SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and addressee's address. †*(Extra charge)*†
2. ☐ Restricted Delivery †*(Extra charge)*†

3. Article Addressed to:

Mr. Garrett Sloan, Director
Miami-Dade Water & Sewer Auth.
3575 LeJeune Road
P.O. Box 330316
Miami, FL 33233-0316

4. Article Number
P 274 007 461

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X R Rvarens

6. Signature — Agent
X

7. Date of Delivery
9 29 88

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

P 274 007 461

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. Garrett Sloan, MDWSAD	
Street and No. P.O. Box 330316	
P.O., State and ZIP Code Miami, FL 33233-9316	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 9-27-88 Permit: AC 13-146961	

★ U.S.G.P.O. 1985-480-794
PS Form 3800, June 1985

Florida Department of Environmental Regulation

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

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. Garrett Sloan
Director
Miami-Dade Water and Sewer Authority Dept.
3575 LeJeune Road
Post Office Box 330316
Miami, Florida 33233-0316

September 26, 1988

Enclosed is permit No. AC 13-146961, for Miami-Dade Water and Sewer Authority Department to construct three 900 kW methane gas fueled internal combustion engines at the South District Wastewater Treatment Plant in Miami, Dade County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any Party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copy furnished to:

R. Cuevas, P.E., MDWSAD
I. Goldman, SE Florida District
P. Wong, DERM
B. Pittman, Esq., DER

Final Determination

Miami-Dade Water and Sewer Authority Department
South District Wastewater Treatment Plant
Dade County
Miami, Florida

Construction Permit Number
AC 13-146961

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Quality Management
Central Air Permitting

September 21, 1988

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on 9-27-88.

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

Judy Rogers
Clerk

9-27-88
Date

Final Determination

Miami-Dade Water and Sewer Authority Department
South District Wastewater Treatment Plant
Dade County
Miami, Florida

Construction Permit Number
AC 13-146961

Department of Environmental Regulation
Division of Air Resources Management
Bureau of Air Quality Management
Central Air Permitting

September 21, 1988

Final Determination

The construction permit application has been reviewed by the Department. Public Notice of the Department's Intent to Issue was published in The Miami Herald on August 24, 1988. The Technical Evaluation and Preliminary Determination were available for public inspection at the Dade County Environmental Resources Management office, the DER's Southeast Florida District office, and the DER's Bureau of Air Quality Management office.

There were no comments received during the public notice period. Therefore, it is recommended that the construction permit be issued as drafted.

Florida Department of Environmental Regulation

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

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

PERMITTEE:
South District Wastewater
Treatment Plant
Miami-Dade Water and
Sewer Authority Dept.
3575 S. LeJeune Road
Miami, FL 33133

Permit Number: AC 13-146961
Expiration Date: December 31, 1990
County: Dade
Latitude/Longitude: 25° 33' 33" N
80° 21' 04" W
Project: Construction of Three (3) 900 kW Methane Gas (Digester Gas) Fueled Combustion Engines, Each With an Associated Electrical Generator

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (FAC) Rules 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved 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 construction/installation of three 900 kW methane gas (digester gas) fueled internal combustion engines, each with an associated electrical generator. Each prime mover will have 12 cylinders and will be turbocharged. The UTM coordinates are Zone 17, 565.2 East and 2826.9 km North. The South District Wastewater Treatment Plant is located at 8950 SW 232nd Street, Miami, Dade County, Florida.

Construction shall be in accordance with the permit application and plans, documents, amendments, and drawings submitted, except as noted in the General Conditions and the Specific Conditions.

Attachments to be Incorporated:

1. Application package to Construct Air Pollution Sources, DER Form 17-1.202(1), received by the SE Florida District on February 22, 1988.
2. Mr. Garrett Sloan's letter and processing fee received March 14, 1988.
3. Mr. C. H. Fancy's letter dated April 12, 1988.
4. Mr. Robert A. Cuevas's letter with enclosures received June 9, 1988.
5. Technical Evaluation and Preliminary Determination dated August 11, 1988.

