Board of
County Commissioners

Permit Number: AC 11-109642
Expiration Date: September 30, 1989

SPECIFIC CONDITIONS:

13. If the construction permit expires prior to the applicant requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the applicant must apply for a new permit to construct which can take up to 90 days to process a complete application, FAC, Rule 17-4.10.

Issued this _____ day of _____, 19____

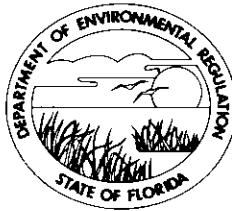
**STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION**

VICTORIA J. TSCHINKEL, Secretary

_____ pages attached.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

PERMITTEE:
Collier County Board of
County Commissioners
3301 Tamiami Trail East
Naples, Florida 33962

Permit Number: AC 11-109643
Expiration Date: September 30, 1989
County: Collier
Latitude/Longitude: 26° 09' 30"N/
81° 39' 00"W
Project: Solid Waste Energy Recovery
Facility Unit 2

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the construction of a 425 ton per day fluidized bed incinerator which will be fueled by refuse derived fuel, wood waste and tires. Particulate matter will be controlled by a baghouse filter.

Construction shall be in accordance with the attached permit application and additional information except as otherwise on pages 5-8, Specific Conditions.

Attachments are follows:

1. Application to Construct an Air Pollution Source DER, Form 17-1.202(1).
2. R. E. Fahey's letter dated September 16, 1985.
3. C. H. Fancy's letter dated October 9, 1985.
4. P. C. Cunningham's letter dated November 5, 1985.
5. P. C. Cunningham's letter dated December 23, 1985.

PERMITTEE:
Collier County Board of
County Commissioners

Permit Number: AC 11-109643
Expiration Date: September 30, 1989

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

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Collier County Board of
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Permit Number: AC 11-109643
Expiration Date: September 30, 1989

GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

- a. Having access to and copying any records that must be kept under the conditions of the permit;
- b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

- a. a description of and cause of non-compliance; and
- b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

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GENERAL CONDITIONS:

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

- (x) Determination of Best Available Control Technology (BACT)
- (x) Determination of Prevention of Significant Deterioration (PSD)
- (x) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

- a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

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- b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.
- c. Records of monitoring information shall include:
 - the date, exact place, and time of sampling or measurements;
 - the person responsible for performing the sampling or measurements;
 - the date(s) analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and
 - the results of such analyses.

15. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

- 1. Hours of operations shall not exceed 8,245 hours per day.
- 2. The unit shall be fueled only with refuse derived fuel, wood waste or tires, or a combination of refuse derived fuel, woodwaste or tires.
- 3. The incinerator boilers shall not be loaded in excess of 35,417 pounds per hour (425 tons per day).

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SPECIFIC CONDITIONS:

4. Stack emissions shall not exceed the following:

- a. Particulate Matter: 0.02 grains per dry standard cubic foot dry gas corrected to 12% CO₂ (0.543 lb/ton, 9.65 lb/hr or 39.8 ton/yr).
- b. Sulfur Dioxide: 2.8 lb/ton or 9.65 lb/hr 30 day rolling average not to exceed 5.6 lb/ton or 99.2 lb/hr or 204.4 tons per year.
- c. Nitrogen Oxides: 5.0 lb/ton, 88.55 lb/hr or 351.55 ton/yr.
- d. Carbon Monoxide: 4.5 lb/ton or 79.7 lb/hr 30 day rolling average not to exceed 8.8 lb/ton or 155.8 lb/hr or 328.55 tons/yr.
- e. Volatile Organic Compounds: 0.50 lb/ton or 8.85 lb/hr 30 day rolling average not to exceed 1.6 lb/ton or 28.3 lb/hr or 36.5 tons per year.
- f. Lead: 0.015 lb/ton, 0.265 lb/hr or 1.1 tons/yr.
- g. Beryllium: 56×10^{-6} lb/ton, 0.0010 lb/hr or 0.0042 ton/yr.
- h. Fluoride: 0.023 lb/ton, 0.405 lb/hr or 1.7 tons/yr.
- i. Sulfuric Acid Mist: 0.008 lb/ton, 0.135 lb/hr or 0.55 ton/yr.
- j. Mercury: 3200 grams per day for the entire facility.
- k. Visible Emissions: Opacity shall be no greater than 15% except that visible emissions with no more than 20% opacity may be allowed for up to three consecutive minutes in any one hour except during startup or malfunctions when the provisions of 17-2.250, FAC, shall apply.
- l. Odor: There shall be no objectionable odor at the site boundary.

