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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAR 21 1988

RECEIVED
MAR 24 1988
DER-BAQM

4APT-APB

Margaret V. Janes, Planner
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: McKay Bay Refuse to Energy Project (PSD-FL-086)

Dear Ms. Janes:

This is to acknowledge receipt of the additional information regarding the proposed increase in throughput for the McKay Bay Refuse to Energy Project and to confirm the March 4, 1988, telephone conversation between Pradeep Raval of your staff and Gary Ng of my staff. We have reviewed the additional information and have the following comments:

1) With regard to Attachment 1, the applicant is requesting that "emissions compliance testing be conducted within ±10% of the nominal steam flow rate . . . instead of ±10% of the maximum charging rate." In a telephone conversation between Greg Grotecloss of the City of Tampa and Gary Ng of my staff, Mr. Grotecloss revealed that the nominal flow rate is within 10% of the maximum steam flow rate. This is reasonably representative of the maximum steam flow rate. However, this flow rate may only be used in place of the maximum charging rate if a log of the amount of municipal waste being charged is kept concurrently with the steam flow rate. This is to ensure that the amount of municipal solid waste being burned does not exceed the permitted amount.

2) The question of the CO limit was also mentioned in both conversations. At this point, the source's compliance testing shows an annual CO emission rate of 96 tons per year. Mr. Grotecloss has also indicated that the exiting facility cannot guarantee an annual CO emission rate below the PSD significant level of 100 tons per year and that CO emissions will increase after the modification. Thus, it is apparent that a BACT analysis should have been done for CO and an emission limit should have been established in the original permit. Therefore, the source should proceed with the necessary PSD review procedures for CO and establish a BACT emission limit for that pollutant.

Thank you for the opportunity to provide you with our comments. Please address the above comments before issuing your preliminary determination. If you have any additional information or comments, please contact me or Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Copied: Pradeep Raval
Tom Rogus
CHF/BT
Barry Andrews
3-29-88

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

Interoffice Memorandum

For Routing To Other Than The Addressee	
To	Location
To	Location
To:	Location
From:	Date:

TO: McKay Bay Incinerator File AC29-47277, PSD-FL-086

THRU: Bill Thomas BT

FROM: Pradeep Raval PR

DATE: March 3, 1988

SUBJECT: Review of Application for Amendment of Permit Conditions

---

In discussing the above referenced project, where City of Tampa wishes to increase the MSW throughput in their McKay Bay facility, EPA Region IV had the following comments:

1) Gary Ng, the review engineer, agreed that allowable emissions in the original PSD permit could be used in place of actual emissions in determining PSD applicability in accordance with provisions in Chapter 17-2 of the Florida Administrative Code.

2) Wayne Aronson has urged DER take the final action on Mckay Bay review, even though the initial construction permit was issued by EPA. Referring to the delegation of permitting authority, he said, "Now that you have the ball...run with it."

In line with the communication from EPA, the Department will evaluate the request for amendment of permit conditions based on current allowable emissions and take final action on the construction permit. A copy of the amended permit will be sent for EPA's records.

PR/ss

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STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

February 15, 1988

Mr. Wayne Aronson, Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: McKay Bay Refuse to Energy Project
Amendment of Construction Permit No. AC 29-47277
Federal Permit No.: PSD-FL-086
Operating Permit No.: AO 29-114760

Enclosed is additional information regarding the above referenced permit for the MSW Incinerators which McKay Bay Refuse to Energy Project proposes to install at their existing location in Tampa, Hillsborough County, Florida. If you have any comments, please contact Pradeep Raval or Bill Thomas at the above address or at (904)488-1344.

Sincerely,

M V. Janes

Margaret V. Janes
Bureau of Air Quality
Management

/mj

Enclosures

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STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

February 15, 1988

Mr. Miguel Flores, Chief
Permit Review and Technical
Support Branch
National Park Service - Air
Post Office Box 25287
Denver, Colorado 80225

Dear Mr. Flores:

RE: McKay Bay Refuse to Energy Project
Amendment of construction Permit No.: AC 29-47277
Federal Permit No.: PSD-FL-086
State Operating Permit No.: AO 29-114760

Enclosed is additional information regarding the above referenced permit for the MSW Incinerators which MaKay Bay Refuse to Energy Project proposes to install at their existing location in Tampa, Hillsborough County, Florida. If there are any comments or questions, please contact Pradeep Raval or Bill Thomas at the above address or at (904)488-1344.

Sincerely,

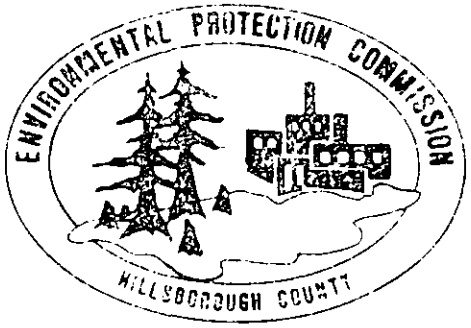
M V. Janes

Margaret V. Janes
Planner
Bureau of Air Quality
Management

/bm

Enclosures

ENVIRONMENTAL PROTECTION COMMISSION
OF
HILLSBOROUGH COUNTY
RODNEY COLSON
PAM IORIO
RUBIN E. PADGETT
JAN KAMINIS PLATT
HAVEN FOE
JAMES O. SELVEY
PICKENS C. TALLEY II



ROGER P. STEWART
DIRECTOR

1900 9TH AVE
TAMPA, FLORIDA 33605

TELEPHONE (813) 272-5960

DER

JUN 11 1987

BAQM

June 5, 1987

Ms. Nancy McCann
Urban Environmental Coordinator
Office of Environmental Coordination
McKay Bay Refuse to Energy Project
City Hall Plaza, 5N
Tampa, FL 33602

Dear Ms. McCann:

The staff of the Bureau of Air Quality Management and the Environmental Protection Commission of Hillsborough County (EPC of HC) has reviewed your May 13, 1987, letter which requests that three amendments be made to permit AO29-114760. This letter shall serve as a response from both Agencies.

In order to make your three amendment proposals federally enforceable, construction permit AC29-47277 must be amended to reflect the new changes. In order to amend the construction permit, both Agencies have determined that you must complete the enclosed application form and that you need to incorporate the three amendment proposals in it. Pursuant to Chapter 1-6 of the rules of the EPC of HC, the county requires a review fee of $340. Please write the check to the order of the Hillsborough Board of County Commissioners.

Furthermore, we request the following additional information:

1. The May 17 letter mentions that the increase in daily tonnage from 1000 to 1209 TPD is mostly comprised of water. Please provide justification for this claim.
2. The same letter mentions that the 1209 TPD charging rate had a corresponding heating value of 4230 BTU/lb during the acceptance test. Please explain how the heating value was derived.
3. Please provide a copy of the following data recorded during the incinerator capacity test.
   a. Tipping Floor Logs
   b. Test Data Sheets - Efficiency Test
   c. Refuse Elevation Data
   d. Volume Addition Calculation

Your cooperation in submitting the above additional information will be appreciated. Should you have any questions, please call me at (813) 272-5530.

Sincerely,

Victor San Agustin

Victor San Agustin
Senior Air Permit Engineer
Environmental Protection Commission
of Hillsborough County

Enclosure

cc: Pradeep Raval, BAQM
Bill Thomas, BAQM
Bill Thomas, SWFDER

VSA/ch

CITY OF TAMPA

Sandra W. Freedman, Mayor OFFICE OF ENVIRONMENTAL COORDINATION

Nancy McCann
Urban Environmental Coordinator

October 23, 1987

RECEIVED
NOV 4 1987
E.P.C. OF H.C.
AIR PROGRAM

Mr. Victor San Agustin
Senior Air Permit Engineer
Environmental Protection Commission
1410 North 21st Street
Tampa, Florida 33605

Dear Mr. San Agustin:

This letter and attachments are the City of Tampa's response to your letter to myself dated June 5, 1987 (copy attached). The attachments should provide all the information requested. A signed and sealed construction permit application is enclosed that incorporates the three requested amendments to permits AC29-47277 and PSD-FL-086. A check for $340 is provided to cover the review fee.

I would like to respond to your request for additional information item by item:

1. The May 13, 1987 letter states that "much of the increased tonnage we are requesting will be water". Our point was that the facility has demonstrated the capability to process 1207 TPD of good quality fuel and meet all emissions limits. Since that time, the plant has been modified such that we believe it can process an additional 100 TPD of excess water. We have no explicit data or moisture content of the refuse for different rainfall conditions. Attached are two graphs and a rainfall chart that indicate during months of high rainfall, the average BTU value declines and the average weight per truck increases. We primarily attribute this to excess moisture. Please note that the "Tons per Truck" graph is for the 1987 fiscal year while the "BTU per month" graph is for fiscal year 1986.

2. Full documentation of how the heating value of the refuse was derived was transmitted with my May 13, 1987 letter to Mr. Clair Fancy. It can be found in the attachment marked "Section 2, Efficiency Test".

DER
FEB 5 1988
BAQM

3. All requested data is attached. Greig Grotecloss has reconciled the tipping floor log with the scalehouse log so that the tipping floor log now accurately reflects the incoming tonnage for the three day acceptance test.

I trust the enclosures adequately respond to your request for additional information. Please contact Greig Grotecloss of my staff at (813) 223-8071 if additional information is required.

Thank you for your assistance in this matter.

Sincerely,

Nancy McCann
Urban Environmental Coordinator

NMc/GG/me:23-26

xc: Mike Salmon, City of Tampa
C.S. Lee, SWFDER
Bill Engel, TWMES
Peter Ware, TWMES
Marc Rogoff, HDR
Red McCormack, HDR

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

PAID $340.00 E.P.C. OF H.C. 11/10/87

RECEIVED

NOV 4 1987

E.P.C. OF H.C. AIR PROGRAM

SOUTHWEST DISTRICT
7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33610-9544

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

RICHARD D. GARRITY, PH.D.
DISTRICT MANAGER

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Resource Recovery Incinerator [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: City of Tampa COUNTY: Hillsborough

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Tampa Incinerator Rehabilitation

SOURCE LOCATION: Street 107 N. 34th Street City Tampa

UTM: East 360000 North 3091900

Latitude 27 ° 56 ' 51 "N Longitude 82 ° 25 ' 14 "W

APPLICANT NAME AND TITLE: Nancy McCann, Urban Environmental Coordinator

APPLICANT ADDRESS: 5th Floor North, City Hall Plaza; Tampa, FL 33602

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of McKay Bay Refuse to Energy Project

I certify that the statements made in this application for a Modification of Construct permit are true, correct and complete to the best of my knowledge and belief. Furthe I agree to maintain and operate the pollution control source and pollution contr facilities in such a manner as to comply with the provision of Chapter 403, Flori Statutes, and all the rules and regulations of the department and revisions thereof. also understand that a permit, if granted by the department, will be non-transferab and I will promptly notify the department upon sale or legal transfer of the permitt establishment.

*Attach letter of authorization

DER
FEB 5 1988
BAQM

Signed: Nancy McCann

Nancy McCann, Urban Environmental Coordinator
Name and Title (Please Type)

Date: _____ Telephone No. (813)223-8071

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project ha been designed/examined by me and found to be in conformity with modern engineeri principles applicable to the treatment and disposal of pollutants characterized in t permit application. There is reasonable assurance, in my professional judgment, th

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr 8736; if seasonal, describe: _____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? Yes-Chapter 3

   a. If yes, has "offset" been applied? Yes-Chapter 6

   b. If yes, has "Lowest Achievable Emission Rate" been applied? Yes-Chapter 5

   c. If yes, list non-attainment pollutants. Total suspended particulate and VOC

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes-Chapter 4

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes-Chapter 3

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? Yes-Chapter 3

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants? N/A

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

All pollutants covered by LAER or BACT.

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur:_____ Percent Ash:_____

Density: _____ lbs/gal Typical Percent Nitrogen:_____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution):_____

_____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

_____

_____

_____

_____

Brief description of operating characteristics of control devices:

Electrostatic precipitators work by electrostatic forces caused by charging the particles and collecting them on oppositely charged walls.

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

Ash to permitted landfill.

Cooling tower and boiler blowdown to sanitary sewer.

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]

2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.

3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).

4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)

5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).

6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.

7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).

8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: 150 ft. b. Diameter: (2 stacks)5.75 ft.

c. Flow Rate: 65,000/unit ACFM d. Temperature: 450 °F.

e. Velocity: 70 FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device: Wet scrubbers for SO_2, HF and gaseous Hg control.

b. Operating Principles: Gas intimately contacted with lime slurry.

c. Efficiency:[1] 90% or better; literature

d. Capital Cost: $5,280,000

e. Useful Life: 20 years

f. Operating Cost: $643,000/year

g. Energy:[2] 460 Kwh; literature

h. Maintenance Cost: $528,500/yr

i. Availability of construction materials and process chemicals:
Available with appropriate lead time.

j. Applicability to manufacturing processes:
Had not been used on U.S. solid waste incinerators at time of construction.

k. Ability to construct with control device, install in available space, and operate within proposed levels:
Could be installed and operated in space available.

2.

a. Control Device: Dry scrubber for SO_2, HF and gaseous Hg control.

b. Operating Principles: Lime slurry contacts gas. Particulate control by baghouse or

c. Efficiency:[1] 90-99%; literature

d. Capital Cost: $7,920,000

e. Useful Life: 20 years

f. Operating Cost: $322,000/year

g. Energy:[2] 482 Kwh; literature

h. Maintenance Cost: $264,000/year

i. Availability of construction materials and process chemicals:
Available with appropriate lead time.

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. HCEPC ~~Company~~ Monitored Data

1. 2 no. sites _____ TSP 63/115 (c) SO^2* 63 Wind spd/dir

Period of Monitoring 5 / / 80 to 5 / / 81
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

ATTACHMENT 1

The City of Tampa is requesting a special condition for this permit that does not fit into the standard application. We ask that emissions compliance testing be conducted within ±10% of the nominal steam flow rate of 52,100 pounds per hour per unit (instead of ±10% of the maximum charging rate). The maximum charging rate is highly variable for any given day depending on the BTU and moisture content of the refuse. Due to the highly variable qualities of municipal solid waste, it is very difficult to set one maximum charging rate that the plant can achieve every day of the year.

Addendum I

VOLUME REDUCTION METHODOLOGY

The level of the pit before and after the capacity test shall be agreed to by inspection and then measured by dropping a tape measure from the refuse crane to the refuse surface. Volumetric differences and therefore tonnage differences shall be calculated by cut and fill calculations, using the average end area method.

The following procedure shall be used:

1. Measuring Device

   WMI will supply two (2) 100' tapes attached to a 2' long wooden 2"x4".

2. Measuring Technique

   A. At the beginning of the test, a measurement will be taken from a reference point (i.e. top of handrail) on the refuse crane bridge to the top of refuse at each point shown on Addendum I Drawing 1. The data shall be recorded on the Refuse Elevation Data Initial Readings (Addendum I, Drawing 2.)

   B. At the conclusion of the test, measurements will be taken as described in Item 2A above and recorded on Addendum I, Drawing 3; Refuse Elevation Data Sheets Final Readings.

   C. Tonnage reduction calculation.

F.D.E.R. has data. Call if you have questions. RR

PROCEDURE USED TO CORRECT TIPPING FLOOR LOG

All tipping floor log entries shown under truck number 9999 are incorrect. That truck number means the scalehouse computer does not have a tare weight for the truck. I have entered the correct net weight for that truck under the remarks column. The number at the bottom of each page is the corrected total for that page. The following procedure was used to correct the tipping floor log:

1. Identify entries shown for truck number 9999 on the tipping floor log and record the ticket number.

2. Find that ticket number in the scalehouse log under transaction number and get the corresponding ticket number from the scalehouse log.

3. Find the new ticket number in the scalehouse log under transaction number and get the corresponding ticket number from the scalehouse log.

4. Find the newest ticket number in the scalehouse log under transaction number and get the corresponding value for net tons. This is the correct value that has been shown in the remarks column of the tipping floor log.