PERMITTEE:
South District Wastewater
Treatment Plant

Permit Number: AC 13-146961
Expiration Date: December 31, 1990

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

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

a. a description of and cause of non-compliance; and

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

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

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

SPECIFIC CONDITIONS:

1. Maximum annual hours of operation shall not exceed 8,400 per electrical generating unit (prime mover and associated generator).

2. Maximum total hours of operation for all three electrical generating units shall not exceed 16,800 hours per year.

3. Each electrical generating unit shall be equipped with a timing device to record the actual time of operation and it shall be electrically interlocked with the starter.

SPECIFIC CONDITIONS:

4. Maximum allowable pollutant emissions are as follows:

Source	Pollutant	Emission Limiting Standard	Allowable Emission Limit lbs/hr	TPY
1 Unit	NOx	250 ppm by vol., corrected to 15% O_2 on a dry basis	9.7	40.8
All Units	NOx			81.6
All Units	Visible Emissions		Less than 20% opacity	

Note: o 1 unit - based on 8,400 annual hours of operation
o All units - based on 16,800 total annual hours of operation
o NOx - nitrogen oxides

5. Objectionable odors shall not be allowed off plant property.

6. Compliance tests shall be required in accordance with FAC Rule 17-2.700. NOx and visible emissions compliance tests shall be performed using EPA Method 7 and 9, respectively. Test reports shall be submitted to the DER's Southeast Florida District office and the Dade County Environmental Resources Management (DERM) office within 45 days after the last completed test run. For compliance testing, each office shall be notified 15 days prior to testing, or within a time frame coordinated and approved by each office.

7. To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, compliance test results, and Certificate of Completion to the Department's Southeast Florida District office and the DERM office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit's expiration date requires a valid permit to operate in accordance with FAC Rules 17-2 and 17-4.

PERMITTEE:
South District Wastewater
Treatment Plant

Permit Number: AC 13-146961
Expiration Date: December 31, 1990

SPECIFIC CONDITIONS:

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct, which can take up to 90 days to process a complete application in accordance with FAC Rule 17-4.

8. Any change in the method of operation, raw materials and chemicals processed, equipment, or operating hours pursuant to FAC Rule 17-2.100(118), Modification, shall be submitted for approval to the DER's Bureau of Air Quality Management office, the DER's Southeast Florida District office, and the DERM office.

Issued this 22 day of Sep, 1988

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Dale Twachtmann

Dale Twachtmann, Secretary

ATTACHMENTS AVAILABLE UPON REQUEST

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

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

Interoffice Memorandum

TO: Dale Twachtmann

FROM: Steve Smallwood for

SUBJ: Approval of Construction Permit No. AC 13-146961
Miami-Dade Water and Sewer Authority Department
South District Wastewater Treatment Plant

DATE: September 21, 1988

Attached for your approval and signature is a permit prepared by Central Air Permitting for the above mentioned company to construct three 900 kW methane gas fueled internal combustion engines, each with an associated electrical generator.

There were no comments received during the public notice period.

Day 90, after which this permit will be issued by default, is October 20, 1988.

I recommend your approval and signature.

SS/BM/s

attachments

Check Sheet

Company Name: MIAMI DADE SEWER AND WATER AUTHORITY
Permit Number: AC13-146961, -146962, -146963
PSD Number: FL-132
Permit Engineer:

Application:

- ☑ Initial Application
  - ☑ Incompleteness Letters
  - ☑ Responses
  - ☐ Waiver of Department Action
  - ☐ Department Response
  - ☐ Other

Cross References:

- ☐
- ☐
- ☐

NOTE:
146962 & 146963
WERE WITHDRAWN

Intent:

- ☑ Intent to Issue
- ☑ Notice of Intent to Issue
- ☑ Technical Evaluation
- ■ BACT or LAER Determination
- ☐ Unsigned Permit

  Correspondence with:
  - ☐ EPA
  - ☐ Park Services
  - ☐ Other
- ☐ Proof of Publication
  - ☐ Petitions - (Related to extensions, hearings, etc.)
  - ☐ Waiver of Department Action
  - ☐ Other

Final Determination:

- ☑ Final Determination
- ☑ Signed Permit
- ■ BACT or LAER Determination
  - ☐ Other

Post Permit Correspondence:

- ☐ Extensions/Amendments/Modifications
- ☐ Other

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Mr. Anthony Clementa, Director
Miami-Dade Water & Sewer Auth.
P. O. Box 330316
Miami, FL 3323309316

4a. Article Number
P 872 563 688

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 563 688

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mr. Anthony Clementa	
Street and No. MDW&SA P. O. Box 330316	
P.O., State and ZIP Code Miami, FL 33233-0316	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date Mailed: 11-4-94 Permit: AC13-81284 AC13-146961	

PS Form 3800, JUNE 1991

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

November 1, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Anthony Clemente, Director
Miami-Dade Water & Sewer Department
P. O. Box 330316
Miami, Florida 33233-0316

Dear Mr. Clemente:

Re: Amendment to Permits
AC13-81284/AO13-244408
AC13-146961/AO13-244406

The Department of Environmental Protection (Department) has received CH2M Hill's September 8, 1994 letter (enclosed) requesting the referenced permits be amended to allow the use of a different emission test method.

The request is acceptable. This letter authorizes the use of EPA Reference Method 7E, as described in 40 CFR 60, Appendix A, to measure the nitrogen oxides emissions from the internal combustion engines at the Virginia Key and Black Point wastewater treatment plants.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the applicant of the amendment request/application and the parties listed below must be filed within 14 days of receipt of this amendment. Petitions filed by other persons must be filed within 14 days of the amendment issuance or within 14 days of their receipt of this amendment, whichever occurs first. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such

person may have to request an administrative determination (hearing) under Section 120.57, F.S.

The Petition shall contain the following information:

(a) The name, address and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
(g) A statement of the relief sought by petitioner, stating precisely the action the petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this amendment. Persons whose substantial interests will be affected by any decision of the Department with regard to the request/ application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this amendment in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

A copy of this letter shall be filed with the referenced permits and shall become a part of the permits.

Sincerely,

Howard L. Rhodes
Director
Division of Air Resources
Management

HLR/WH/bjb

Enclosure: CH2M Hill September 8, 1994 letter.

cc: Tom Tittle, SED
Al Linero, CH2M Hill

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this AMENDMENT and all copies were mailed by certified mail before the close of business on 11/4/94 to the listed persons.

Clerk Stamp
FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to 120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Charlotte J. Hayes 11/4/94
Clerk Date

Florida Department of
Environmental Protection

Memorandum

TO: Howard L. Rhodes

FROM: Clair Fancy

DATE: November 1, 1994

SUBJECT: Amendment of Permits

Attached for your approval and signature is a letter that will amend the permits for the Miami-Dade Wastewater treatment plants. The amendment will allow the use of EPA Method 7E in lieu of EPA Method 7 to measure the nitrogen oxides emissions from digester gas internal combustion engines at these facilities.

I recommend your approval and signature.

CF/WH/bjb

Attachment

10-26-94
John, JB
Clair,
FYI, review, edit,
initial. Thanks,
Bruce

MEMORANDUM CH2M HILL

TO: Patty Adams, DEP/DARM

FROM: Al Linero, CH2M-Hill

DATE: October 20, 1994

SUBJECT: Miami-Dade Water and Sewer Department Permits No. AC13-81284 and No. AC13-146961 - Request for Permit Amendments

PROJECT: FLE36668.Y0

Per the attached, Miami-Dade sent $500. Any idea on status of request. We understood all that remained was receipt of the fee.

By the way, it turned out that the change requested in AC13-146961 was processed at the District a couple of years ago but our client was unaware of it. Please do not process it further and remit $250 to Miami-Dade WASD (unless it has already been processed). Please proceed on other request and advise.

I think it was given to Bruce Mitchell to review because he called me about the 5-digit number on one of the permits and we discovered the system will bring it up if a "0" is placed in front.

Thank you very much. Your help is appreciated.

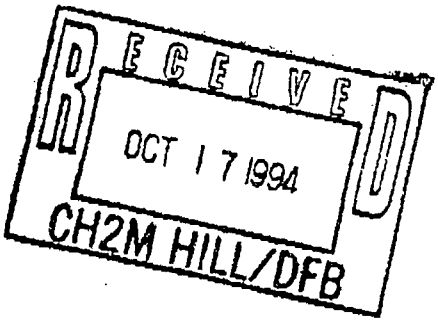
Please call me at (305)426-4008, ext 221 (or Len Drago, ext 228) if you have any questions or any news.