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Expiration Date: September 30, 1989

SPECIFIC CONDITIONS:

5. Compliance tests shall be run at full design capacity.
6. Compliance will be demonstrated by the maximum firing of each permitted fuel.
7. Compliance with the permitted allowable limitations shall be demonstrated in accordance with DER Methods 1, 2, 3, and 9; 40 CFR 60, Appendix A, Methods 5, 7, 8, 10, 13A or 13B and 18; 40 CFR 61, Method 10 and Method 103 or 104. Particulate testing shall include one run during representative soot blowing which shall be averaged proportionally to normal daily operations. Visible emission testing shall be conducted simultaneously with soot blowing and non-soot blowing runs.
8. Fifteen (15) days prior notification of the compliance tests shall be given to South Florida District office.
9. Compliance tests shall be submitted to DER's South Florida District office within 45 days after completion of the tests.
10. The construction shall reasonably conform to the plans and schedule submitted in the application. If the applicant is unable to complete construction on schedule, he must notify the department in writing 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit, FAC Rule 17-4.09.
11. Continuous emission monitors for opacity oxygen and/or carbon dioxide shall be installed, operated and certified in accordance with 40 CFR 60, Appendix B. Continuous monitors for carbon monoxide and combustion temperature shall be installed and operated.
12. To obtain a permit to operate, the applicant must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with the compliance test results and Certificate of Completion, to the department's South Florida District office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date require a valid permit to operate, FAC Rule 17-4.22 and 17-4.23.

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SPECIFIC CONDITIONS:

13. If the construction permit expires prior to the applicant requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the applicant must apply for a new permit to construct which can take up to 90 days to process a complete application, FAC, Rule 17-4.10.

Issued this _____ day of _____, 19____

**STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION**

VICTORIA J. TSCHINKEL, Secretary

_____ pages attached.

Best Available Control Technology (BACT) Determination
Collier County Board of County Commissioners
Collier County

The applicant plans to construct an 850 ton per day (TPD) solid waste energy recovery facility to be located at the Naples Sanitary Landfill in western Collier County. The thermal energy from combustion of the solid waste will be used to produce steam for electric power generation.

The present plans are to install two units to be fueled by up to 850 tons per day of either municipal solid waste or refuse derived fuel (and/or wood waste and tires). Collier County does not expect to fire 100% wood waste on any long term basis but seeks permission to fire 100% wood wastes as necessary. This BACT review will be completed assuming the mode of operation constitutes the worst case condition on a pollutant-by-pollutant basis.

Each of the energy recovery facilities will have an approximate maximum heat input of 177 million Btu per hour, based upon a maximum heat content of 5,000 Btu per pound. Each incinerator will operate 8,245 hours per year based on a capacity factor of 94%. The emission rates of the various pollutants emitted from the facility are calculated in tons per year using the capacity factor of 94%. The applicant has projected the total maximum annual tonnage of regulated air pollutants emitted from the two units to be as follows:

Pollutant	Maximum Annual Emissions (Tons/Year)	PSD Significant Emission Rate (Tons/Year)
Particulate (PM)	119	25
Sulfur Dioxide (SO ₂)	920	40
Nitrogen Oxides (NO _x)	1051	40
Carbon Monoxide (CO)	730	100
Vol. Org. Cmpds (VOC)	257	40
Lead (Pb)	43.8	0.6
Mercury (Hg)	1.9	0.1
Beryllium (Be)	0.0083	0.0004
Fluorides (F)	33.6	3
Sulfuric Acid (H ₂ SO ₄)	11.3	7
Arsenic (As)	1.3	0