I have personally derived the totals shown on the tipping floor log and certify they are correct to the best of my knowledge. Please note the three day total must still be corrected for the difference in pit elevation.

Greig Grotecloss
Planning Research Analyst

F.D.E.R. has logs. Please call if you have questions. RR.

8/12/87
Atlanta, GA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

AUG 12 1987

DER

AUG 14 1987

BAQM

4APT-APB/eaw

Mr. Clair Fancy, Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Fancy:

This is to confirm an August 5, 1987, telephone conversation between you and Mr. Wayne J. Aronson of my staff regarding his upcoming inspections of resource recovery facilities in the Tampa and Miami, Florida areas. The following schedule and list of facilities to be visited have been discussed with the appropriate local agency contacts:

August 24, 1987 - Pinellas County Resource Recovery Facility (RRF)
- McKay Bay RRF
- Hillsborough County RRF

August 25, 1987 - City of Lakeland
- Dade County RRF

August 26, 1987 - Palm Beach County RRF

If you have any questions regarding these upcoming inspections, please feel free to contact me or Wayne J. Aronson at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

cc: Mr. Iwan Choronenko
Hillsborough County Environmental
Protection Commission

Mr. Patrick Wong
Dade County Environmental
Planning Division

Mr. Peter Hessling
Pinellas County Department of
Environmental Management

Mr. E. J. Sacco
Palm Beach County Health Department

Copied: CHF/BT
Barry Andrews } 8/17/87

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

July 10, 1987

Mr. Miguel Flores
Chief
Permit Review and Technical
Support Branch
National Park Service-Air
Post Office Box 25287
Denver, Colorado 80225

Dear Mr. Flores:

RE: PSD Permit Amendment Request
City of Tampa: McKay Bay Refuse-to-Energy Facility
PSD-FL-086

Enclosed for your review and comment is additional information on the above referenced permittee. If you have any comments or questions, please contact Pradeep Raval or Tom Rogers at the above address or at (904)488-1344.

Sincerely,

Margaret V. Janes

Margaret V. Janes
Planner
Bureau of Air Quality
Management

/mj

PM
Jul 87
Atlanta GA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

DER

JUL 9 1987

BAQM

JUL 6 1987

4APT/APB-aes

Mr. Clair Fancy
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

RE: McKay Bay Refuse-to-Energy Facility

Dear Mr. Fancy:

This is to acknowledge receipt of your May 18, 1987, letter and to confirm the June 25, 1987, telephone conversation between Mr. Pradeep Raval of your staff and Mr. Gary Ng of my staff regarding an amendment on the above source's PSD permit.

We would like to reiterate the comments that were mentioned in the June 25th conversation:

1. Although the source claimed the proposed increase in refuse tonnage is attributed mainly to the moisture content in the refuse, you must ensure that there will be no significant increase of any of the regulated pollutants over the actual emissions or an increase in ambient impacts.

2. Although the source was not originally subject to PSD review for CO, we feel that the addition of a CO emission limitation (expressed in lb/hr) would be appropriate at this time. This is to ensure that potential CO emissions (96 tons per year) would remain below the PSD significant emissions rate of 100 tons per year.

If you have any questions regarding our comments, please contact me or Mr. Gary Ng of my staff at (404) 347-2864.

Sincerely yours,

Bruce P. Miller

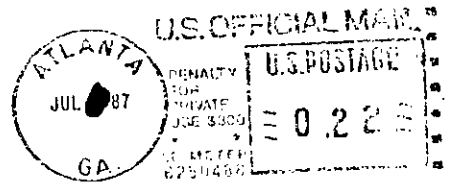
Bruce P. Miller, Chief
Air Programs Branch
Air, Pesticides, and Toxics
Management Division

Bill Thomas - Bill Dist
Miguel Flores - UPS
Barry Campbell - HCEPC
Barry Andrews
CHF/BT
Pradeep Raval
Tom Bucher

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

AIR-4



Mr. Clair Fancy
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301-8241

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

July 9, 1987

Mr. Wayne Aronson
Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: PSD Permit Amendment Request
City of Tampa: McKay Bay Refuse-to-Energy Facility
PSD-FL-086

Enclosed for your review and comment is additional information on the above referenced permittee. If you have any comments or questions, please contact Pradeep Raval or Tom Rogers at the above address or at (904)488-1344.

Sincerely,

Margaret V. Janes

Margaret V. Janes
Planner
Bureau of Air Quality
Management

/mj

PM
7/10/87
Columbus, GA

Full Copy

United States Department of the Interior

FISH AND WILDLIFE SERVICE
75 SPRING STREET, S.W.
ATLANTA, GEORGIA 30303

DER

JUL 9 1987

BAQM

July 2, 1987

Mr. R. Bruce Mitchell
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Mitchell:

We have reviewed the information you forwarded to us regarding the city of Tampa's request to modify their PSD permit for the McKay Bay Refuse-to-Energy Facility. The McKay Bay facility is located approximately 90 km south of Chassahowitzka National Wildlife Refuge, a PSD class I area administered by the U.S. Fish and Wildlife Service. We appreciate your prompt notification of permitting activities that have the potential to impact the air quality and air quality related values of Service lands.

To maintain proper steam flow rates when the fuel quality is low, the city of Tampa requests that (1) the maximum charging rate be increased from 1000 tons per day of refuse to 1300 tons per day, and (2) to reflect this higher charging rate, the maximum heat input be increased from 9,000 x 10^6 Btu per day to 11,700 x 10^6 Btu per day. Although the city of Tampa is proposing to burn more municipal waste than specified in their permit, there would be no increase in permitted emissions. Actual performance testing data indicate that the facility could burn the higher amount of fuel and still be well within the permitted emission rates.

The air quality modeling analysis for the city of Tampa's PSD permit was based on the rates ultimately specified in the permit. The results of this analysis indicate that neither the air quality nor the air quality related values at Chassahowitzka National Wildlife Refuge would be significantly impacted by the proposed emissions. Because the requested permit modifications will not result in any increases in permitted emissions, the proposed modifications should not have any significant effects on

the air quality or air quality related values of the refuge. Therefore, we do not oppose the city of Tampa's requested permit revisions.

If you have any questions regarding this matter, please contact Mr. John Bunyak at (303) 236-8765.

Sincerely yours,

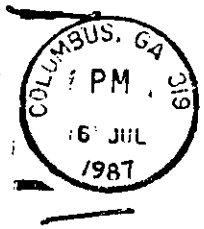
David B. Allen
Acting Regional Director

cc: Barry Andrews
CHF/BT
Pradip Raval
Tom Rogers
Wayne Aronson - EPA
Judy Campbell - HCEPC
Bill Thomas - SWD

mailed
11/9/87

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
75 Spring Street, SW.
Atlanta, GA 30303

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300



POSTAGE AND FEES PAID
U.S. DEPARTMENT OF THE INTERIOR
INT-423

Mr. R. Bruce Mitchell
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

	Initial	Date
1. TO: (NAME, OFFICE, LOCATION) Mr. Miguel Flores		
2. Chief, Permit Review & Technical Support Branch		
3. National Park Service - Air		
4. P.O. Box 25287 Denver, Colorado 80225		

REMARKS:

F Y I.

McKay Bay Refuse-to-Energy

PSD-FL-086

INFORMATION

- Review & Return
- Review & File
- Initial & Forward

DISPOSITION

- Review & Respond
- Prepare Response
- For My Signature
- For Your Signature
- Let's Discuss
- Set Up Meeting
- Investigate & Report
- Initial & Forward
- Distribute
- Concurrence
- For Processing
- Initial & Return

FROM: C. H. Fancy

R. Bruce Mitchell

DATE 6-26-87

PHONE (904)488-1344

ROGER P. STEWART
DIRECTOR

1900 - 9th AVE
TAMPA, FLORIDA 33605

TELEPHONE (813) 272-5960

DER

JUN 11 1987

BAQM

nd the Environmental
f HC) has reviewed
amendments be made
a response from both

erally enforceable,
eflect the new changes.
ncies have determined
m and that you need to
ursuant to Chapter 1-6
a review fee of $340.
ough Board of County

formation:
daily tonnage from
Please provide justi-

ging rate had a corres-
acceptance test.
d.
orded during the incin-

erator capacity test.

a. Tipping Floor Logs
b. Test Data Sheets - Efficiency Test
c. Refuse Elevation Data
d. Volume Addition Calculation

PM
6-8-87
Tampa, FL

File Copy

ENVIRONMENTAL PROTECTION COMMISSION
OF
HILLSBOROUGH COUNTY
RODNEY COLSON
PAM IORIO
RUBIN E. PADGETT
JAN KAMINIS PLATT
HAVEN POE
JAMES D. SELVEY
PICKENS C. TALLEY II

ROGER P. STEWART
DIRECTOR

1900 - 9th AVE
TAMPA, FLORIDA 33605

TELEPHONE (813) 272-5960

DER

JUN 11 1987

BAQM

June 5, 1987

Ms. Nancy McCann
Urban Environmental Coordinator
Office of Environmental Coordination
McKay Bay Refuse to Energy Project
City Hall Plaza, 5N
Tampa, FL 33602

Dear Ms. McCann:

The staff of the Bureau of Air Quality Management and the Environmental Protection Commission of Hillsborough County (EPC of HC) has reviewed your May 13, 1987, letter which requests that three amendments be made to permit AO29-114760. This letter shall serve as a response from both Agencies.

In order to make your three amendment proposals federally enforceable, construction permit AC29-47277 must be amended to reflect the new changes. In order to amend the construction permit, both Agencies have determined that you must complete the enclosed application form and that you need to incorporate the three amendment proposals in it. Pursuant to Chapter 1-6 of the rules of the EPC of HC, the county requires a review fee of $340. Please write the check to the order of the Hillsborough Board of County Commissioners.

Furthermore, we request the following additional information:

1. The May 17 letter mentions that the increase in daily tonnage from 1000 to 1209 TPD is mostly comprised of water. Please provide justification for this claim.
2. The same letter mentions that the 1209 TPD charging rate had a corresponding heating value of 4230 BTU/lb during the acceptance test. Please explain how the heating value was derived.
3. Please provide a copy of the following data recorded during the incinerator capacity test.
   a. Tipping Floor Logs
   b. Test Data Sheets - Efficiency Test
   c. Refuse Elevation Data
   d. Volume Addition Calculation

Your cooperation in submitting the above additional information will be appreciated. Should you have any questions, please call me at (813) 272-5530.

Sincerely,

Victor San Agustin

Victor San Agustin
Senior Air Permit Engineer
Environmental Protection Commission
of Hillsborough County

Enclosure

cc: Pradeep Raval, BAQM 6-11-87 PRR
Bill Thomas, BAQM
Bill Thomas, SWFDER
Gary Ng, Program Support Section, EPA Region IV 6-26-87 GNG

VSA/ch

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STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

May 18, 1987

Mr. Wayne Aronson
Chief
Program Support Section
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Aronson:

RE: PSD Permit Amendment Request
City of Tampa: McKay Bay Refuse-to-Energy Facility
PSD-FL-086

Enclosed for your review and comment is an admendment request package received from the above referenced permittee. If you have any comments or questions, please contact Pradeep Raval or Larry George at the above address or at (904)488-1344.

Sincerely,

R. Bruce Mitchell
Bureau of Air Quality
Management

/bm

File Copy

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

May 18, 1987

Mr. Miguel Flores
Chief, Permit Review and Technical
Support Branch
National Park Service-Air
Post Office Box 25287
Denver, Colorado 80225

Dear Mr. Flores:

RE: PSD Permit Amendment Request
City of Tampa: McKay Bay Refuse-to Energy Facility
PSD-FL-086

Enclosed for your review and comment is an amendment request package received from the above referenced permittee. If there are any questions, please call Pradeep Raval or Larry George at (904)488-1344 or write to them at the above address.

Sincerely,

R. Bruce Mitchell
Bureau of Air Quality
Management

/bm

cc: Russ Galipeau, SE Regional Office, NPS
Glen A. Carowan, Jr.,Chassahowitzka-National Wildlife Refuge
US Fish & Wildlife Service

~~Clair~~, 5/18
Bill,

5-18-87

File Copy. I have
copied: Pradeep, Barry, Larry,
and Wayne Aronson - USEPA
Miguel Flores - National Park Service
Galen A. Carowan, Jr. - US Fish + Wildlife Service
Russ Galipeau - NPS, SE Regional Off.
Bem

See if Barry took
care of this
6-3-87
~~Barry Andrews
plans to check
with this.~~
6-4-87 WA
Pradeep Raval

From

To

Mr. Clair Fancy
Bureau of Air Quality Management
Twin Towers Office Bldg.
2600 Blair Stone Rd.
Tallahassee, Fl 32301-8241

PM
5-14-87
Tampa, FL

CITY OF TAMPA

Sandra W. Freedman, Mayor

Office of Environmental Coordination
McKay Bay Refuse-to-Energy Project

May 13, 1987

Mr. Clair Fancy
Bureau of Air Quality Management
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

DER
MAY 18 1987
BAQM

Dear Mr. Fancy:

The City of Tampa has proposed three amendments to Permit Number A029-114760 to operate the McKay Bay Refuse-to-Energy Facility which appear to be inconsistent with construction permit numbers AC29-47277 (DER) and PSD-FL-086 (EPA). The proposed amendments are as follows:

1. A maximum charging rate of 325 tons per day per process line and 1300 tons per day for the facility (instead of 250 TPD per line and 1000 TPD for the facility).

2. A maximum heat input rate of 2925 MMBTU per day per process line and 11,700 MMBTU per day for the facility (instead of 2500 MMBTU per day per line and 9000 MMBTU per day for the facility).

3. Testing emissions within ±10% of the nominal steam rate of 52,100 pounds per hour (instead of ±10% of the maximum charging rate of 10.5 tons per hour).

These amendments would not increase air emissions. We are requesting the ability to charge a higher quantity of fuel when the fuel quality is low, to maintain proper steam flow rates. If it is necessary to amend the construction permits to allow these changes, please consider this a request to do so.

The value of 1000 tons per day stated in the construction permit application, submitted in 1981, was the design capacity guaranteed by the vendor, based on design fuel parameters of 4500 BTU per pound higher heating value and 30% moisture content. It was never intended to be the maximum plant capacity for operating purposes. We now have real data to be applied toward our plant capacity and emissions requirements.

The acceptance testing in September, 1985 proved that the plant could efficiently process 1209 TPD and be well within air emission limitations as stated in the construction permits. The BTU value during acceptance testing averaged 4230 BTU per pound. During the summer of 1986, it became obvious that the municipal solid waste delivered was often higher in moisture content and lower in BTU value than design fuel parameters. Equipment is currently being installed that will enhance the plants ability to burn wet garbage. Much of the increased tonnage we are requesting will be excess water.

There are no explicit references to a 1000 TPD maximum charging rate in the DER or EPA construction permits. Both permits do reference all information presented in the application as part of the permits. The original application only mentioned charging rates in Section IV. It appears that projected emissions were based on other similar facilities and not on an assumed emission factor and an assumed charging rate. I have verified that the actual plant emissions at 1209 TPD were below the 1981 projected emissions for facility number 1 for all regulated pollutants. The air modeling was done with the assumption that two facilities would be collocated at the McKay Bay site. The second facility was constructed about 4.5 miles east of McKay Bay. The requested changes do not invalidate the air quality analysis originally presented to DER.

I wish to emphasize that we are not requesting any changes in emission and power production limitations as set forth in the current operating permit. I have attached additional information in support of this request, with the major points highlighted in red for your convenience. Please call Greig Grotecloss of my staff at (813) 223-8071 if additional information is required.

Thank you for your assistance in this matter.