SERVE • CONSERVE

MIAMI-DADE WATER AND SEWER DEPARTMENT
4200 Salzedo Street, Coral Gables, Florida 33146 • Tel: 305-669-3700 • Fax: 669-3788

CERTIFIED: Z 146 691 522
RETURN RECEIPT

October 4, 1994



Mr. C.H. Fancy, Chief
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Miami-Dade Water and Sewer Department Permits No. AC13-81284 and No. AC13-146961 Request for Permit Amendments.

Dear Mr. Fancy:

Per your letter to Mr. Leonard C. Drago, CH2M HILL, dated September 13, 1994 (see attached), enclosed please find a check in the amount of $500.00, for processing the referenced request.

Should you have any questions, please call me at (305) 669-5711.

Sincerely,

Bertha M. Goldenberg, P.E.
Environmental Coordinator

BMG/rsl

Attachments

cc: Willard M. Hanks, DEP
Leonard C. Drago, CH2M HILL ✓

SERVE • CONSERVE

MIAMI-DADE WATER AND SEWER DEPARTMENT
4200 Salzedo Street, Coral Gables, Florida 33146 • Tel: 305-669-3700 • Fax: 669-3788

CERTIFIED: Z 146 691 522
RETURN RECEIPT

October 4, 1994

Mr. C.H. Fancy, Chief
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Miami-Dade Water and Sewer Department Permits No. AC13-81284 and No. AC13-146961 Request for Permit Amendments.

Dear Mr. Fancy:

Per your letter to Mr. Leonard C. Drago, CH2M HILL, dated September 13, 1994 (see attached), enclosed please find a check in the amount of $500.00, for processing the referenced request.

Should you have any questions, please call me at (305) 669-5711.

Sincerely,

B M Goldenberg

Bertha M. Goldenberg, P.E.
Environmental Coordinator

BMG/rsl

Attachments

cc: Willard M. Hanks, DEP
Leonard C. Drago, CH2M HILL

0006446

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

September 13, 1994

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Leonard C. Drago
CH2M Hill
2525 Coral Way, Suite 440
Miami, Florida 33145-3214

Dear Mr. Drago:

RE: Miami-Dade Water and Sewer Department
Permit No. AC13-81284 and No. AC13-146961
Request for Permit Amendments

The Bureau of Air Regulation has reviewed the above referenced request and determined that it will require permit amendments and a $500 processing fee ($250 for each permit). As soon as the fee is received, we will be begin processing your request. If you have any questions, please call Patty Adams at (904)488-1344.

Sincerely,

Patricia B. Adams

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

CHF/pa

cc: Willard Hanks

Engineers
Planners
Economists
Scientists

September 8, 1994

FLE36668.Y0

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

Subject: Request for Amendment of Permits AC13-81284, AC13-146961, AO-13-344406, AO13-244408 to Change NO_x Test Method

Dear Mr. Fancy:

On behalf of the Miami-Dade Water and Sewer Department (MDWASD), CH2M HILL requested an Alternative Sampling Procedure (ASP) in two separate letters dated August 15, 1994, to allow use of the more modern NO_x Method 7E in lieu of Method 7 at the co-generation units located at the Central District (Virginia Key) Wastewater Treatment plant and the South District Wastewater Treatment plant (Black Point). A copy of the two letters representing each facility are attached for your information along with the pages from the operating permits listing the testing methods.

Mike Harley of your staff informed us that an ASP approval is not necessary for the following reasons:

1. There is no specific method indicated in FAC 17-297 for gas-driven digester engines.

2. Method 7E is already a Department-approved method in FAC 17-297 for NO_x emissions concentrations.

3. Method 7 and 7E measure the same pollutant.

Also, we consulted Willard Hanks of your staff who agreed with Mike's rationale and advised us that the procedure is to request an amendment to the affected permits.