The Collier County solid waste energy recovery facility was reviewed according to Florida Administrative Code Chapter 17-2 and Rule 17-2.500: Prevention of Significant Deterioration (PSD). The Bureau of Air Quality Management (BAQM) performed the air quality review, which includes this BACT determination. Rule 17-2.500(2)(f)3 requires a BACT review for all regulated pollutants emitted from a major facility in an amount equal to or

greater than the significant emission rates listed in Table 500-2, Regulated Air Pollutants. The facility is located in an area classified as attainment for all air pollutants.

BACT Determination Requested by the Applicant:

The following emission limits are based upon a ton of refuse basis.

PM - 0.815 lbs	CO - 4.5 lbs	Hg - 0.013 lbs
SO ₂ - 6.3 lbs	Pb - 0.30 lbs	F - 0.23 lbs
NO _x - 7.2 lbs	Be - 56.0 x E-6	VOC - 0.50 lbs

The following carbon monoxide and volatile organic compound emissions are requested for wood waste burning.

CO - 54.0 lbs/ton	VOC - 0.76 lbs/ton
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Date of receipt of a BACT application:

November 5, 1985

Date of publication with Florida Administrative Weekly:

January 17, 1986

BACT Determination by DER:

Pollutant	Emission Limit Per Unit
Particulate Matter	0.020 grains/dscf, corrected to 12% CO
Sulfur Dioxide	2.8 lb/ton refuse charged, 30 day average, not to exceed 5.6 lb/ton
Nitrogen Oxides	5.0 lb/ton refuse charged
Carbon Monoxide	4.5 lb/ton refuse charged, 30 day average, not to exceed 8.8 lb/ton
Fluorides	90% control
Sulfuric Acid	90% control
Lead	95% control
Mercury	3200 gram/day (1)
Beryllium	56.0 x E-6 lb/ton refuse charged
VOC	0.50 lb/ton refuse charged, 30 day average, not to exceed 1.6 lb/ton

Visible Emission

15% opacity

(1) Total emissions from the facility shall not exceed this value. Compliance with the mercury emissions limit shall be demonstrated in accordance with 40 CFR 61, Method 101 Appendix B.

Compliance with limitations for sulfur oxides, particulate matter, and nitrogen oxides will be demonstrated in accordance with Florida Administrative Code Rule 17-2.700, DER Methods 1, 2, 3, 4, and 6, and 40 CFR 60 Appendix A; Method 5, 7, 10, 12, 13A or 13B. Compliance with the opacity limit shall be demonstrated in accordance with Florida Administrative Code Rule 17-2.700(6)(a)9., DER Method 9.

A continuous monitoring system to measure combustion temperature plus CO, O₂, and/or CO₂ levels and opacity of the stack's emissions shall be installed, calibrated, and maintained in accordance with the provisions of Rule 17-2.710, Continuous Emission Monitoring Requirements. The CEM's must be installed and operational prior to compliance testing.

BACT Determination Rationale:

The applicant has requested permission to burn either municipal solid waste (MSW) or refuse derived fuel (and/or wood waste and tires). Emissions will be maximized for each pollutant when MSW is fired except in case of carbon monoxide and volatile organic compound emissions which are maximized when burning wood waste.

Each incinerator will have a charging rate more than 50 tons per day, and therefore, is subject to the provisions of 40 CFR 60.50, Subpart E, New Source Performance Standards (NSPS). The NSPS standard regulates only particulate matter. The particulate matter standard is 0.08 grains/dscf, corrected to 12% CO. This NSPS was promulgated in 1971 and no longer reflects state-of-the-art for control of particulate emissions. Recent stack testing data for MSW incinerators indicates that both electrostatic precipitator and fabric filter control technology are capable of controlling particulate emissions well below the applicant's proposal of 0.03 grains/dscf. Based on the control technology available, a particulate matter emissions limit of 0.020 grains/dscf corrected to 12% CO₂ is judged to represent BACT. All the other requirements as set forth in the NSPS, Subpart E, will apply.