Sincerely,

Nancy McCann
Urban Environmental Coordinator

NMc/GG/me:21-37
attachment

xc: Mike Salmon, City of Tampa
Jim Estler, SWFDER (w/attach.)
Victor San Agustin, HCEPC (w/attach.)
Peter Ware, WMI
Bill Engel, WMI
Jim Brittain, HDR
Red McCormack, HDR
Kim Ford, SWFDER

McKAY BAY REFUSE-TO-ENERGY FACILITY
SUMMARY OF AIR EMISSIONS

POLLUTANT	PERMITTED DISCHARGE	ACTUAL DISCHARGE
Particulate	0.025 gr/dscf @ 12% CO_2 or 27.9 lb/hr	0.00088 gr/dscf @ 12% CO_2 or 8.07 lb/hr
VOC	9.0 lb/hr	2.7 lb/hr
SO_2	170.0 lb/hr	139.9 lb/hr
NO_x	300.0 lb/hr	94.8 lb/hr
Lead	3.1 lb/hr	0.40 lb/hr
Flouride	6.0 lb/hr	2.3 lb/hr
Mercury	0.6 lb/hr	0.36 lb/hr
Beryllium	0.00046 lb/hr	<0.00008 lb/hr
CO	no limits set	21.9 lb/hr (≈32 ppm dry)

The average flue gas parameters for the facility are:

350,000 actual cubic feet per minute
155,000 dry standard cubic feet per minute
545°F temperature
14% moisture content
12% oxygen content
8% CO_2 content

note: Unit 1 NO_x data and all Beryllium data from retesting, the September 1985 acceptance test was not valid for Beryllium or Unit 1 NO_x. All other data taken during acceptance testing.

Section 1

Incineration Capacity Test

From Acceptance Test Report

1. OBJECTIVE

The objective of the Incineration Capacity Test is to demonstrate that the McKay Bay Refuse to Energy Facility meets the performance guarantee specified in the WMI/Tampa Design an Construction Contract, Exhibit 4.1.

2. REFERENCES

A. WMI/Tampa Design and Construction Contract

B. McKay Bay Facility Acceptance Test Methodology dated July 8, 1985

3. TEST PROCEDURE

During the days prior to the test commencement the refuse pit was dug down to the extent possible while final preparations of the plant were being made.

On Monday, September 16, 1985 the plant was stabilized at design steam flow at 10:00 a.m. as verified by the Data Logger Trendcurves attached, Addendum 2.

-- Refuse was received on a continuous basis beginning at approximately 7:00 a.m. During the midafternoon hours, efforts began to level the refuse pit for the initial level measurement.

-- At 5:48 p.m., WMI and HDR agreed that the pit was leveled sufficiently. The charging hoppers were filled to the bottom of the sloped portion of the hoppers.

-- The initial pit level was recorded per the procedure in the Acceptance Test Methodology.

-- The reject hopper was placed in service and discharged into an empty twenty cubic yard container. Refuse deliveries were curtailed during the pit measurement procedure.

-- Deliveries were then resumed and recorded on the tipping floor log.

-- The plant was maintained at the throughput rate of 50 tons per hour, using the refuse crane load cells to monitor the incineration rate.

-- Shutdown time was required for parts of the facility during the test which is summarized as follows:

LINE	DATE	TIME	DURATION	REASON
4	9/18/85	0650-0730 Hrs.	40 Min	Plugged feed chute
1	9/18/85	2200-2215 Hrs.	15 Min	Plugged feed chute
4	9/18/85	2250-2320 Hrs.	30 Min	Plugged feed chute
3	9/19/85	0710-0755 Hrs.	45 Min	Clinker in after-burner chamber

LINE	TOTAL TIME	TIME ALLOWED
1	.25 Hrs.	2 Hrs.
2	.0 Hrs.	2 Hrs.
3	.75 Hrs.	2 Hrs.
4	1.17 Hrs.	2 Hrs.

The shutdown time experienced was significantly less than the time allowed in the contract, therefore it was not necessary to extend the test beyond seventy-two hours duration.

-- On September 19, 1985, the refuse pit was leveled during the after-noon hours in preparation for the final pit level measurement.

-- At 5:48 p.m., the charging chutes were restored to the beginning level at the bottom of the sloped portion of the hopper. Refuse deliveries were curtailed. The final refuse pit level was recorded. The container under the process rejects hopper was removed and weighed at the scalehouse.

4. DATA

The following data recorded during the test is included in this section:

Tipping Floor Logs
Test Data Sheets - Efficiency Test
Refuse Elevation Data
Volume Addition Calculation

5. CALCULATIONS

The tipping floor log was reconciled with the Scalehouse Transaction Log to account for the deliveries received that did not have tare weights. Also several recorded as "not dumped in the pit" were not recorded on the Transaction Log as being returned to the transfer station. These transactions were subtracted from the total tons received.

The final refuse pit elevation was higher than the initial elevation. Therefore the volume difference must be subtracted from the tons received.

TOTAL RECEIVED - TONS	3,894.23	3 day total of actual weight incinerated · the stack testing occurred during this time
TOTAL PIT TONNAGE ADDITION - TONS	(264.04)	
TOTAL PROCESS REJECTS - TONS	(1.59)	
TOTAL PROCESSED - TONS	3,628.60	
EQUIVALENT WEEKLY CAPACITY	$3,628.60 \times \frac{7}{3} = 8,466.73$	

6. CONCLUSION

It can be concluded that the facility has met its Incineration Capacity performance guarantee since the facility incinerated the equivalent of 8,466.73 tons weekly. This is 1,466.73 tons per week, or twenty-one percent above the guaranteed incineration capacity of 7,000 tons per week, at a higher heating value of 4,500 Btu/lb.

VOLUME ADDITION CALCULATION

ACCEPTANCE TEST PERIOD: 9/16/85 THRU 9/19/85

LOCATION	INITIAL ELEVATION A	B	C	FINAL ELEVATION A	B	C	AREA A-B	AREA B-C	TOTAL AREA	VOLUME
E. WALL	50.67	50.25	49.25	42.42	39.17	38.92	169.14	187.34	356.48	
										4802.61
PIER 1	54.08	50.92	50.25	42.25	43.00	40.25	172.81	156.80	329.61	
										4741.98
PIER 2	52.58	52.00	52.42	42.33	42.92	41.08	169.14	178.68	347.81	
										4659.90
PIER 3	52.58	52.00	50.17	41.92	43.00	42.50	172.03	145.86	317.89	
										4527.60
PIER 4	52.42	52.08	49.67	41.83	42.08	42.67	180.16	148.75	328.91	
										3558.01
PIER 5	49.00	49.50	47.92	44.00	44.67	42.08	86.01	93.36	179.38	
										2363.03
PIER 6	48.00	48.25	45.33	44.00	43.25	41.25	78.75	79.45	158.20	
										1725.41
PIER 7	48.33	45.92	43.67	43.25	43.50	43.50	65.63	22.66	88.29	
										1084.74
PIER 8	48.67	45.10	43.42	44.67	44.75	40.50	38.06	28.61	66.68	
										1017.36
PIER 9	47.33	45.33	42.33	43.42	44.33	39.25	42.96	35.70	78.66	
										1536.15
W. WALL	48.25	46.17	43.58	42.25	43.50	38.83	75.86	64.93	140.79	

VOLUME ADDITION (CF)	30016.79
TONNAGE ADDITION (TONS)	264.04
TOTAL RECEIVED (TONS)	3894.23
TOTAL PROCESS REJECTS (TONS)	1.59
TOTAL BURNED (TONS)	3628.60

Section 2

EFFICIENCY TEST

From Acceptance Test Report

1. OBJECTIVE

The objective of the Efficiency Test is to determine that the electrical energy generation per ton of the reference composition waste complies with the energy recovery guarantee of a net electric output of 428 (± 5%) kwh per ton of reference composition processible waste as defined in Exhibit 10.2, Section C of the contract.

2. REFERENCES

WMI/Tampa Design and Construction Contract

ASME PTC 4.1 Steam Generating Units

G-E Curve K-1078421-197928-12, "Expected Output with Variable Exhaust Pressure"

ASME Steam Tables, Fifth Edition

Steam-Its Generation and Use by Babcock & Wilcox

3. TEST PROCEDURE

The plant was prepared for the efficiency test as described in the Acceptance Test Methodology dated July 8, 1985. The turbine driven boiler feed pump was secured, as was the steam supply to the dump condenser. The circulating water side of the dump condenser remained in service since this system has been modified to place the dump condenser in series with the main condenser which will be normal operating mode of the plant.

The test commenced at 10:28 a.m. on September 17, 1985, while the Incineration Capacity Test was in progress. At that time the residue conveyors were diverted to empty containers and the fly ash silo was emptied in accordance with the Acceptance Test Methodology. Data collection began and was recorded on the appropriate forms for the duration of the eight hour test. The data logger was also operational throughout the test period. At the conclusion of the efficiency test period at 6:28 p.m., the fly ash silo was discharged into an empty container. The bottom ash system was diverted to discharge directly onto the ground. All residue from the test was weighed at the City Scalehouse, prior to transport to landfill.

4. DATA

The following data recorded during the test is included in this section:

Control Room Data Sheets

T/B Area Data Sheets

Balance of Plant Data Sheets

Consumption Data Sheet

Residue Weight Data Sheet

Fly Ash Weight Data Sheet

Residue Sample Log

Boiler Area Sump Discharge Log

5. CALCULATIONS

Tabulated data and calculations follow:

A. TABLE OF VALUES

SYMBOL	DESCRIPTION	UNIT	VALUE	SOURCE
AAF	Excess air is the actual quantity of air used minus the theorectical air required divided by the theorectical air, and expressed as a percentage	per cent	132.78	
cpA	Mean specific heat of dry air at constant pressure	Btu per lb F	0.24	ASME PTC 4.1 Fig. 3
cpG	Mean specific heat of the flue gas	Btu per lb F	0.25	ASME PTC 4.1 Fig. 7
H	Hydrogen content of the flue gas	percent dry gas	3.70	Contract
hRW	Enthalpy of entering moisture	Btu per lb	50.43	ASME Steam Tables
hRv	Enthalpy of entering vapor	Btu per lb	1096.40	ASME Steam Tables
hs	Enthalpy of steam @ 625.46 psi & 681.61 °F	Btu per lb	1323.95	ASME Steam Tables
hFW	Enthalpy-Feedwater @ 1041.76 psi & 263.82 °F	Btu per lb	234.63	ASME Steam Tables
hGR	Enthalpy of vapor @ 558.76 °F & 1 psig	Btu per lb	1316.14	ASME Steam Tables
Lrc	Heat loss due to radiation and convection	percent	0.05	Contract
mFG	Moisture in flue gas	percent	13.60	Flue gas analysis
N2	Percent nitrogen per volume of dry flue gas. Determined by subtracting the sum of the measured quantities CO2, O2, and CO from 100	percent	79.90	
O2	Percent oxygen per volume of dry flue gas.	percent	12.03	Flue gas analysis
CO2	Percent carbon dioxide per volume of dry flue gas. Determined by flue gas anal.	percent	8.07	Flue gas analysis
PA	Atmospheric pressure	in HG	30.30	
Ps	Pressure of the steam measured at the superheater outlet	psig	615.74	Averaged test data
pf	Pressure of the feedwater @ BFP discharge	psig	1041.76	Averaged test data
tG	Temperature of the flue gas @ econ outlet	F	558.76	Averaged test data

A. TABLE OF VALUES (continued)

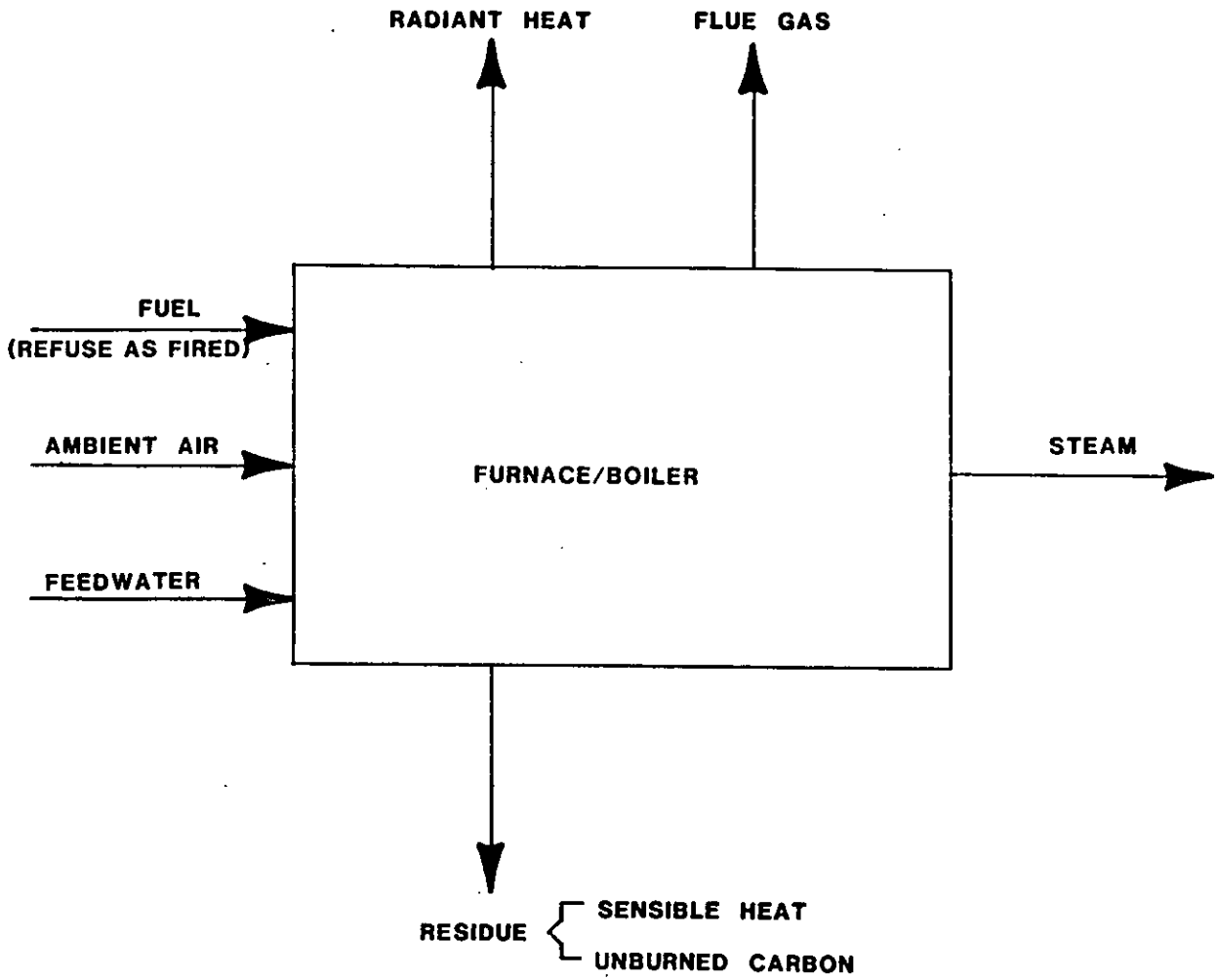
SYMBOL	DESCRIPTION	UNIT	VALUE	SOURCE
ts	Temperature of steam @ superheater outlet	F	655.88	Averaged test data
tw	Temperature of the feedwater	F	263.82	Averaged test data
WA	Pounds of dry air supplied per pound of as-fired" fuel	lb per lb of A.F. fuel	7.35	Calculated
Wfe	Pounds of refuse fired (rate)	lb per hr	97555.5	Calculated
Wse	Pounds of steam per hour flowing	lb per hr	222420.0	Calculated
	Pounds water per pound dry air	lb per lb	0.016	Physchrometric chart
	Drum pressure	psig	664.64	Averaged test data
	Dry bulb temperature	F	82.47	Averaged test data
	Wet bulb temperature	F	74.57	Averaged test data
	Boiler sump discharge temperature	F	96.05	Averaged test data
	Combustion air temperature	F	85.43	Averaged test data
	North bottom ash pit temperature	F	152.52	Averaged test data
	South bottom ash pit temperature	F	205.00	Averaged test data
	Bottom ash pit make-up water temperature	F	97.88	Averaged test data
	Blowdown	lb per hr	1168.00	Averaged test data

note: Turbine Generator Design Data

normal steam flow 208,400 pounds per hour

maximum steam flow 233,000 pounds per hour

COMBUSTION HEAT BALANCE - HEAT LOSS METHOD



McKAY BAY REFUSE TO ENERGY PROJECT

ACCEPTANCE TEST

SEPTEMBER 1985

B. FLUE GAS AND COMBUSTION ANALYSIS
(from Clean Air, Inc. Tests)

	% Vol Dry	% Vol Wet	Mol. Wt. lb/lb mole	R.W. Dry	R.W. Wet	% Wt. Dry	% Wt. Wet	lb./hr
CO_2	8.07	7.0	44.01	355.2	308.1	11.9	10.9	84,881
O_2	12.03	10.4	32.00	385.0	332.8	12.9	11.8	92,014
N_2	79.90	69.0	28.016	2238.5	1922.1	75.2	68.6	536,391
H_2O		13.6	18.016		245.0		8.7	67,969
	100.00			2978.7	2819.0	100.0	100.0	781,255 = lbs./hr. wet gas

C. DRY GAS CALCULATION

Molecular Weight = $.44\ (CO_2) + .32\ (O_2) + .28\ (N_2 + CO)$

$= .44\ (8.07) + .32\ (12.03) + .28\ (79.9)$

$= 29.77$ Mol. Wt.