METRO-DADE

METROPOLITAN DADE COUNTY, FLORIDA 063666 63-643/670

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT-POOLED CASH FUND 0006446

VOID AFTER SIX MONTHS
FIRST UNION NATIONAL BANK
OF FLORIDA
MIAMI, FLORIDA 33131

Date	Control Number	Amount of Check
09/22/94	00063666	$500.00

PAY EXACTLY ******500 DOLLARS AND 00 CENTS

To The Order Of

STATE OF FLORIDA DEPT
OF ENVIRONMENTAL REG
2600 BLAIR STONE ROAD
TALLAHASSEE FL
32399-2400

[redacted]

BOARD OF COUNTY COMMISSIONERS
CHAIRPERSON
CLERK

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT
POOLED CASH FUND
P.O. BOX 330316 • MIAMI, FLORIDA 33233-0316

CHECK NO.
063666

DATE	PAYEE NAME
09/22/94	STATE OF FLORIDA DEPT

INVOICE DATE	INVOICE NUMBER	AMOUNT	PURCHASE ORDER NUMBER	DESCRIPTION
09-19-94	AIR PERMITS	500.00		
	TOTAL	500.00		

The attached check represents the amount due you from
Dade County as shown on file in the Clerk's Office. For additional information Contact (305) 665-7471

P 872 562 699

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to: Mr. Leonard C. Drago	
Street and No.: 2828 Coral Way, Suite 440	
P.O. State and ZIP Code: Miami, Florida 33145-3214	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date: Mailed: 9/14/94 AC13-81284 & AC13-146961	

PS Form 3800, JUNE 1991

Is your **RETURN ADDRESS** completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Leonard C. Drago
CH2M Hill
2828 Coral Way, Suite 440
Miami, Florida 33145-3214

4a. Article Number
P 872 562 699

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
SEP 16 1994

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form **3811**, December 1991 *U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

September 13, 1994

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Leonard C. Drago
CH2M Hill
2828 Coral Way, Suite 440
Miami, Florida 33145-3214

Dear Mr. Drago:

RE: Miami-Dade Water and Sewer Department
Permit No. AC13-81284 and No. AC13-146961
Request for Permit Amendments

The Bureau of Air Regulation has reviewed the above referenced request and determined that it will require permit amendments and a $500 processing fee ($250 for each permit). As soon as the fee is received, we will be begin processing your request. If you have any questions, please call Patty Adams at (904)488-1344.

Sincerely,

Patricia B. Adams

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

CHF/pa

cc: Willard Hanks

CH2M HILL
Engineers
Planners
Economists
Scientists

September 8, 1994

FLE36668.Y0

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

Subject: Request for Amendment of Permits AC13-81284, AC13-146961, AO-13-344406, AO13-244408 to Change NO_x Test Method

Dear Mr. Fancy:

On behalf of the Miami-Dade Water and Sewer Department (MDWASD), CH2M HILL requested an Alternative Sampling Procedure (ASP) in two separate letters dated August 15, 1994, to allow use of the more modern NO_x Method 7E in lieu of Method 7 at the co-generation units located at the Central District (Virginia Key) Wastewater Treatment plant and the South District Wastewater Treatment plant (Black Point). A copy of the two letters representing each facility are attached for your information along with the pages from the operating permits listing the testing methods.

Mike Harley of your staff informed us that an ASP approval is not necessary for the following reasons:

1. There is no specific method indicated in FAC 17-297 for gas-driven digester engines.
2. Method 7E is already a Department-approved method in FAC 17-297 for NO_x emissions concentrations.
3. Method 7 and 7E measure the same pollutant.

Also, we consulted Willard Hanks of your staff who agreed with Mike's rationale and advised us that the procedure is to request an amendment to the affected permits.

CH2M HILL
2828 Coral Way Building, 2828 Coral Way, Suite 440
Miami, Florida 33145-3214
305.443.6401
FAX 305.443.8856

The reason for the request is lower cost, but more accurate tests at publicly-owned utilities. We request early action on the Amendment to allow its use on the tests which must be conducted by September 30, 1994.

If you have any questions, please contact me at (305) 426-4008, extension 228, or Al Linero at extension 221.