The Department has determined the emission limit for SO₂ to be 2.8 pounds per ton of refuse charged into the incinerator based on a 30 day average. MSW components that appear to be major contributors of sulfur include rubber, plastics, food wastes, yard wastes, and paper.

The SO₂ emission limit was determined to be BACT by evaluating studies of emissions test data for similar MSW incinerators. Various studies have indicated average emission levels of 2.0 to

2.8 lb SO₂/ton MSW charged with deviations of + 1.3 to 1.6 lb/ton. The amount of SO₂ emitted would be comparable to the burning of distillate oil having less than a 0.5% sulfur content. Burning low sulfur fuel is one acceptable method of controlling SO₂ emissions. The installation of a flue gas desulfurization system to control SO₂ emissions alone is not warranted when burning MSW.

The mercury emission limit determined as BACT is equal to the National Emission Standard to Hazardous Air Pollutants (NESHAPs), 40 CFR 61.50, Subpart E, for municipal waste water sludge incineration plants. Although this standard does not apply to the incineration of municipal solid waste, it is an emission limit that should not be exceeded. The BACT is determined to be 3200 grams per day for the entire facility. This level of mercury emissions is not considered to have a major impact on the environment.

The uncontrolled emission of beryllium, according to the California report, when firing MSW is estimated to be 6.2×10^{-6} pounds per million Btu. Uncontrolled beryllium emissions would be approximately 11 grams per 24 hours or 0.01 TPY. The operating temperature of the particulate matter emission control device will be below 500°F. Operation below this temperature is necessary to force absorption/condensation of beryllium oxides, present in the flue gas stream, onto available fly ash particles subsequently removed by the particulate control device. Assuming a 95% efficiency for the control device, the annual beryllium emissions are estimated at 0.004 tons per year. This amount of beryllium emitted is considered to have a negligible impact on the environment. The emission factor of 56.0×10^{-6} lb/ton MSW proposed by the applicant is judged to be BACT. However, if beryllium containing waste as defined in the National Emission Standards for Hazardous Air Pollutants (NESHAPs), Subpart C, Subsection 61.31(g), is charged into the incinerator, emissions of beryllium to the atmosphere shall not exceed 10 grams per 24 hours or an ambient concentration of 0.01 ug/m³, 30 day average. Compliance with this beryllium emission limit will be in accordance with the NESHAPs, Subpart C.

The applicant has projected unabated lead and fluoride(s) emissions to be 43.8 and 33.6 tons per year respectively. Projected maximum sulfuric acid mist emissions are 11.3 ton per year. These amounts are well in excess of the significant emission rates given in Florida Administrative Code Rule 17-2.500, Table 500-2.

With respect to lead emissions, two conditions are needed to achieve high removal efficiencies of metallic compounds emitted at refuse burning facilities: (1) operation of particulate matter control equipment at temperatures below 260°C (500°F), and (2) consistently efficient removal of submicron fly ash particles. The temperature of the incinerator combustion gases at the inlet to the particulate control device is estimated to be 400°F. At

this temperature the particulate control equipment would be capable of removing the lead emissions from the flue gas stream. When flue gas temperatures are lowered below 260°C (500°F), metallic compounds are removed from the vapor phase by absorption and condensation preferentially on fine particles with submicron particles receiving the highest concentrations of metals. Properly designed and operational fabric filter systems appear at this time to offer the best method for consistent and efficient removal of fine (and in particular submicron) fly ash. Removal efficiencies of fine fly ash using these system can be in excess of 99% with respect to MSW incinerators. Studies have indicated the weight percent of submicron particles emitted from combustion is on the order of 45% which clearly indicates the need for efficient control of particles in this range.