$\frac{29.77}{359} \times \frac{492}{528} \times 154{,}817 \times 60 = 717{,}770$ lb./hr. Dry Gas

$\frac{717{,}770}{97{,}555.5} = 7.35$ lb. Gas/lb. Fuel

D. EXCESS AIR CALCULATION

$$\% \text{ Excess Air} = \frac{12.03 - 0}{(.264 \times 79.9) - 12.03} \times 100 = \frac{12.03}{9.06} = 132.78\%$$

N_2 in Flue Gas from Fuel = .0058 x 97555.5 = 565.82

N_2 in Flue Gas from Comb. Air = 536391 - 566 = 535,825

Comb. Air Supplied = 535,825 ÷ .7685 = 697,235/lb./hr.

Moisture Supplied/Air = .016 X 697,235 = 11,156 lb./hr.

E. POUNDS PER HOUR MOISTURE

Pounds per hour moisture: Wet Gas - Dry Gas - Moisture Comb. Air =

781,255 - 717,770 - 11,156 = 52,329 lb/hr

PERFORMANCE CALCULATIONS
BASED ON ACTUAL CONDITIONS

		Btu/lb	%
F.	HEAT OUTPUT Due to -		
	Steam:		
	[(lb/hr of steam) / (lb/hr of fuel)] x (h out - h in, Btu/lb)		
	[(222,420)/(98,555)] x (1323.95 - 234.63)	2483.58	58.71
	Boiler blowdown:		
	[(lb/hr of blowdown) / (lb/hr of fuel)] x (h out - h in, Btu/lb)		
	[(1168)/97,555.5] x (484.73 - 234.73)	2.99	0.07
		2486.57	
G.	HEAT LOSSES DUE TO -		
	Dry gas:		
	(lb dry gas/lb fuel) x average specific heat x (T gas exit - T Ref.)		
	7.35 x 0.25 X (558.76 - 85.43)	869.74	20.56
	Moisture from H_2 and H_2O in fuel:		
	(Wet Gas - Dry Gas - Quench Vapor-Moisture Comb. Air x (h T gas exit, 1 psia - h liquid T Ref.)		
	(781,255 - 717,770 - 11,156/97,555)/(1316.14(- 50.43)	678.93	16.05
	Moisture from combustion air:		
	(lb air/lb fuel) x (lb moisture/lb air at Amb. T & humidity) x		
	(h T gas exit, 1 psia - h sat. vapor at Ref T)		
	697,235/97,555.5 x 0.16 X (1316.14 - 1096.4)	25.13	0.59
H.	HEAT LOSS DUE TO UNBURNED COMBUSTIBLES:		
=	(lb C per lb. Bottom Ash) X (lb Bottom Ash/hr) X (HHVC) ÷ (lb fuel)		
=	0.0121 X 20,732.5 X 14500 ÷ 97,555.5 =	37.29	0.88
=	(lb C per lb. Fly Ash) X (lb Fly Ash/hr) X (HHVC) ÷ (lb fuel)		
=	(.0097) X (1532.5) X 14500 ÷ 97,555.5 =	2.09	0.04
		39.38	0.93

		Btu/lb	%
I.	HEAT LOSS DUE TO RESIDUE SENSIBLE HEAT:		
	= (lb Bottom Ash/hr) X (sp. ht. residue) (T after kiln - T at Quench Pit) ÷ (lb. fuel)		
	= (20,732.5) X (0.25) X (1550.14 - 191) ÷ 97,555.5 =	72.21	0.17
	= (lb Fly Ash/hr) X (sp. ht. residue) T after kiln-T at Quench Pit) ÷ (lb fuel)		
	= (1532.5) X (0.25) X (1550.14-191) ÷ 97,555.5 =	5.34	0.12
		77.55	1.83
J.	SENSIBLE HEAT IN QUENCH VAPOR:		
	= (lb M-U Quench Water) (Enthalpy Vapor @ 558.76 Enthalpy MU Water) ÷ (lb fuel)		
	= 3199.04 (1316.14 - 65.88) ÷ 97555.5 =	41.00	0.96
K.	RADIATION AND CONVECTION	21.50	.005
L.	TOTAL HEAT LOSS	1753.23	
M.	HEAT CREDITS due to -		
	Dry combustion air sensible heat: (lb air/lb fuel) X specific heat X (T air entering - T Ref.) (97235/97555.5 X 0.24 X (85.43 - 80)	9.31	0.22
	Moisture in combustion air: (lb air/lb fuel) X (lb moisture/lb air at Amb. T & humidity) X specific heat X (T air entering - T Ref.) 697235/97555.5 X .016 X 0.24 X (85.43 - 80)	0.15	0.004
		9.46	0.22
N.	TOTAL HEAT CREDITS		

Heat Input = HHV of Fuel + Heat Credits = Heat Output + Heat Losses

HHV of Fuel = Heat Output + Heat Losses - Heat Credits = 2486.57 + 1731.73 - 9.46 = $\frac{4208.84}{.995}$ = 4229.99

O. HHV OF FUEL = 4229.99

P. Measured Steam Flow (8 hour average) 222,420 lb/hr

Q. Correction Factor for HHV

$$1 + \frac{4500 - 4299.99}{4500} = 1.06$$

R. Corrected Steam Flow for Reference Composition Waste

1.06 X 222,420 = 237,885 lb/hr

S. Equivalent Electrical Output per General Electric Company Curve K-1078421-12

Plot 237,885 lb/hr OS output = 23.6 MeW

For 8 hour test = 8 X23.6 = 189,008 Kwh

T. Station Power Usage (measured) 19,896 Kwh

U. Net Electrical Output 169,112 Kwh

V. Refuse Throughput (8 hours) 390.22 tons

W. Net Energy Output 433.4 Kwh/ton

origonal application for construction permit

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Resource Recovery Incinerator [ ] New[1] [X] Existing[1]

APPLICATION TYPE: [ ] Construction [ ] Operation [X] Modification

COMPANY NAME: City of Tampa COUNTY: Hillsborough

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Tampa Incinerator Rehabilitation

SOURCE LOCATION: Street 14 Acre site adjacent to McKay Bay City Tampa

UTM: East 360000 North 3091900

Latitude 27 ° 56 ' 51 "N Longitude 82 ° 25 ' 14 "W

APPLICANT NAME AND TITLE: Dale H. Twachtmann, Administrator, Water Resources & Public Work

APPLICANT ADDRESS: 8th Floor - City Hall Plaza, Tampa, Florida 33602

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of McKay Bay Refuse-To-Energy Project

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: Dale H. Twachtmann

Dale H. Twachtmann, Administrator, WR&P
Name and Title (Please Type)

Date: 23 July 81 Telephone No. 813-223-8771

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

(Affix Seal)

Signed: R. Lee Torrens

Ralph Lee Torrens
Name (Please Type)

Hennings on, Durham & Richardson
Company Name (Please Type)

8404 Indian Hills Drive; Omaha, NE 68114
Mailing Address (Please Type)

Florida Registration No. 21274 Date: 7/23/81 Telephone No. 402-399-1000

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Renovate existing incinerator, add heat recover for steam production for electricity generation, addition of electrostatic precipitators to control particulate emissions. The facility will operate in full compliance of all existing regulations.

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction Early 82 Completion of Construction Early 84

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

Pollution Control $4,000,000-$7,000,000
Due to LAER requirements cost is not a factor in the technology choice.
See Chapter 5

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Tampa Incinerator was shut down in Dec. 1979 under consent decree of EPA.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes __X__ No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr 8760 ; if seasonal, describe: with approximately 20% down time for maintenance

G. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? yes - Chapter 3
   a. If yes, has "offset" been applied? yes - Chapter 6
   b. If yes, has "Lowest Achievable Emission Rate" been applied? yes - Chapter 5
   c. If yes, list non-attainment pollutants.
      total suspended particulate and VOC
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. yes - Chapter 4
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII. yes - Chapter 3
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? yes - Chapter 3

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): _____

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5])

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard

[4]Emission, if source operated without control (See Section V, Item 3)

[5]If Applicable

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating. Annual Average _____ Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: _____ ft. Stack Diameter: _____ ft.

Gas Flow Rate: _____ ACFM Gas Exit Temperature: _____ °F.

Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated	5.7% $.473 \times 10^4$	29.5% 2.45×10^4	38.9% 3.23×10^4	9.6% $.797 \times 10^4$	None	None	16.3% 1.35×10^4

Description of Waste Municipal refuse collected within City of Tampa.

Total Weight Incinerated (lbs/hr) 8.3×10^4 Design Capacity (lbs/hr) 8.3×10^4

Approximate Number of Hours of Operation per day 24 days/week 7

Manufacturer Unknown - to be determined.

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (^oF)
			Type	BTU/hr	
Primary Chamber	N/A	3.56×10^8	solid waste	3.75×10^8	1600 - 1800° F
Secondary Chamber					

Stack Height: 150 ft. Stack Diameter 4 flues 4.43 ft Stack Temp. 450°F

Gas Flow Rate: 65,000 ACFM .03 gr/ DSCFM* Velocity 70 FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [X] Cyclone [ ] Wet Scrubber [ ] Afterburner [X] Other (specify) ESP

Brief description of operating characteristics of control devices: Electrostatic Precipitators work by electrostatic forces caused by charging the particles and collecting them on oppositely charged walls

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

Ash to permitted landfill

Cooling tower & boiler blowdown to sanitary sewer

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight — show derivation.
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.,) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, etc.).
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3, and 5 should be consistent: actual emissions = potential (1-efficiency).
6. An 8½" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
7. An 8½" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. An application fee of $20, unless exempted by Section 17-4.05(3), F.A.C. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY *

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[X] Yes [ ] No

Contaminant	Rate or Concentration
Particulate	0.08 gr/dscf at 12% CO_2

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [X] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology? None

Contaminant	Rate or Concentration
all emission but particulate	at potential to emit rate = without controls
	See Chapters 3 and 4

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:
5. Useful Life:
6. Operating Costs:
7. Energy:
8. Maintenance Cost:
9. Emissions:

Contaminant	Rate or Concentration

*Explain method of determining D 3 above.

*See Chapter 6

10. Stack Parameters

a. Height: 150 ft. b. Diameter: 4 x 4.43 ft ft.

c. Flow Rate: 65,000/unit ACFM d. Temperature: 450 °F

e. Velocity: 70 FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device: wet scrubbers - for SO_2, HF, and gaseous Hg control

b. Operating Principles: gas intimately contacted with lime slurry. SO_2 and HF react and are removed. Hg condenses and is removed.

c. Efficiency*: 90% or better; literature d. Capital Cost: $5,280,000

e. Useful Life: 20 year f. Operating Cost: $643,000/yr

g. Energy*: 460 Kwh; literature h. Maintenance Cost: $528,500/yr

i. Availability of construction materials and process chemicals:
Available with appropriate lead time

j. Applicability to manufacturing processes: Has not been used on U.S. solid waste incineration

k. Ability to construct with control device, install in available space, and operate within proposed levels:
Could be installed and operated on space available. Has not been done on U.S. solid waste incinerator.

2.

a. Control Device: Dry scrubber - SO_2, HF, and gaseous Hg control

b. Operating Principles: lime slurry contacts gas and is dried by flue gas. Particulate control by baghouse on ESP

c. Efficiency*: 90-99%; literature d. Capital Cost: $7,920,000

e. Useful Life: projected for 20 yr f. Operating Cost: $ 322,000/yr

g. Energy**: 482 kwh; literature h. Maintenance Costs: $264,000/yr

i. Availability of construction materials and process chemicals:
Available with appropriate lead time

j. Applicability to manufacturing processes: has not been used on any combustion source in U.S. First unit to start up soon on coal-fired boiler.

k. Ability to construct with control device, install in available space, and operate within proposed levels:
Room to construct. Yet to be proven

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power – KWH design rate.

3.

a. Control Device: Low sulfur fuel - SO_2 control

b. Operating Principles: Lower sulfur content in fuel, lower SO_2 emission

c. Efficiency*: - d. Capital Cost: -

e. Life: - f. Operating Cost: -

g. Energy: 0 h. Maintenance Cost: -

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space and operate within proposed levels:

4.

a. Control Device Ammonia injection, wet scrubbers and catalytic reduction for

b. Operating Principles: NO_x control

A laboratory control device - Described in Chapter 4

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

Not proven on any combustion source, not recommended

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device: no additional collection device

2. Efficiency*: 0

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes: This BACT recommendation used on all solid waste-fired boilers in U.S.

a.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

(5) Environmental Manager:

(6) Telephone No.:

*Explain method of determining efficiency above.

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

Contaminant	Rate or Concentration

(8) Process Rate*:

10. Reason for selection and description of systems:

See Chapters 4 and 5.

*Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

A. HCEPC Monitored Data

1. 2 no sites _____ TSP 63/115 (C) SO^2* 63 Wind spd/dir

Period of monitoring 5 / / 80 to 5 / / 81
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? X Yes ____ No

b) Was instrumentation calibrated in accordance with Department procedures? X Yes ____ No ____ Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 5 Year(s) of data from 1 / 1 / 70 to 12 / 31 / 74
month day year month day year

2. Surface data obtained from (location) Tampa International Airport

3. Upper air (mixing height) data obtained from (location) Tampa International Airport

4. Stability wind rose (STAR) data obtained from (location) _____

C. Computer Models Used

1. CRSTER _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	46 grams/sec
SO^2	20.8 grams/sec

E. Emission Data Used in Modeling

in Modeling Section

Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review. See Chapter 3

*Specify bubbler (B) or continuous (C).

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

See Other Impact Sections

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

From Appendix F of origonal application submitted July 1981

Waste Quantities

A. PURPOSE

To verify the annual quantity of solid waste generated in Hillsborough County and determine if a solid waste generation rate of 4.3 lb/cap/day determined previously should be used for resource recovery procurement activities.

B. SUMMARY

a) This analysis indicated that 539,400 tons rather than the projected 495,000 tons was disposed of in Hillsborough County in 1980. We propose the use of the lower tonnage as the basis for the RFP procurement documents.

b) The analysis showed a unit waste generation rate of 4.7 lb/cap/day which was higher than the projected rate of 4.3 lb/cap/day. To conservatively estimate the quantities, we propose the use of the lower rate of 4.3 lb/cap/day as the basis for the RFP procurement documents and when it is to the County's advantage, increase the baseline quantities.