Sincerely,

CH2M HILL

Leonard C. Drago

DFB10013F12.DOC

cc: Izzy Goldman, P.E., FDEP Southeast District, West Palm Beach
Stephanie Brooks, P.E., FDEP Southeast District, West Palm Beach
Tom Tittle/ FDEP Southeast District, West Palm Beach
Willard Hanks, P.E., FDEP-Tallahassee
Robert C. Ready, Assistant Director, Treatment Facilities, Miami-Dade WASD
Bertha M. Goldenberg, P.E., Process Engineer, Miami-Dade WASD
A.A. Linero, P.E., Environmental Engineer, CH2M HILL

Engineers
Planners
Economists
Scientists

August 15, 1994

FLE36668.Y0

Mr. Howard L. Rhodes, Director
Division of Air Resources Management
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. ~~Rhodes~~ Howard:

Subject: Approval of Alternate Air Sampling Procedures
Miami-Dade WASD South District Wastewater Treatment Plant
FDEP Permit AO 13-244406

We request approval to use FAC 17-297.401(7)(e), "EPA Method 7E—Instrumental Method for determining Nitrogen Oxide Concentrations at Fossil Fuel Fired Steam Generators" in lieu of FAC 17-297.401(7), "EPA Method 7—Determination of Nitrogen Oxide Emissions from Stationary Sources."

The information in support of such approval under FAC 17-297.620, "Exceptions and Approval of Alternate Procedures and Requirements" is as follows:

a. The source is at referenced Miami-Dade WASD South District Wastewater Treatment Plant located at 8950 S.W. 232nd Street, Miami, Florida. The affected units are three 900 KW Methane gas-fueled generators permitted by FDEP (AO 13-244406).

b. No exception or alternative is sought from the methods in chapter FAC 17-297 as both methods are listed therein for measurement of Nitrogen Oxides. Miami-Dade WASD requests that approved "Method 7E" be allowed in lieu of "Method 7" cited in the above referenced permit.

c. We request that we be allowed to use Method 7E on the basis of cost to Miami-Dade WASD, safety of personnel conducting these tests, and more representative and accurate sampling.

Miami Office
2828 Coral Way, Suite 440
Miami, FL 33145-3214
305 443-6401
Fax No. 305 443-8856

The test series using Method 7E will cost approximately $4,500 versus $7,500 using Method 7. Although Method 7E is more sophisticated, it is simpler to use because a probe may be inserted into the exhaust stream and left there during the tests. This avoids having technicians climb to difficult, hot, and noisy access points numerous times with glassware, seeking to obtain what are only "grab samples." When using Method 7E, the instrumentation may be located in an air-conditioned instrument van.

d. The alternate procedure, "Method 7E", was developed by EPA specifically for sources burning fossil fuel. It is a modern instrumental method which draws a continuous sample from the exhaust stream and provides instantaneous readings.

EPA conducted equivalency tests and wrote detailed protocols (which the testing contractor must follow) prior to approving it for use. By adopting Method 7E by reference, DEP determined it's adequacy.

Miami-Dade WASD and its consultants did not dispute the specification of Method 7 when accepting the permit as it was believed that Method 7E was automatically allowable due to its reference to fossil fuel units. We were advised and agree that, in fact, an approval is needed in accordance with FAC 17-297.620.

We request an early decision since Miami-Dade WASD is required to test by September 30, 1994.

Sincerely,

CH2M HILL

A.A. Linero, P.E.
Project Manager

set/DFB10013E0D.WP5

c: Jim Pennington, Division of Air Resources Management, FDEP, Tallahassee
Mike Harley, P.E., Division of Air Resources Management, FDEP, Tallahassee
Tom Tittle, FDEP Southeast District, West Palm Beach
Robert C. Ready, Assistant Director, Treatment Facilities, Miami-Dade WASD
Bertha M. Goldenberg, P.E., Process Engineer, Miami-Dade WASD
Len Drago, CH2M-HILL

PERMITTEE:
South District Wastewater Treatment Plant
Miami-Dade Water & Sewer Authority
Miami, Florida. 33133

I.D. NUMBER: 50/WPB/13/0520
PERMIT/CERTIFICATION NUMBER: AO 13-244406
DATE OF ISSUE: MAR 17 1994
EXPIRATION DATE: January 15, 1996

SPECIFIC CONDITIONS:

1. Compliance testing shall be conducted for the sources covered by this permit by July 7, 1994, and annually thereafter in accordance with the methods specified below.