Emissions of fluoride originate from a number of sources in the refuse. The mechanisms of governing fluoride release and formation of hydrogen fluoride at refuse-burning facilities are probably similar to those for hydrogen chloride. The emission of fluorides can be reduced at refuse-burning plants by removal of selected refuse components with high fluoride contents, and the use of flue gas control equipment. In view of the fact that it is proposed to incinerate materials that contain fluoride, BACT for the control of fluorides is installation of a flue gas scrubber system or similar technology to remove acid gases. The addition of an acid gas removal system would also provide control for SO₂ emissions addressed earlier in this analysis as well as other acid gases which will be addressed in other sections of the analysis.

During combustion of municipal solid waste, NO_x is formed in high temperature zones in and around the furnace flame by the oxidation of atmospheric nitrogen and nitrogen in the waste. The two primary variables that affect the formation of NO_x are the temperature and the concentration of oxygen. Techniques such as the method of fuel firing to provide correct distribution of combustion air between overfire and underfire air, exhaust gas recirculation, and decreased heat release rates have been used to reduce NO_x emissions. A few add-on control techniques such as catalytic reduction with ammonia and the thermal de-NO_x are still experimental and are not considered to be demonstrated technology for the proposed project. Combustion design will be used to limit NO_x emissions from the facility. An emission rate of 5.0 pounds per ton of refuse charged is judged to represent BACT. This limitation is consistent with previous BACT determinations for resource recovery facilities in Florida and other states.

Carbon monoxide is a product of incomplete combustion where there is insufficient air. Incomplete combustion will also result in the emissions of solid carbon particulates in the form of smoke or soot and unburned and/or partially oxidized hydrocarbons. Incomplete combustion results in the loss of heat energy to the boiler. The department agrees with the applicant that BACT is a combustion control system that will insure sufficient mixing of

the MSW and air so that the emissions of products of incomplete combustion are minimized. Carbon monoxide emissions will be greater if and when wood wastes are incinerated. Should MSW or RDF be supplemented with wood wastes a larger average emission limit is needed to account for the situation. Based on previous determinations for resource recovery facilities in Florida and nationwide BACT determinations for large wood fired boilers, a 30 day average emission limit of 4.5 pounds and a maximum limit of 8.8 pounds of CO per ton of waste charged is judged to represent BACT for this facility.

Volatile organic compound emissions, like carbon monoxide emissions, result from incomplete combustion. As with carbon monoxide, emissions of volatile organic compounds will be greater when wood wastes are fired. Again based on BACT determinations for resource recovery facilities in Florida and nationwide BACT determinations for large wood fired boilers, a 30 day average emission limit of 0.5 pounds and a maximum limit of 1.6 pounds of VOC per ton of waste charged is judged to represent BACT for this facility.

Sulfur dioxide produced by combustion of sulfur containing materials can be oxidized to SO_3 which can then combine with water vapor to produce sulfuric acid mist. The applicant has stated that maximum sulfuric acid mist emissions would be 11.3 tons per year for the resource recovery facility. The installation of an acid gas control system would minimize sulfuric acid mist emissions and is considered to be BACT for this proposed facility.

The type of air pollutants emitted when incinerating plastics depends on the atomic composition of the polymer. Plastics composed of only carbon and hydrogen or carbon, hydrogen and oxygen form carbon dioxide and water completely combusted. Incomplete combustion yields carbon monoxide as the major pollutant.

Plastics containing nitrogen as a heteroatom yield molecular nitrogen, some NO_x , carbon dioxide, and water when completely combusted. Incomplete combustion may yield hydrogen cyanide, cyanogen, nitrites, ammonia and hydrocarbon gases. Complete combustion of plastics containing halogen or sulfur heteroatoms form acid gases such as hydrogen chloride, hydrogen fluoride, sulfur dioxide, carbon dioxide, and water. Halogen or sulfur compounds can form from incomplete combustion of the plastic. Polyvinyl chloride (PVC), one of the many polymers, has been implicated as causing the most serious disposal problem due to the release of hydrogen chloride (HCl) gas when incinerated. This problem has long been realized resulting in other polymers being used in packaging. For example, the weight percent of chlorine in polyurethane is 2.4 with only trace amounts in polystyrene, as compared to the weight percent of 45.3 in PVC. A recent study of MSW incineration performed for the USEPA has indicated that the plastics content of refuse is expected to grow