C. DISCUSSION

1. Introduction

As part of the work program, solid waste records were collected and analyzed to determine an appropriate waste generation rate to be used to estimate future waste quantities generated in Hillsborough County. The previous consultant, Brown & Caldwell, used a unit waste generation rate

of 4.3 pounds/capita/day. HDR will determine if this waste generation rate is appropriate based upon the additional year of data that has been collected since Brown & Caldwell did their analysis in 1979. The updated unit waste generation factor will be used to estimate the future quantities of solid waste that will have to be accommodated by a solid waste management system.

2. Waste Quantities

Two sanitary landfills are currently in operation in Hillsborough County: the Northwest Landfill and Hillsborough Heights. These two landfills receive all of the waste disposed in the County. In the past, other landfills were also used.

The Ruskin Landfill was operational until August 1978 when its waste was diverted to the Taylor Road Landfill. Plant City's landfill was operational through September 1979 when its waste was diverted to the Taylor Road Landfill. Furthermore, the Tampa Incinerator was operational until December 1979, when its waste was also diverted to the Taylor Road Landfill. The Taylor Road Landfill was replaced by the Hillsborough Heights Landfill and daily operation was contracted to Waste Management, Inc. on February 11, 1980. Hillsborough County also operates the South County Transfer Station which hauls all of its waste to the Hillsborough Heights Landfill.

Scale data from the Hillsborough Heights Landfill is available for most of 1980. Scale data of the incoming waste stream is also available from the Transfer Station. Other pertinent data concerning the waste stream includes estimates of the total volume in cubic yards of the waste going to the landfills which do not or did not operate scales. For the months when no information on the waste stream was available; reasonable estimates of the incoming waste were made by the scale attendants.

TABLE A-1 - HILLSBOROUGH COUNTY
1980 SOLID WASTE DATA BY MONTH

	Northwest Landfill		Hillsborough Heights	
	Estimated Cu. Yards	Est. Tons @ 350 lb/c.y.	Tons	Total Tons
Jan.	53,206	9,311	28,896	38,207
Feb.	52,827	9,244	10,791 (1)	30,035
Mar.	58,050	10,159	33,634	43,793
Apr.	56,871	9,952	37,557	47,509
May	56,418	9,874	36,916	46,790
June	57,818	10,119	37,162	47,281
July	60,440	10,577	39,402	49,979
Aug.	61,150	10,701	38,514	49,215
Sept.	60,501	10,588	37,953	48,541
Oct.	83,391	14,593	33,614	48,207
Nov.	55,002	9,625	33,472	43,097
Dec.	60,859	10,650	36,097	46,747
Total	716,533	125,392	414,008	539,400

(1) Waste Management, Inc. (WMI) assumed operational control of the landfill in 1980. Scales were installed on February 11, and only a partial month of scale data is available.

Table A-2 shows the total waste quantities going into each landfill for the years 1978 and 1979.

TABLE A-2 - TOTAL WASTE QUANTITIES FOR 1978 AND 1979

	1978 Cubic Yards	Tons	1979 Cubic Yards	Tons
Northwest Landfill	755,085	132,140	838,538	146,744
Taylor Road	1,026,286	179,600	912,434	159,675
Tampa Incinerator	---	180,000	---	188,738
Plant City	---	10,514	---	8,370 (1)
Ruskin	55,844 (2)	9,773	Closed	Closed
Total	1,837,215	512,027	1,750,972	503,527

(1) The Plant City Landfill closed October 1, 1979 and the waste was diverted to the Taylor Road Landfill.

(2) The Ruskin Landfill closed August 1, 1978 and the waste was diverted to the Taylor Road Landfill.

Special Note: Waste quantities contain some white goods, demolition waste and tires.

Another minor problem with the 1980 waste quantities is that not all incoming vehicles using the Hillsborough Heights Landfill crossed the scale. For example, some cars, some tire loads, and some cash customers bypassed the scales. Records indicate that an average of 3100 cars and pickup trucks bypassed the scales each month in 1980. The peak number of cars and pickup trucks that passed the scales was 3428 vehicles in August 1980. The least amount of cars and pickup trucks bypassing the scales occurred during November when 2765 vehicles were recorded. The quantities hauled by these types of vehicles was determined to be insignificant. But, beginning in 1981, all incoming wastes will be weighted at Hillsborough Heights. This operating requirement will improve the data for future solid waste management planning activities in Hillsborough County.

3. Population Projections

Table A-3 lists the estimated population projections for Hillsborough County. These projections were obtained from the Hillsborough County City-County Planning Commission publication entitled, "Population and Housing Estimates, April 1, 1970 - April 1, 1980."

TABLE A-3 - POPULATION PROJECTIONS FOR HILLSBOROUGH COUNTY

Year	Population Projection
1980	630,698
1985	757,300
1990	848,500
1995	939,300
2000	1,030,000

4. Unit Waste Generation Factor

The unit waste generation factor is simply a per capita waste generation rate. The factor is calculated by dividing the total tonnage of waste disposed by the contributing population. Using the data presented in Table 4 and a countywide population of 630,698, the County's unit waste generation factor for 1980 was computed to be 4.7 pounds per capita per day. The 1979 data indicated a 4.7 pounds per capita per day was computed. The 1978 data equated to 4.8 pounds per capita per day rate.

In previous analyses, a unit waste generation rate of 4.3 pounds per capita per day was determined. This rate is approximately 8.5% less than the rate computed by HDR and this differential is small when determining unit waste generation rates. To be conservative, the 4.3 pounds per capita per day rate will be used in projecting waste quantities delivered to resource recovery facilities.

From our perspective, the unit factor of 4.3 pounds per capita per day is a reasonable estimate when compared to unit waste generation factors found in other HDR projects such as Pinellas County, Florida; DeKalb County, Georgia; Fort Worth, Texas; and Phoenix, Arizona. Furthermore, it is assumed that the unit waste factors will remain constant in the future. This assumption provides a reasonable compromise between past predictions of rising per capita waste generation rates and some recent indication of the trend toward slight decreases in the per capita waste generation rates.

Table A-4 lists the solid waste tonnage projections for Hillsborough County. These projections are based on the population projections listed in Table 3 and a constant unit waste generation rate of both 4.7 and 4.3 pounds per capita per day.

TABLE A-4 - SOLID WASTE PROJECTIONS FOR HILLSBOROUGH COUNTY

Year	Waste Quantity (Tons) 4.7 lb/cap/day	Resource Recovery Quantity 4.3 lb/cap/day
1980	539,000	495,000
1985	647,000	594,000
1990	725,000	666,000
2000	880,000	808,000

5. Seasonal Variations

Figure A-1 depicts the seasonal variation of waste quantities for the years 1978, 1979 and 1980. Figure A-2 gives reference to which months are above or below the average monthly waste generation percentage of 8.33% (100% - 12 months = 8.33%).

6. Solid Waste Composition

Local solid waste composition data was extracted from the Phase II Project Draft Report. This sampling program determined the composition of the municipal solid waste stream in Hillsborough County.

The sampling survey spanned six continuous days per month in each of the following months: November 1979, February 1980, May 1980 and August 1980.

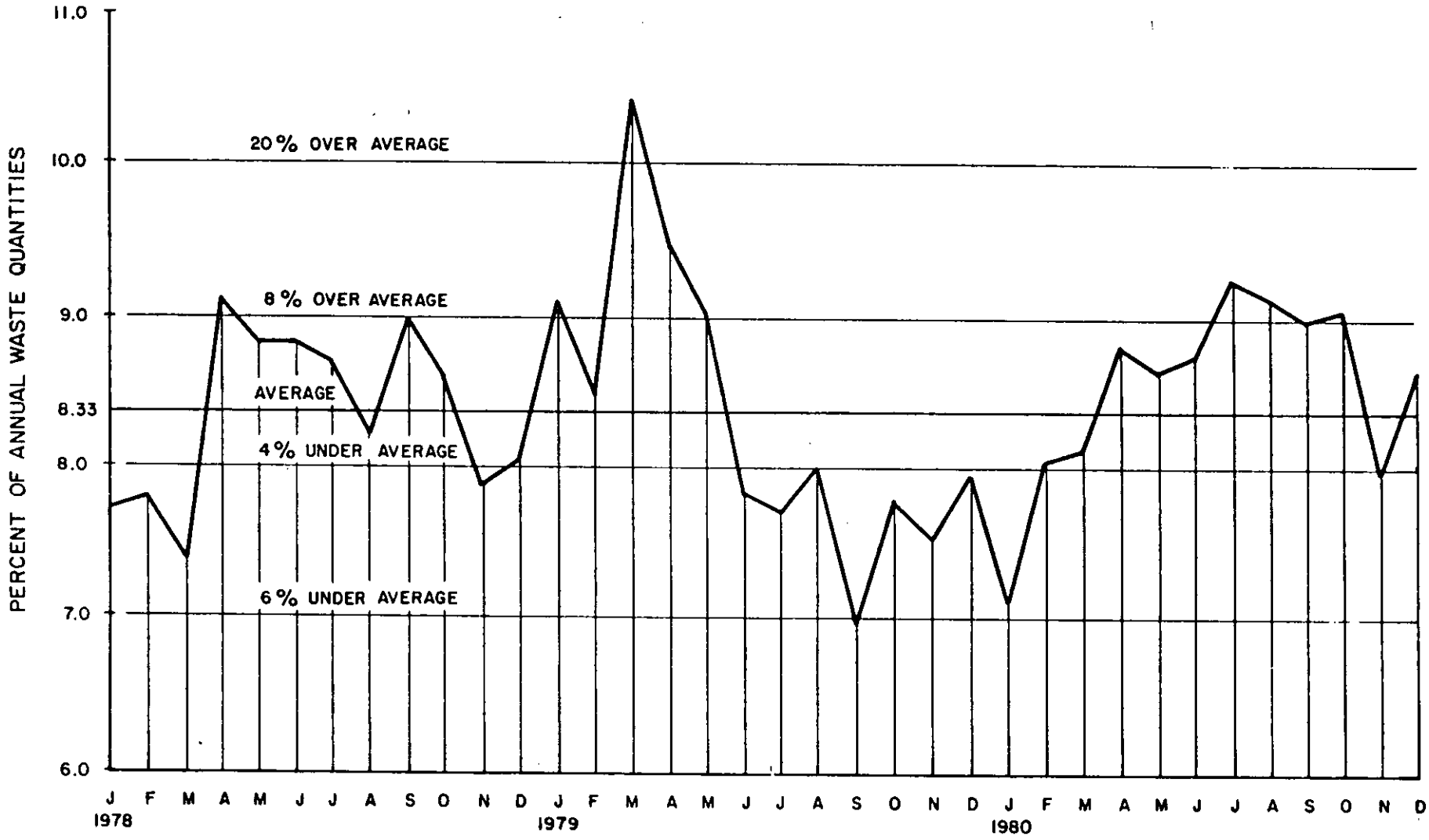


FIGURE A-1

SEASONAL VARIATIONS IN SOLID WASTE QUANTITIES
1978-1980

Table A-5 summarizes the seasonal variation in the waste stream composition. The percentage of combustibles was the highest at 89.8% in August 1980, and the lowest at 80.3% in February 1980.

TABLE A-5 - STUDY AREA MSW COMPOSITION COMPARISON

Category	Waste Stream Composition, Percent				
	November 1979(1)	February 1980(2)	May 1980(3)	August 1980(4)	Average (5)
Combustibles					
Paper					
Miscellaneous paper	33.4	33.1	27.2	24.4	29.5
Newspaper	11.2	7.6	9.6	9.4	9.4
Food and organics	9.5	16.2	7.9	4.8	9.6
Wood and garden	18.7	13.8	17.9	42.1	25.6
Rubber, leather, and textile	2.8	3.8	4.5	4.5	3.9
Plastics	6.2	5.8	6.1	4.6	5.7
Subtotal combustibles	81.8	80.3	83.1	89.8	83.7
Noncombustibles					
Ferrous					
Heavy	1.2	2.4	1.1	0.1	1.2
Light	4.0	4.7	2.9	2.3	3.5
Aluminum	1.1	1.0	.7	0.8	0.9
Other nonferrous metals	0.0	0.0	.5	0.0	0.1
Glass	7.9	8.3	9.2	6.0	7.9
Rocks, dirt, ash and miscellaneous	4.0	3.3	2.4	1.0	2.7
Subtotal noncombustibles	18.2	19.7	16.9	10.2	16.3

(1) Average wet weight from a 6-day sampling survey from November 12 to November 17, 1979.

(2) Average wet weight from a 6-day sampling survey from February 4 to February 9, 1980.

(3) Average wet weight from a 6-day sampling survey from May 5 to May 10, 1980.

(4) Average wet weight from a 6-day sampling survey from August 4 to August 9, 1980.

(5) Based on the November, February, May and August results.

Source: Hillsborough County Resource Recovery Planning Study, Chapter 2.

WASTE COMPOSITIONAL ANALYSES

SOLID WASTE COMPONENT	HDR STUDIES																					ALTERNATE SOURCE			
	IOWA		MINNESOTA			CALIFORNIA				MONTANA				MICHIGAN	ARIZONA		GEORGIA		FLORIDA	ILLINOIS						
	DUBUQUE (RES)	DUBUQUE (COMM)	ST CLOUD (RES)	ST CLOUD (COMM)	OLMSTEAD CO (RES-COMM)	COLTON (RES)	COLTON (COMM)	SAN DIEGO (RES)	SAN DIEGO (COMM)	MISSOULA	BUTTE	BILLINGS	GREAT FALLS	MARQUETTE (RES-COMM)	PHOENIX (RES)	PHOENIX (COMM)	DEKALB (RES)	DEKALB (COMM)	ST PETERSBURG (RES)	SPRINGFIELD (RES)	SPRINGFIELD (COMM)	SPRINGFIELD (RES-COMM)	WISCONSIN REGION I (RES)	WISCONSIN REGION I (COMM)	NCRR (RES-COMM)	EPA 4TH REPT
PAPER	37.0	42.2	37.0	36.1	33.4	26.9	35.4	38.6	44.1	25.0	24.3	24.9	26.9	44.6	43.7	50.8	37.3	58.2	31.4	27.6	21.7	25.9	25.4	27.4	42.7	35.0
CARDBOARD	3.5	11.0	14.0	22.6	12.8	6.2	20.4	6.8	22.8	10.3	7.0	10.1	8.2							4.2	22.7	9.4	10.2	36.1		
PLASTIC	5.3	7.8	4.1	3.7	5.6	2.8	4.5	3.6	7.5	4.3	6.1	6.1	4.2	7.0	4.1	5.3	3.5	4.5	1.3	5.3	5.1	5.3	3.2	3.3	1.7	3.8
WOOD	0.6	1.0	2.3	1.6	2.0	2.2	4.5	1.4	3.9	2.2	0.1	1.0	1.5	0.8	1.3	2.3	1.3	2.5	1.9	1.7	3.9	2.5	5.3	10.0	2.5	3.8
FOOD WASTE	10.6	7.4	17.5	11.7	14.6	3.4	2.6	2.8	5.5	12.9	21.9	20.5	13.6	13.8	12.2	12.5	3.9	2.7	0.8	15.5	18.6	16.4	17.2	11.0	14.6	14.9
YARD WASTE	25.1	7.2	0.6	0	9.1	40.8	13.6	33.7	2.3	29.6	14.5	12.2	28.0	10.0	17.2	6.9	26.6	0.5	46.7	21.0	2.3	15.8	24.1	-	12.5	16.3
TEXTILES	2.3	1.7	3.6	4.4	3.2	2.5	6.3	2.3	2.6	3.2	3.8	6.0	2.7	3.2	3.8	2.5	3.2	3.3	2.9	3.9	1.5	3.2	2.1	0.9	2.4	1.7
RUBBER (LEATHER)	0.2	0	1.0	1.6		0.9	1.3	1.1	0.7								0.7	0.6	0	0.4	0.1	0.3			1.8	2.6
RESIDUE			2.6		1.7										5.7	6.5	13.2	10.7		4.2	1.5	3.3	0.3	3.6		
TOTAL PERCENT COMBUSTIBLE	84.6	78.3	82.7	85.0	80.7	85.7	88.6	90.3	89.4	87.5	77.8	80.8	85.1	81.4	88.0	86.8	89.7	83.0	85.0	83.8	77.4	81.9	87.8	92.3	78.2	78.0
FERROUS	6.8	13.6	8.0	8.8	9.5	5.5	5.6	4.5	5.2	8.2	9.0	9.0	9.7	9.1	4.9	5.6	5.5	10.7	5.4	7.1	12.4	8.6	6.4	5.4	8.2	9.8
ALUMINUM	1.3	1.1	0.5	0.3	0.6	0.6	0.6	1.0	0.8	1.4	2.5	1.8	1.7	1.3	0.9	0.5	1.0	1.0	1.0	0.7	0.6	0.7	1.1	0.1	0.9	
GLASS	9.4	6.7	8.8	5.9	9.0	5.5	2.9	4.0	4.3	4.9	10.9	8.4	6.5	8.7	6.2	7.1	3.8	5.3	5.7	5.8	8.5	6.5	4.7	2.0	10.3	10.5
RESIDUE	0.1	0.3				2.7	2.3	0.2	0.5					0.5					2.9	2.6	1.3	2.3		0.2	2.4	1.6
TOTAL PERCENT NON COMBUSTIBLE	15.4	21.7	17.3	15.0	19.3	14.3	11.4	9.7	10.6	12.5	22.4	19.2	14.9	18.6	12.0	13.2	10.3	17.0	15.0	16.2	22.6	18.1	12.2	7.7	21.8	21.8
BTU/lb (AS RECEIVED)	3653	4796	3793	4155		4878.00		5456.00		AVG. 5039					5000		4810	5227		5470.0	4972.9	5330.8				
BTU/lb (DRY)	7010	8175								7746	7402	7739	7278							7680.3	7953.6	7736.8				
BTU/lb (AVERAGE)	3600	5300	4000																		6334					
% MOISTURE	41.1	36.6	39.4	33.6		28.0		21.9	20.9	37.6	26.6	41.3	34.9		29.1	32.5	37.1	32.1		28.8	37.5	34.1				
% RESIDUE	15.1	8.7	14.1	18.9						13.3	8.7	11.3	11.9				9.7			12.2	10.3	11.6				
CARBON	29.4	40.6	23.9	29.8						43.7	45.7	43.0	41.5							42.8	44.3	43.2				
HYDROGEN	2.3	2.2	3.1	3.3						6.2	6.6	6.2	5.6							5.2	5.1	5.2				
OXYGEN	14.6	11.2	18.5	16.7						35.2	39.1	37.5	39.6							39.6	39.4	38.6				
NITROGEN	0.52	0.37	0.64	0.56						0.88	1.01	1.07	0.68							0.6	0.6	0.6				
CHLORINE	0.17	0.15	0.25	1.47						0.60	0.49	0.75	0.45				0.04			0.09	0.06	0.08				
SULFUR	0.02	0.02	0.12	0.53						0.12	0.11	0.31	0.23				0.09			0.08	0.18	0.11				

This table shows the high variability of % moisture and heating value found in MSW

TABLE 4

Table A-6 illustrates the seasonal variation of the higher heating value and moisture content of the solid waste. The heating value was lowest in May 1980, the highest values occurred in the months of November 1979 and August 1980. This local data correlates reasonably with HDR and other's sampling programs listed in Table A-7 and its use should provide a reasonable basis for the procurement activities.

TABLE A-6 - STUDY AREA HIGH HEAT VALUE, PROXIMATE ANALYSES

	High Heat Value, Btu per Pound				
Category	November 1979(1)	February 1980(2)	May 1980(3)	August 1980(4)	Average
Combustible fraction, as received	5750	5290	4910	5290	5310
Combustible fraction, moisture free	8100	7560	7220	7780	7660
MSW, as received	4710	4250	4080	4750	4450
MSW, moisture free	6630	6070	6000	6980	6420
Average Moisture %	29	30	32	32	-

(1) Based on a 6-day sampling survey from November 12 to November 17, 1979.

(2) Based on a 6-day sampling survey from February 4 to February 9, 1980.

(3) Based on a 6-day sampling survey from May 5 to May 10, 1980.

(4) Based on a 6-day sampling survey from August 4 to August 9, 1980.

Source: Hillsborough County Resource Recovery Planning Study, Chapter 2.

Special wastes can comprise a significant amount of the waste that is landfilled. Included in these wastes are large amounts of shrimp, tires, dead animals, lumber, and construction wastes. These non-processable wastes will go directly to the landfills and bypass any waste processing facilities. By selecting the 4.3 unit waste generation rate, we are of the opinion the special wastes have been adequately included in the total waste quantities listed in Table 4.

For the purposes of RFP procurement it is assumed that the waste stream delivered to resource recovery facilities will have the following characteristics:

Combustibles	-	80%
Ferrous	-	5%
Aluminum	-	1%
Other Non Ferrous Metals	-	0.1%
Average higher heating value	-	4500 Btus/lb. @ moisture content of 30%

E. CONCLUSIONS:

The primary purpose of this analysis was to confirm the quantity of waste that would be available for resource recovery in Hillsborough County. Our analysis indicated that more than the 1980 projected tonnage of 495,000 tons was disposed. Our analysis indicated that approximately 539,400 tons were disposed during 1980.

Since all waste is now being weighed at the Hillsborough Heights Landfill, we are proposing to use for the RFP procurement documents the lower tonnage of 495,000 tons (4.3 lbs/capita/day) as the basis for future projections. We will monitor the additional records and as more definitive data becomes available, we may recommend an increase in the quantity available for resource recovery when it is advantageous to the county.

From Chapter 3 of origonal application submitted July 1981

AIR QUALITY ANALYSIS

The purpose of air quality analysis is to determine the effects this Project will have on the surrounding area and the attainment status of that area. This is done first determining a good estimate of the emissions from the Project, then modeling the emissions from this facility and finally adding the modeled emissions to the existing background concentration. The area of air quality analysis is less than a precise science and assumptions must be made. These assumptions include the use of air quality models. A fundamental assumption used in the analysis is that the facility is operating at full load, all day, everyday. This will lead to a more conservative analysis than will actually exist.

Facility Emissions and Monitoring

The emissions information for Facility 1 was obtained from Waste Management, Inc. (WMI), the current Volund technology licensee. The data represents the highest value obtained from stack tests done worldwide (see Appendix I). The expected emissions are shown in Table 3-1. The Project's emissions are compared to the PSD significance levels in Table 3-2.

Table 3-1
Emissions Expected from Project

	Facility 1		Facility 2		TOTAL
	gm/s	TPY	gm/s	TPY	TPY
Particulate (uncontrolled)	575	19970	400	13890	27350
Particulate (controlled)	4.6	160	3.2	109	269
Sulfur Dioxide	20.8	722	12.1	420	1142
Nitrogen Oxides	26.0	903	9.5	330	1233
Carbon Monoxide	1.68	58	5.8	200	258
Hydrocarbons	0.92	32	0.92	32	64
Lead	0.47	16.3	0.47	16.3	32.6
Mercury (vaporous)	0.05	1.8	0.05	1.8	3.6
Mercury (particulate)	2.3×10^{-3}	0.08	2.3×10^{-3}	0.08	0.16
Beryllium	4.0×10^{-5}	1.4×10^{-3}	4.0×10^{-5}	1.4×10^{-3}	2.8×10^{-3}
Flouride	0.53	18.4	.53	18.4	32.6
Hydrogen Chloride	23.7	823	23.7	823	1646

please note our actual stack test data shows lesser emissions at 1200TPD than origonally estimated for facility 1, the total for both facilities was used for air quality analysis

please note that TPY values are for 2 facilities while only 1 facility was constructed at McKay Bay

Table 3-2
Project Emissions Versus PSD Significance Levels

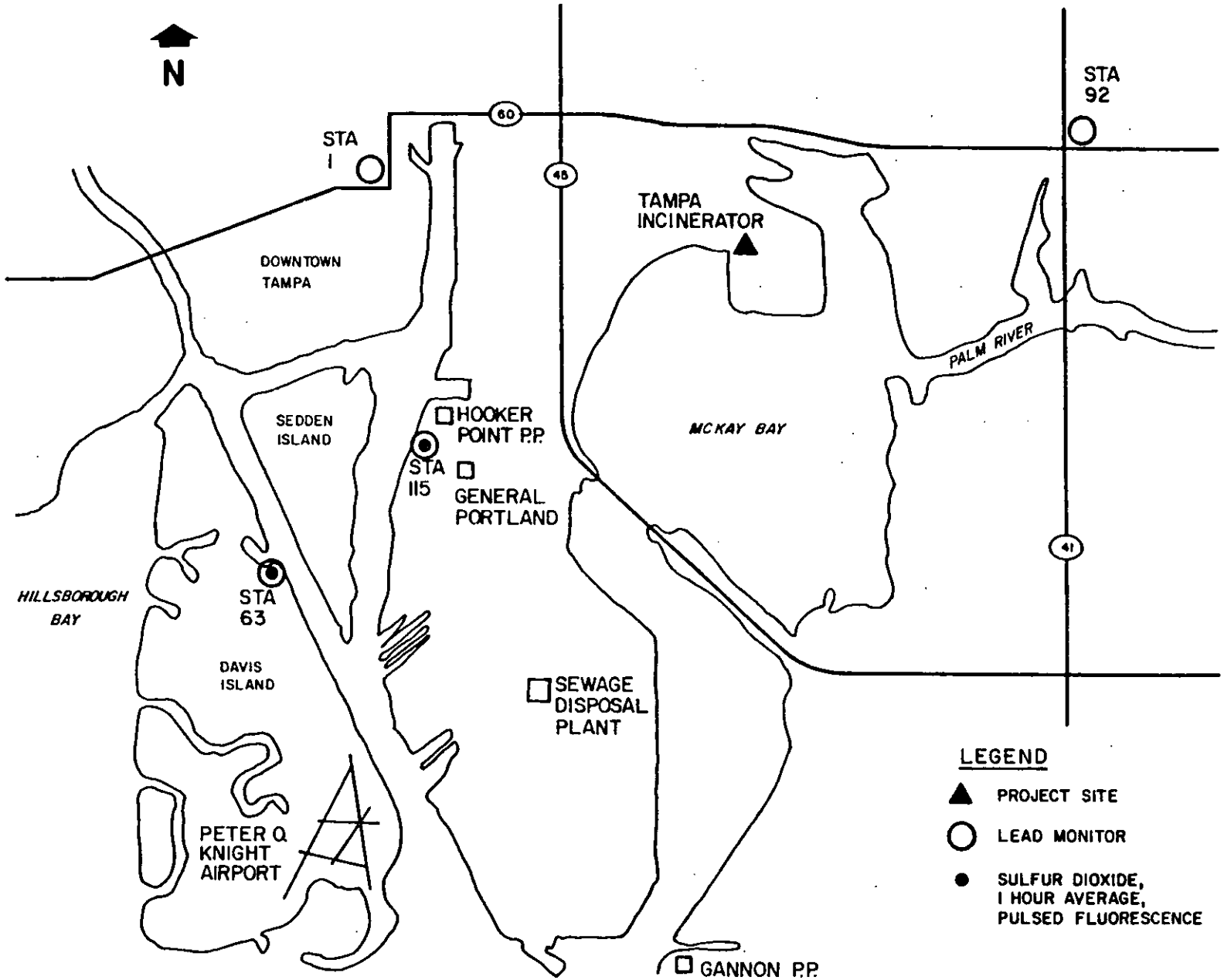
	TPY	Significance Level (TPY)	De minimus Impact Period (ug/m^3)	Worst Modeled Impact
Particulate (controlled)	269	25	10/24 hr.	5.8
Sulfur Dioxide	1142	40	13/24 hr.	24.8
Nitrogen Dioxide	1233	40	14/annual	2.3
Carbon Monoxide	258	100	575/8 hr.	11/3 hr.
Hydrocarbon	64	40	NV*	
Lead	32.6	0.6	0.1/24 hr.	0.7
Mercury (vaporous)	3.6	0.1	0.25/24 hr.	0.08
Mercury (particulate)	0.16			
Beryllium	2.8×10^{-3}	4×10^{-4}	5×10^{-4}/24 hr.	6×10^{-5}
Flourides	32.6	0.6	0.25/24 hr.	0.7

Worst 24-hour day - Day 175, 1972

*NV = No Value

The data in Table 3-2 indicate that the McKay Bay Refuse-to-Energy Project (Project) will be a major source for sulfur dioxide, carbon monoxide, nitrogen oxides, and a significant source for lead, mercury, hydrocarbons, beryllium and flouride. Based on the modeled impacts, monitoring data will be required for sulfur dioxide, lead and flourides.

To fulfill the monitoring requirements for sulfur dioxide and lead Hillsborough County Environmental Protection Commission (HCEPC) monitors have been used. Figure 3-1 shows the monitor location used in the analysis. The monitors are within the area of maximum impact. These monitors adequately reflect the air quality in the area except when the wind is from the southwestern quadrant. With southwesterly wind the effect of TECO's Gannon and Hooker's Point Powerplants and General Portland Cement Plant will be missed. To account for their effect these plants were modeled for specific days which coincided with the southwesterly quadrant maximum days and the impacts added to the Project's impact and the ambent concentrations.



MONITORING STATIONS

MCKAY BAY
REFUSE-TO-ENERGY PROJECT

FIGURE 3-1

The preamble to the August 7, 1980 PSD Rules states that, "For the noncriteria and hazardous pollutants, modeling, not monitoring, will be the mechanism used to perform most detailed air quality analyses. However, there may be circumstances where monitoring may be the only plan available to perform an adequate analysis ...", FR 52724, August 7, 1980 (in Appendix J). The flouride impact (in Table 3-2) is significant by the PSD rules, but negligible when compared to the Threshold Limiting Value (TLV) of 2 mg/m^3. Negotiations with the Florida DER have concluded that monitoring will not be required for flourides.

For acceptance testing at least EPA method 5 will be used. Any other emission test requested by the DER or EPA will also be performed.

Modeling

The CRSTER model was used to determine the effect of the sulfur dioxide emissions. These values were modified to develop modeled effects of the other pollutants. The meteorological input data was suppled by both the Florida Department of Environmental Regulation and the National Climatic Center (NCC). To reformat the NCC data to a form acceptable to the CRSTER, the preproscessor program RAMMET was used.

The modeled situation was six stacks colocated at Facility 1. The six stacks represent the four flues from Facility 1 and two flues from Facility 2. The parameters used are shown in Table 3-3. The ring distances were developed by the procedure outlined in the "Proposed Guideline to Air Pollution Models".