by from 300%-400% from the year 1968 to 200. This increase can be expected to increase by roughly 400% from 1970 to the year 2000. The applicant has stated that the maximum emission rate for hydrogen chloride emissions is expected to be 6.2 pounds per ton of refuse charged. Recent sampling of MSW and RDF in Palm Beach County has shown chlorine contents as high as 0.73 percent. Assuming a conversion rate of 60% into HCl, the resulting emissions of HCl would be 8.8 pounds per ton of refuse burned. This figure is consistent with emissions of HCl from resource recovery facilities around the county based on recent testing.

Emissions of HCl at refuse incinerations facilities can be reduced by removal of selected refuse components with high chlorine contents (source separation), combustion modification, and the use of flue gas control equipment. Although the combustor configuration may influence the amount of chlorine conversions, combustion modification is not a viable means of controlling HCl emissions.

Potential emissions of HCl can be reduced significantly by removing plastic items from the waste stream. This is particularly true when the plastics are the PVC type explained earlier. With the exception of limited recycling efforts, source separation of plastics has not been demonstrated and costs are uncertain at this time. In addition to this, the combustion of plastics may be favorable due to their relatively high heat of combustion.

Plastic materials have high heat of combustion, for example, coated milk cartons - 11,300 Btu/lb, latex - 10,000 Btu/lb and polyethylene 20,000 Btu/lb. For comparison, newspaper and wood have a heat content of 8,000 Btu/lb, and kerosene - 18,900 Btu/lb. Here again there is economic incentive to obtain as complete combustion as possible.

At this time flue gas controls are the most conventional means of reducing HCl emissions at refuse burning facilities. Based on the estimates of HCl emissions and the trend for increases due to higher percentages of plastics in future waste streams, the installation of a flue gas scrubber or other acid gas control technology would provide an added benefit of controlling HCl emissions.

An analysis of a proposal to construct a MSW incinerator in 1985 would not be complete unless the subject of dioxins was addressed.

Dioxin is hazardous material that has received widespread public concern. It is found in trace amounts whenever substances containing chlorine (for example, plant and animal tissues and plastics) are burned. It is also an impurity that can be found in some herbicides, such as "2,4,5-T".

The applicant has stated that flue gas temperatures in excess of 1600°F (measured at the furnace outlet) result in 99% destruction of dioxins. It has been proposed that the furnace will achieve gas temperatures in the radiant section of the furnace of approximately 1900°F. This temperature combined with an exposure of at least one second is proposed as an effective control for dioxins. Another proposal is to use technology with a combustion zone temperature in the 1550 to 1600°F range however increasing the residence time on the order of 4 to 5 seconds.

Although the subject of dioxin is new, and relatively little is known, two important things stand out: 1) Dioxin is readily minimized in properly designed and operated BACT-equipped facilities, and 2) very small amounts cause demonstrable health effects. Although most of the reduction in dioxin emissions is believed to take place in the combustion chamber, the installation of acid gas control and a high efficiency particulate control device (grain loading not to exceed 0.020 gr/dscf) would provide an additional control strategy to remove dioxins from the flue gases based on the assumption which is thought by many that dioxins can be adsorbed on the surface of particulate matter. Thus, the greater the TSP collection, especially submicron particles, the better the dioxin control.

Throughout this BACT determination much emphasis has been placed on the controls that are needed to satisfy the BACT requirements. Although the department does not have the authority to stipulate the type of control equipment that should be used on a facility (i.e., ESP vs. baghouse; dry vs. wet scrubber), a dry scrubber used in conjunction with baghouse appears to be the best method for controlling emissions from this type of facility. Other technology capable of controlling acid gases with comparable efficiency to dry scrubbing would also be acceptable.