Table 3-3

Stack Parameters Modeled for Sulfur Dioxide

Stack	Emission Rate (gm/s)	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/sec)	Exit Temp. (^oK)	Volumetric Flow Rate (m^3/s)
Facility 1						
1	5.2	45.72	1.35	21.3	500	30.49
2	5.2	45.72	1.35	21.3	500	30.49
3	5.2	45.72	1.35	21.3	500	30.49
4	5.2	45.72	1.35	21.3	500	30.49
Facility 2						
1	10.4	50.00	1.84	18.3	477	48.66
2	10.4	50.00	1.84	18.3	477	48.66

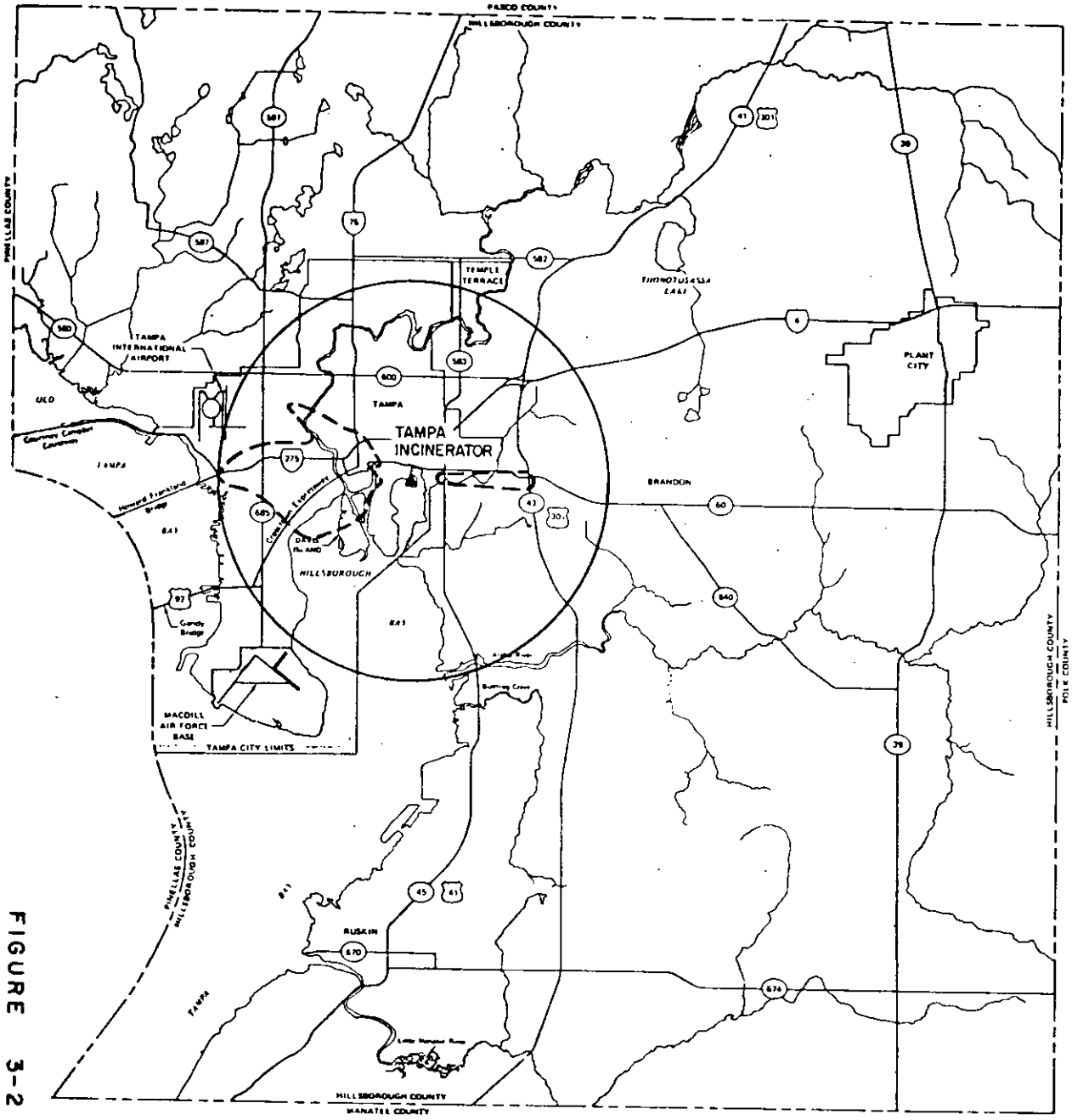
Ring Distances (km)= 0.5, 1.0, 1.2, 1.7, 2.2, 2.9. 3.8, 5.0, 6.6, 9.0

Impact Area

Based on the CRSTER model evaluation of 1970-74 the worst annual impact occurs in 1970. The impact area is shown in Figure 3-2 by a 10.2 km radius circle. The actual area of the 1 ug/m^3 impact is also shown on Figure 3-2.

Emission Inventories

The only facilities specifically inventoried were TECO's Gannon and Hooker Point Power plants, and General Portland Cement Plant. Additional data was obtained from the CONSRV PSD application recently submitted to DER. The TECO emissions were updated by conversations with TECO personnel. Other inventories were obtained from local agencies and are shown in Appendix A and B.



LEGEND

- ACTUAL IMPACT AREA 1 µg/M³
- PSD IMPACT AREA

N

SCALE IN MILES
0 1 2 3 4

SULFUR DIOXIDE
SIGNIFICANT IMPACT AREA

MCKAY BAY REFUSE-TO-ENERGY PROJECT

FIGURE 3-2

Project Impacts

Sulfur Dioxide Analysis

Hillsborough County is presently an attainment area for sulfur dioxide. All of the monitoring data presented was developed by the Hillsborough County Environmental Protection Commission (HCEPC) and is presented in Appendix C. The data is summarized annually in the HCEPC Environmental Quality series. Table 3-3 presents a summary of the sulfur dioxide monitoring data for 1978 and 1979.

Table 3-4
Sulfur Dioxide
(micrograms/cubic meter)
1-hr Averages from Continuous Analysis

1978

Station	# of Observations	Minimum Value	Arithmetic Mean	Geometric Mean	Maximum Value
63	7803	2.6	25.7	14.3	584
115	4158	2.6	22.2	10.3	342

1979

Station	# of Observations	Minimum Value	Arithmetic Mean	Geometric Mean	Maximum Value
63	7066	2.6	19.6	10.8	540
115	6466	2.6	25.6	12.3	525

The modeled impacts of the sulfur dioxide emissions are shown in Tables 3-5, 3-6 and 3-7. These values represent the highest values for each of the eight compass direction over the five years of modeling. Included in Tables 3-6 and 3-7 are some of the meteorological parameters associated with the modeled day and the day from which the monitored data was chosen. Every effort was taken to find the closest calendar day and similar wind characteristics so that seasonal variations would be

minimized. As a practical matter the high and 2nd high seldom differed by more than 3%.

Table 3-5
Sulfur Dioxide
Maximum Modeled Annual Impacts
(micrograms/cubic meter)

Direction	Concentration	Distance
N	0.7	1.7
NE	1.0	1.2
E	2.2	1.2
SE	0.8	2.9
S	0.7	2.9
SW	1.2	2.2
W	1.9	2.2
NW	1.2	1.7

The highest three hour impact occurs southwest of the Project. In this case the Project, TECO's Hooker Pt. Powerplant and General Portland Cement Plant are upwind of the Davis Island monitor, Station 63.

If the modeled impact from the Project is added to the highest monitored three hour value, a highest 3 hr. ambient concentration of 178 ug/m^3 occurs. This is significantly below the 3 hr. NAAQS of 1300 ug/m^3. The Project is modeled to provide 55 ug/m^3 of this amount. The highest three hour impact from the Project alone was modeled to be 77 ug/m^3 at 1.2 km east of the Project.

The highest ground level concentration is computed by adding the highest 24-hour southwest impact to the monitored data indicates a worst 24-hour average of 72 ug/m^3. The Projects highest twenty-four hour impact is predicted to be 24 ug/m^3 2.2 km east of the Project.

Table 3-6
24 Hour Comparison
Sulfur Dioxide Concentration
(micrograms/cubic meter)

Modeled Data				Meteorology Data			Monitored Data				
				Wind			Concentration			Wind	
Direction	Worst Conc.	Day	Yr.	Dir.	Spd. (m/s)	Stability	Sta. 63	Sta. 115	Date	Dir.	Spd. (m/s)
N 0, 360	12	175 6/25	74	S	7	4	16	32	7/2/80	SSW-SSE	3.1
NE 40, 50	12	158 6/7	74	S-SW	4	2-7	16	26	4/4/81	SE-SW	5
E 90	24	175 6/25	72	W	6	4-5	5.3	3.2	6/26/80	W	4.2
SE 130, 140	12	90 2/10	74	SE-NE	4	2-7	8	2.6	3/5/81	NNW	6
S 180	15	320 11/15	72	N-NW	5.5	4-6	37	5.3	11/2/80	N-ENE	ND*
SW 220, 230	22	270 9/1	71	NE	5	4-6	50	45	9/25/81	ENE	3.5
W 270	21	306 11/5	72	E	3.5	4-6	39	29	11/23/80	E	ND
NW 310, 320	16	136 5/15	74	ESE	5	3-6	18	ND	5/4/81	SE	2.7

*ND = No Data

Table 3-7
3 Hour Comparisons
Sulfur Dioxide Concentrations
(micrograms/cubic meter)

Modeled Data					Meteorology Data			Monitored Data					
	Worst				Wind			Concentration					
Direction	Conc. (ug/m^3)	Period	Day	Yr.	Dir.	Spd. (m/s)	Stability	Sta. 63	Sta. 115	Period	Date	Dir.	Spd. (m/s)
N 0, 360	51	4	33 2/3	74	S	4.3	3-7	21	26	5	3/15/81	S	4.5
NE 40, 50	75	5	90 3/31	74	SE-NW	3.3	2-7	71	ND*	2	5/10/81	SW	3.5
E 90	77	5	246 9/6	74	W-N	2	3-6	21	21	5	6/26/80	W	4
SE 130, 140	44	6	249 9/9	72	SW-SE	3	4-7	5.3	29	4	10/20/80	N	3.3
S 180	49	5	311 11/9	74	N-NE	5	3-5	26	42	3	11/29/80	N	ND*
SW 220, 230	55	4	172 6/20	74	N-NE	3	1-7	123	6	4	6/14/80	ENE	5
W 270	73	4	110 4/18	74	E	3.5	2-7	ND	29	5	5/27/81	ENE	4.5
NW 310, 320	67	4	64 3/3	74	E/W	3.2	2-6	37	ND	1	5/4/81	SE	1

*ND = No Data

The highest annual impact is 1.2 km to the east in 1974 with a value of 2.2 ug/m^3. The annual impacts for 1970-1974 varied from 1.3 to 2.2 ug/m^3. The monitored annual arithmetic average were 25.7 and 19.6 ug/m^3 in 1978 and and 1979 respectively at station 63. Station 115 registered annual averages of 22.2 and 25.0 ug/m^3 in 1978 and 1979 respectively. The summation of the annual impact and the monitored annual average leads to a highest annual concentration of about 30 ug/m^3. This is significantly below the federal secondary standard of 80 ug/m^3 and the Florida Standard of 60 ug/m^3.

There are significant sulfur dioxide sources to the east of the Project site. The recent CONSRV PSD application analysed the impact it plus other significant sources would have in various directions. The CONSRV case VI analysed a SSE wind. This would align several facilities with the project site. The CONSRV results indicate that there would be essentially no impact from those facilities on the projects impact area.

The only other increment consuming source affecting the impact area is TECO's Gannon Powerplant. This powerplant is modifying its fuel and was granted a PSD permit around the first of the year. A letter from EPA to Mayor Bob Martinez of a Public Notice of the change is found in Appendix E. The Public Notice indicated that the maximum increment consumed by the proposed modification is as follows:

	Annual	24 Hour	3 Hour
SO_2	5 %	38 %	32 %

A condensation of Tables 3-5, 3-6, and 3-7, shows that the project's maximum increment consumption of the total allowed will be:

Annual	24 Hour	3 Hour
2.1 ug/m^3	22 ug/m^3	77 ug/m^3
or	or	or
11 %	24 %	15 %

Baseline was set by the TECO modification. There are two new PSD sources proposed for Hillsborough County, CONSRV and the McKay Bay Refuse-to-Energy Project. CONSRV's data indicates no impact on the Project's impact area and TECO's impact was given above. Table 3-8 shows our projection of the increment that has or will be consumed.

Table 3-8
Total Increment Consumed

	Annual		24 Hour		3 Hour	
	ug/m^3	Percent	ug/m^3	Percent	ug/m^3	Percent
McKay Bay	2.1	11	22	24	77	15
CONSRV	0	0	0	0	0	0
TECO	1.0	5	35	38	164	32
Total	3.1	16	57	62	341	47
Allowed	20		91		512	

Table 3-9 shows the increment used by the project and TECO added to the HCEPC monitored ambient conditions. This assumes that the ambient maximums plus both source maximums occur at the same place and time.

Table 3-9
Highest Predicted Ambient Concentrations
Sulfur Dioxide
(micrograms/cubic meter)

	Annual	24 Hour	3 Hour
Ambient (1979)	25.5	126	597
TECO	1.0	35	164
Project	2.1	22	77
Total	28.6	183	838
Standards			
EPA	80	365	1300
Florida	50	265	1300

Summary of Sulfur Dioxide Analysis

As was shown in Tables 3-8 and 3-9 the McKay Bay Refuse-to-Energy Project will not violate the Class II increments nor will it lead to a violation of either national or state ambient air quality standards.

Lead Analysis

The ambient lead values have exceeded the NAAQS of 1.5 ug/m^3 on a quarterly average in the past but the most recent data does not indicate an attainment problem. The highest ambient lead value consistantly occurs at station 92 (the intersection of Hwys 60 and 41). In the past year the situation has significantly improved. This is shown in Table 3-10.

Table 3-10
Lead in Suspended Particulate Matter
Quarterly Average in Micrograms/Cubic Meter

	Station Number	Quarter 1	2	3	4	Annual Average
			1978			
Health Dept.	1	0.6	0.6	2.0	0.9	1.0
Davis Island	63	0.3	0.4	0.7	0.6	0.5
Hwys 60 & 41	92	0.8	1.3	2.4	1.4	1.5
Hooker's Pt.	115	---	---	2.4	0.9	---
			1979			
Health Dept.	1	0.9	0.6	0.7	0.7	0.7
Davis Island	63	0.6	0.5	0.7	0.7	0.6
Hwys 60 & 41	92	2.1	1.4	1.4	0.9	1.4
Hooker's Pt.	115	0.6	0.5	0.5	0.4	0.5
			1980 - 1981			
Health Dept.	1	0.43	0.5	0.35	0.23	0.38
Davis Island	63	0.15	0.24	0.2	0.14	0.18
Hwys 60 & 41	92	0.60	0.93	0.74	0.44	0.68
Hooker's Pt.	115	0.14	0.26	0.6	0.28	0.32

The CRSTER model does not generate 90 day averages. To demonstrate the insignificance of the lead emissions on Station 92 the the highest 24-hour value will be used.

Flouride Analysis

By proportioning the respective emission rates the modeled data can be used to determine the highest concentration of flourides expected from the Project. The flouride concentration should be 32.6 TPY/1142 TPY or 2.8% of the sulfur dioxide concentration. The maximum 1-hour concentration is modeled to be 2.8 ug/m^3. The Occupational Safety and Health Administration threshold limiting value (TLV) for hydrogen flouride is 2.0 mg/m^3. The Project's impact is less than 2/10 of 1% of the TLV, and will not be significant.

Nitrogen Oxides

The Hillsborough Environmental Protection Commission data indicate that the highest annual average between 1975 and 1979 is 68 ug/m^3 in 1977. By proportioning the modeling results by the emission rates the nitrogen oxides are equal to 1233 TPY/1142 TPY or 108% of the sulfur dioxide values. The maximum annual nitrogen oxide impact is modeled to be 2.4 ug/m^3. This value added to the highest annual average gives a maximum annual concentration of 70 ug/m^3. When compared to the federal standard of 100 ug/m^3 it can be seen that the area will remain attainment for nitrogen oxides.

Mercury and Beryllium

The projected impact from the emissions of Mercury and Beryllium were shown in Table 3-2. Their worst impact are 1/3 and 1/8 of the de minimis values. The de minimis values are determined to be that value below which no impact is assumed to occur and the commitment of applicant and review authority resources would not be productive.

The NESHAP rules for Beryllium (40CFR61.30) require that no more than 10 grams/day be emitted. The conservative data used in these estimates indicate an emission rate of less than seven (7) grams of Beryllium per day. The NESHAP rules for Mercury (40CFR61.50) are applicable to those sources that process mercury ore, use mercury chlor-alkali cells, or dry and/or incinerate wastewater treatment plant sludges. Neither Facility I nor the Facility 2 is planned to process or burn any wastewater treatment plant sludges.

please note these values are for 2 facilities while only 1 was constructed at McKay Bay

The highest annual sulfur dioxide value determined in 5 years of modeling occurs due east of the Project site near Station 92 and is 24 ug/m^3. The impact of lead can be proportioned by comparing the emission rates of lead to sulfur dioxide. The Project will emit 32.6 TPY of lead and 1142 TPY of sulfur dioxides. The lead impact will be 32.6/1142 or 2.9% of the sulfur dioxide impact. Thus the lead concentration at Station 92 is modeled to be 0.70 ug/m^3. When added to the past years highest quarterly average of 0.93 ug/m^3 value barely exceeds the standard. This assumes the highest 24-hour average modeled over 5 years would somehow be a quarterly average.