Electrostatic precipitators (ESP's) without acid gas control remove total suspended particulates (TSP) only, collecting submicron particles with difficulty. It can be done, but as with any control, effectiveness and reliability are questionable in this area. The need for acid gas controls is clearly defined in this analysis and test data show fabric filters to be less sensitive to changes in flue gas volumes, inlet concentrations, and small excursions in temperatures than ESP's employed at many refuse burning facilities.

The recommendation that a dry scrubber baghouse combination should be used as the control strategy for the resource recovery facility is not warranted if the economic costs of installing and operating the recommended control technology outweigh the benefits of controlling the pollutants that would be controlled by the equipment.

The applicant has stated that systems which would control acid gases with 90 percent efficiency would result in costs which equate to a minimum of 1 million (1984) dollars.

A review of economic analyses performed for several proposed resource recovery facilities indicates that the highest cost of adding acid gas control was \$4.37 (1984 dollars) per ton of MSW incinerated. This cost included amortized capital cost and annual operating cost. Equating this value to operating the proposed facility results in an annualized cost of approximately 1.3 million dollars which is consistent with applicant's projection.

Assuming that the applicant's estimation of one million dollars to control acid gases used, an analysis of the cost required to control tonnage of pollutants removed is required.

Based on the cost per ton of controlling SO₂ and HCl* alone, the installation and operation of a scrubber unit at 94% capacity would be \$548 (\$0.27 per pound). This is not excessive compared to costs of up to \$2,000 per ton which are considered reasonable in developing EPA New Source performance standards. When the acid gases HF and H₂SO₄ are computed into the cost of using acid gas control the installation of controls for acid gases becomes even more cost beneficial.

Previous analysis completed for similar facilities have indicated that the cost of using the scrubber-baghouse combination was not unreasonable compared to using an electrostatic precipitator alone. At rated capacity, a unit proposed for installation in the state of Connecticut showed that the cost of using the scrubber-baghouse combination and the precipitator alone were \$3.36 and \$1.83 respectively per ton of MSW charged. This corresponds to costs per ton of pollutant removed using the scrubber-baghouse combination which are indeed reasonable compared to the use of an electrostatic precipitator alone. This slight differential in cost can be attributed to the following: 1) a scrubber cools the gases and reduces their volume which reduces the size requirement (cost) of the particulate control device, and 2) a dry scrubber is mechanically a simple device and capable of off-site fabrication.

Based on the scrubber's ability to control SO₂, HCl*, and other acid gas emissions, the department feels that the cost of acid gas control technology to the precipitator or using the dry scrubber-baghouse combination is not unreasonable for this facility. The added cost according to general equipment vendors, designers and contractors is typically in range of 2 to 5 percent of the total cost of the project and would be offset by the immediate economic and environmental benefits realized by the installation.

(* Hydrochloric acid [HCl], though not listed as a regulated pollutant for MSW incinerators, is intensely corrosive and should

be included in the economic analysis when justifying the addition of flue gas scrubbing equipment. The EPA is currently requiring hazardous waste incinerators emitting more than four (4) pounds of HCl per hour achieve removal efficiency of up to 99%. A minimum of 99% removal efficiency is required when removal at this efficiency will not reduce emissions to four pounds per hour.)

The air quality impact of the proposed emissions has been analyzed. Atmospheric dispersion modeling has been completed and used in conjunction with an analysis of existing air quality data to determine maximum ground-level ambient concentrations of the pollutant subject to BACT. Based on these analyses, the department has reasonable assurance that the proposed solid waste recovery facility in Broward County, subject to these BACT emission limitations, will not cause or contribute to a violation of any PSD increment or ambient air quality standard.

Details of the Analysis May be Obtained by Contacting:

Barry Andrews, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Recommended By:

C. H. Fancy, P.E., Deputy Bureau Chief

Date: _____

Approved:

Victoria J. Tschinkel, Secretary

Date: _____