Summary - Lead Analysis

Based on the data this Project will not endanger the National Ambient Air Quality Standard of 1.5 ug/m^3.

Carbon Monoxide Analysis

To determine the highest concentration of carbon monoxide attributable to the Project, the concentration modeled for sulfur dioxide will be proportioned by the emission rates 258 TPY/1142 TPY or 23% of the sulfur dioxide value. Table 3-11 shows the modeled impacts of the Project. To best utilize our modeling for a conservative analysis, the 8-hour values are actually the values modeled for a 3-hour average.

Table 3-11
Maximum Carbon Monoxide Concentrations
(micrograms/cubic meter)

	N	NE	E	SE	S	SW	W	NW
8 Hour (3-hr.)	12	17	18	10	11	13	17	15
1 Hour	21	23	22	19	19	23	23	23

The carbon monoxide NAAQS standards are 40,000 and 10,000 ug/mg for 1 hour and 8 hour average respectively. The area is attainment for carbon monoxide. The Project will not have a significant impact on the ambient levels of carbon monoxide.

HILLSBOROUGH COUNTY
ENVIRONMENTAL PROTECTION
COMMISSION

RODNEY COLSON
RON GLICKMAN
PAM IORIO
RUBIN E. PADGETT
JAN KAMINIS PLATT
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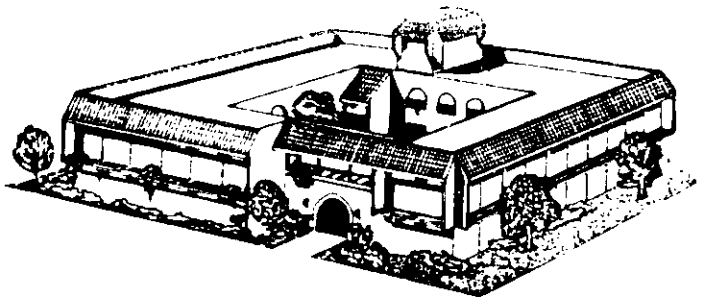

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DER

FEB 2 1987

BAQM

Test Data from Mckay Bay

MEMORANDUM

Date January 29, 1987

To Jim Estler thru Bill Thomas, DER

From Victor San Agustin VSA thru Jerry Campbell JC EPC

Subject: New Operating Permit for McKay Bay RTE Project

Performance tests performed on all units in September, 1985, Jan. (NOx) and Aug. (Be), 1986 indicate the following actual emissions:

Stack.

Pollutant	Actuals (lbs/hr) Unit #1	Unit #2	Unit #3	Unit #4	Total Actual (lbs/hr)	Allowable (lbs/hr)	lbs/MMBtu
PM (gr/dscf)	0.015	0.022	0.0028	0.012	- -	0.025 gr/dscf	
SO2	28.21	33.3	27.53	50.85	139.9	170.0	.37
NOx	28.27	11.13	25.0	30.4	94.8	300.0	.25
VOC	0.87	0.37	0.71	0.72	2.67	9.0	.007
Pb	0.099	0.098	0.093	0.112	0.402	3.1	.0011
F	0.35	0.41	0.64	0.89	2.29	6.0	.0061
Hg	0.068	0.079	0.098	0.105	0.35	0.6	.0009
Be	0.000019	<0.000012	0.000034	<0.000012	<0.000077	0.00046	@ .05%
VE (%)*		1.5%		8.8%		- -	
CO	5.3	6.07	4.8	5.7	21.87	- -	0.058

*V.E.'s were performed when 1/2 and 3/4 were operating simultaneously. 1/2 share the same stack and so do 3/4.

You will note from the above that there is yet no applicable v.e. standard. The state construction permit requires that a standard be established as a surrogate compliance method in the operation permit. Furthermore, Bruce Miller of EPA informed City of Tampa in a February 14, 1986, letter (enclosed) that opacity is an indirect indication of compliance with McKay Bay RTE's particulate emission limit. The stack's visible emissions standard should therefore be based upon the results of simultaneous VE/TSP performance tests conducted in September, 1985. The values below indicate a correlation between mass and particulate emissions.

Date	Source/s	Time	Opacity	Mass Emissions
9/18/85	Units 3 and 4	11:30 AM-1:30 PM	8.8%	0.012 gr/dscf
9/19/85	Units 1 and 2	1:20 PM-3:20 PM	1.5%	0.013 gr/dscf

The next question which needs to be tackled is-knowing the mass emissions/ opacity correlation, how is the allowable opacity determined? Before this question is answered, I feel we should look at allowable opacity/mass emission standards implemented on other plants. Below is a listing obtained from BAQM's Barry Andrews:

RTE Facility Location	VE Standard	PM Mass Emission Standard gr/dscf
Pinellas County	10%	0.03
North Broward County	15%	0.015
South Broward County	15%	0.015
Lake County	15%	0.02
Collier County	15%	0.015
Palm Beach County	15%	0.015
Bay County	10%	0.015
Hillsborough County (Faulkenberg Road)	15%	0.021

Considering the above facts, I recommend we stipulate 15% as an indication of compliance with the particulate standard of 0.025 gr/dscf.

I recommend approval to issue an operating permit with the following conditions:

1. Total maximum allowable emissions from all four process lines shall be:

Pollutant	Emission Limitation
Particulate	0.025 gr/dscf, corrected to 12% CO2 and 27.9 lb/hr
Sulfur Dioxide	170.0 lb/hr
Nitrogen Oxides	300.0 lb/hr
VOC	9.0 lb/hr
Lead	3.1 lb/hr
Fluoride	6.0 lb/hr
Mercury (vaporous and particulate)	0.6 lb/hr
Beryllium	5 grams/24 hour period and 0.00046 lb/hr

2. Visible emissions from each exhaust stack shall not exceed 15% opacity.

3. Compliance with the emission limitations of Specific Conditions Nos. 1 & 2 shall be determined using EPA Methods 1, 2, 3, 5, 6, 7, 12, 13A/13B, 25A/ 25B, 101A and 104 contained in 40CFR60, Appendix A, and/or adopted by reference in Section 17-2.700, F.A.C. The minimum requirements for stack sampling facilities, source sampling and reporting, shall be in accordance with Section 17-2.700, F.A.C. and 40CFR60, Appendix A. (DER #94).

4. Test the emissions from each unit for the following pollutants at intervals of 12 months from September 18, 1986 and submit 2 copies of test data to the Air Section of the Environmental Protection Commission of Hillsborough County within forty-five (45) days of testing. Testing procedures shall be consistent with the requirements of Section 17-2.700, F.A.C.

(X) Particulates
(X) Opacity*
(X) Sulfur Dioxide
(X) Nitrogen Oxides
( ) Volatile Organic Compounds
(X) Lead
( ) Total Fluorides
( ) Mercury (vaporous and particulate)
( ) Beryllium

*The visible emissions test for each unit shall be at least 60 minutes in duration and shall be conducted simultaneously with the particulate stack test. Additional visible emissions tests shall be performed on each stack exhaust during simultaneous operation of Units 1 & 2 and of 3 & 4.

5. The Hillsborough County Environmental Protection Commission shall be notified in writing 15 days in advance of any compliance test to be conducted on this source. (DER #100)

6. Testing of emissions from each unit must be accomplished within ± 10% of maximum charging rate of 10.5 TPH of municipal waste. The actual charging rate during each test run shall be specified in each test run. Failure to submit the input rates or operation at conditions which do not reflect actual operating conditions may invalidate the data [Section 403.161(1)(c), Florida Statutes].(DER #72)

7. Submit for this facility, each calendar year, on or before March 1. an emission report for the preceding calendar year containing the following information as per Section 17.4.14, F.A.C.

   (A) Annual amount of materials and/or fuels utilized.
   (B) Annual emissions (note calculation basis).
   (C) Any changes in the information contained in the permit application.

   Duplicate copies of all reports shall be submitted to the Hillsborough County Environmental Protection Commission. (DER #102)

8. Pursuant to 40CFR60.7, a written report of excess emissions shall be reported in a quarterly report. For purposes of this report, excess emissions shall be all air pollutant emissions in excess of the permitted levels stated in conditions 1 and 2 of this permit. Quarterly reports shall be submitted no later than 30 days from the end of each calendar quarter.

9. Pursuant to Section 17-4.09, F.A.C., an application for renewal of permit to operate this source shall be submitted to the Hillsborough County Environmental Protection Commission at least 60 days prior to its expiration date. (DER #105)

10. Pursuant to 40CFR60.53, Subpart E, the permittee shall record the daily charging rates and hours of operation of each unit.

11. A continuous monitoring system to determine in-stack opacity from each exhaust stack shall be calibrated, operated, and maintained in accordance with Section 17-2.710(1), F.A.C.

12. All reasonable precautions shall be taken to prevent and control generation of unconfined emissions of particulate matter in accordance with the provision in Section 17-2.610(3), F.A.C. These provisions are applicable to any source, including, but not limited to, vehicular movement, transportation of materials, construction, alterations, demolition of wrecking, or industrial related activities such as loading, unloading, storing and handling. (DER # 74)

13. Pursuant to Section 17-2.250(1), F.A.C., excess emissions resulting from start-up, shutdown, or malfunction of any unit shall be limited to a total of 2 hours in any 24 hour period provided best operational practices are adhered to and the duration of excess emissions are minimized. Best operational practices shall include but are not limited to ensuring that the control device (the electrostatic precipitator) is operational whenever material is being combusted in the furnace.

14. Operation and Maintenance Plan for Particulate Control [Section 17-2.650(2), F.A.C.].

A. Process Parameters:
1. Source Designator: Units #1 -4
2. Maximum Charging Rate: 250 tons per day per unit, 1000 tons per day total
3. Maximum Heat Input Rate: 2,250 MMBTU/day/line, 9,000 MMBTU/day total
4. Permitted Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr
5. Furnace Temperature: 2200-2400°F
6. Fuel Type: Unsorted Municipal Waste
7. Design Fuel Analysis: Carbon- 25.6%, Nitrogen- 0.58%, Hydrogen- 3.7%, Sulfur- 0.3%, Oxygen- 22.75%, Moisture- 30.0%, Non-combustibles- 18.0%
8. Combustion Conditions: 50-80% excess air 7-11% O2 in flue gas
9. Steam Pressure: 650 psig
10. Steam Temperature: 700 F
11. Steam Production: 208,400 lbs/hr total normal flow rate
12. Maximum Permitted Electrical Output: 25 MW

B. Pollution Control Equipment Parameters:
1. Control Equipment Type: 4 Electrostatic Precipitators
2. Model Name and No: F.L. Smidth Model F300
3. Design Flow Rate: 37,430 dscfm/line, 75,000 dscfm/stack
4. Primary Voltage: 480V
5. Primary Current: 89A
6. Secondary Voltage: 25,000 - 45,000 VDC
7. Secondary Current: 800 mA
8. Design Collection Efficiency: 99.45%
9. Stack height Above Ground: 160 ft/stack
10. Stack Diameter: 5.75 ft. each stack
11. Exit Gas Temperature: 540 F each stack

C. The following observations, checks, and operations apply to this source and shall be conducted on the schedule specified.

Continuously Monitored

1. Opacity
2. Temperatures-a. ESP Inlet and Outlet
   b. Furnace
   c. Bypass
   d. Kiln Outlet
   e. Boiler Inlet
   f. Primary and Secondary Superheater
3. Pressures - a. Primary Superheater Steam
   b. Secondary Superheater Steam

Every 2 Hours

1. Monitor/inspect fly ash removal equipment
2. Read instruments on A.V.C.'s
3. Observe rapper operation
4. Observe pressures and temperatures throughout system
5. Observe visual emissions
6. Observe all fans for proper operation
7. Inspect precipitator externals for hot spots, air infiltration, etc.
8. Observe fly ash silo operation
9. Monitor ash temperature
10. Primary Voltage
11. Primary Current
12. Secondary Voltage
13. Secondary Current
14. Spark Rate Rapper Frequency
15. Rapper Vibrator Frequency
16. Rapper Vibrator Duration

Daily

1. Clean opacity monitor lenses
2. Monitor T/R temperatures
3. Check gear box reservoir oil levels
4. Monitor charging rate per line
5. Monitor hours of operation per line

Weekly

1. Calibrate opacity monitor
2. Lubricate all external bearings, chains, idlers, sprockets
3. Lubricate fly ash collecting equipment

Quarterly (During Outages)

1. Inspect precipitator internals; observe dust build up, corrosion
2. Check alignment of plates and electrodes
3. Inspect rappers, observe for cracking on rapper frame assembly
4. Clean rapper insulator bushing
5. Clean electrode bushings
6. Check screw conveyor bearings
7. Inspect all field connections, door frames, duct connections for corrosion
8. Replace door frame gaskets as needed
9. Inspect internal structural members for corrosion and integrity
10. Clean relay cabinets, clean motor starter and relay contacts
11. Check hopper heaters for proper operation
12. Check insulator housing heaters for proper operation
13. Lubricate key interlock system
14. Check resistance to ground by meggering
15. Record all control points on AVC Microprocessor

Annually

1. Perform smoke bomb test on housing (optional)
2. Ultrasonic thickness test on hoppers, inlet distribution baffles
3. Check thickness of inlet electrode wires
4. Check Filter Earth Connection (Ground)
5. Inspect collecting plates for corrosion
6. Check external structural members for integrity
7. Scan surfaces with optical pyrometer, checking insulation (Running)
8. Run T/R oil analysis

D. Records
Records of inspection, maintenance, and performance parameters shall be retained for a minimum of two years and shall be made availble to the Department or Environmental Protection Commission of Hillsborough County upon request [Subsection 17-2.650(2)(g)5., F.A.C.]

15. Municipal waste and infectious waste shall burned in the facility. Waste oil collected from spills cleaned up by the Port Authority not exceeding 10,000 gallons per day from tanker trucks or 10 tons per day of fiber drums shall also be burned. Wastewater treatement plant sludges or hazardous wastes shall not be incinerated.

16. Electrical output for sale to Tampa Electric Company (TECO) shall not exceed 25 MW.

17. The above stated emission limitations are based upon the best estimates of the permittee. Any change in the information submitted in the application regarding facility emissions or changes in the quantity or quality of materials processed that will result in new or increased emissions must be reported to the permitting authority. If appropriate, the permitting authority may then institute procedures to amend the permit conditions.

cc: Greg Grotecloss, City of Tampa
Bill Engel, TWMI

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT

7601 HIGHWAY 301 NORTH
TAMPA, FLORIDA 33610

813-985-7402
SunCom - 570-8000

PERMITTEE

Ms. Nancy McCann
Urban Environmental Coordinator
Office of Environmental Coordination
City of Tampa
City Hall Plaza, 5N
Tampa, FL 33602

PERMIT/CERTIFICATION

Permit No.:
County: Hillsborough
Expiration Date:
Project: McKay Bay Refuse-to-Energy Facility

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

For the operation of 4-250 TPD (each) municipal waste incinerators designated as Units 1, 2, 3, and 4 respectively from the west to east. Each incinerator is equipped with a 37,430 scfm F.L. Smidth Model F300, 2 field electrostatic precipitator to control particulate emissions. Units 1 and 2 share the same stack exhaust. Units 3 and 4 share the same stack exhaust. Each stack exhaust is equipped with a certified opacity monitor.

Location: 107 North 34th St., Adjacent to McKay Bay, Tampa

UTM: 17-360.0E 3091.9N NEDS NO: 0127 Point ID: 01-Unit #1
02-Unit #2
03-Unit #3
04-Unit #4

Replaces Permit No.: AC29-47277