2. In accordance with AC 13-146961 issued September 22, 1988.

a. Maximum annual hours of operation shall not exceed 8,400 per electrical generating unit (prime mover and associated generator).

b. Maximum total hours of operation, for all three electrical generating units, shall not exceed 16,800 hours per year.

c. Each electrical generating unit shall be equipped with a timing device to record the actual time of operation and it shall be electrically interlocked with the starter.

d. Maximum allowable emissions are as follows:

Source	Pollutant	Emission Limiting Standard	Allowable Emission Limit lb./hr	TPY
1 Unit	NO_x	250 ppm by volume, corrected to 15% O_2 on a dry basis	9.7	40.8
All Units	NO_x			81.6
All Units	Visible Emissions		less than 20% opacity	

NOTE:

- 1 unit - based on 8,400 annual hours of operation.
- All units - based on 16,800 total annual hours of operation.
- NO_x - nitrogen oxides.

e. Objectionable odors shall not be allowed on off-plant property.

f. Compliance test shall be required in accordance with Florida Administrative Code (F.A.C.) Rule 17-297. NO_x and visible emissions compliance tests shall be performed using EPA Methods 7 and 9, respectively. Test reports shall be submitted to the DEP's Southeast Florida District Office and the Dade County Environmental Resources Management Office within 45 days after the last completed test run. For compliance testing, each office shall be notified 15 days prior to testing, or within a time frame coordinated and approved by each office.

~~Pauline~~ Willard

Please check with Nick K. at WPB – I don't know whether we are they FD are doing the AC mods.

Teresa,

Let me talk to you a minute about this.

Doug

Barbara? Please make a copy of these documents for the local air programs(C)

Teresa)

Please hold this
I sent copy to
the printer and
it should be ready
on 4/18 or 4/19.

Doug Scott

Cert. mail P 083652 755
PM 9-9-88 - Miami, FL

file copy

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

P. O. BOX 330316
MIAMI, FLORIDA 33233-0316

Main Office
3575 S. LeJeune Road
Telephone 665-7471

CERTIFIED MAIL RETURN
RECEIPT REQUESTED
NO. P 083 652 755

September 9, 1988

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: EPA Grant No. C-120377330,
Contract No. S-328
DER File No. AC 13-146961

Dear Mr. Fancy:

We are enclosing the proof of publication of the "Notice of Intent" for the subject contract. The contract covers the construction of three 900 kW Methane gas fueled internal combustion engine at the South District Wastewater Treatment Plant.

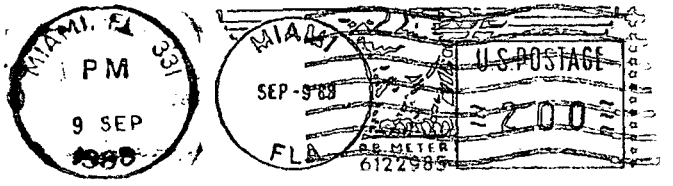
Very truly yours,

Bonnie P. Wells

Bonnie P. Wells
Grants Coordinator

BPW/fb
copied: Bruce Mitchell
S. Goldman, SE Dist.
P. Hong, DERM

MIAMI-DADE WATER AND SEWER
AUTHORITY DEPARTMENT
P.O. Box 330316
MIAMI, FLORIDA 33233-0316



CERTIFIED
P 083 652 755
MAIL

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

110.01-15 Rev. 7/85

The Miami Herald
A KNIGHT-RIDDER NEWSPAPER

PUBLISHED DAILY
MIAMI — DADE — FLORIDA

STATE OF FLORIDA
COUNTY OF DADE:

Before the undersigned authority personally appeared

ANN MARTULA

who on oath says that he/she is

CUSTODIAN OF RECORDS

of The Miami Herald, a daily newspaper published at Miami in Dade County, Florida; that the attached copy of advertisement was published in said newspaper in the issues of

AUGUST 24, 1988

Affiant further says that the said The Miami Herald is a newspaper published at Miami, in the said Dade County, Florida and that the said newspaper has heretofore been continuously published in said Dade County, Florida, each day and has been entered as second class mail matter at the post office in Miami, in said Dade County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Ann Martula

Sworn to and subscribed before me this 24th day of August A.D. 1988

My commission expires Elyse Bento

NOTARY PUBLIC STATE OF FLORIDA
MY COMMISSION EXP. MAR 15,1991
BONDED THRU GENERAL INS. UND.

Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Miami-Dade Water and Sewer Authority Department to construct three 900 kw methane gas fueled internal combustion engines, each with an associated electrical generator, at the South District Wastewater Treatment Plant, located at 8950 SW 232nd Street, Miami, Dade County, Florida.

The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207 Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

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

Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida
32399-2400

Dept. of Environmental Regulation
Southeast Florida District
1900 S. Congress Ave.
Suite A
P.O. Box 3858
West Palm Beach, Florida
33406

Dade County Department of Environmental Resources Management
Jose Marti Building
801 S.W. 3rd Avenue
2nd Floor
Miami, Florida 33130

Any person may send written comments on the proposed action to Mr. Bill Thomas, at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

August 24, 1988
Ad No. 560323R

S-328

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and addressee's address. *†(Extra charge)†*
2. ☐ Restricted Delivery *†(Extra charge)†*

3. Article Addressed to:

Mr. Garrett Sloan, Director
Miami-Dade Water and Sewer Auth.
3575 S. LeJeune Rd.
P.O. Box 330316
Miami, FL 33233-0316

4. Article Number
P 702 177 476

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery
8/15/88

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

P 702 177 476

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. Garrett Sloan, MDW&SA	
Street and No. P.O. Box 330316	
P.O. State and ZIP Code Miami, FL 33233-0316	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 8-12-88 Permit: AC 13-146961	

PS Form 3800, June 1985

File Copy

Florida Department of Environmental Regulation

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

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

August 11, 1988

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. Garrett Sloan
Director
Miami-Dade Water and Sewer Authority Dept.
3575 S. LeJeune Road
P. O. Box 330316
Miami, Florida 33233-0316

Dear Mr. Sloan:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for the Miami-Dade Water and Sewer Authority Department to construct three 900 kW methane gas fueled internal combustion engines, each with an associated electrical generator, at the South District Wastewater Treatment Plant located at 8950 SW 232nd Street, Miami, Dade County, Florida.

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

Sincerely,

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

CHF/bm

Attachments

cc: I. Goldman, SE FL Dist.
P. Wong, DERM
R. Cuevas, P.E., MDWSAD
B. Pittman, Esq., DER

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Miami-Dade Water and Sewer Authority Dept.
P. O. Box 330316
Miami, Florida 33233-0316

DER File No. AC 13-146961

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Miami-Dade Water and Sewer Authority Department, applied on February 22, 1988, to the Department of Environmental Regulation for a permit to construct three 900 kW methane gas fueled internal combustion engines, each with an associated electrical generator, at the South District Wastewater Treatment Plant, which is located at 8950 SW 232nd Street, Miami, Dade County, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit was needed for the proposed work.

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, FAC, you (the applicant) are required to publish at your own expense the enclosed Notice of Proposed Agency Action on permit applications. The notice must be published one time only in a section of a major local newspaper of general circulation in the county in which the project is located and within thirty (30) days from receipt of this intent. Proof of publication must be provided to the Department within seven days of publication of the notice. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S. A person whose substantial interests are affected by the

Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. Petitions must comply with the requirement of Florida Administrative Code Rules 17-103.155 and 28-5.201 (copy enclosed) and be filed with (received by) the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant must be filed within fourteen (14) days of receipt of this intent. Petitions filed by other persons must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this intent, whichever first occurs. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes, concerning the subject permit application. Petitions which are not filed in accordance with the above provisions will be dismissed.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

I. Goldman, SE FL Dist.
P. Wong, DERM
R. Cuevas, P.E., MDWSAD
B. Pittman, Esq., DER

RULES OF THE ADMINISTRATIVE COMMISSION
MODEL RULES OF PROCEDURE
CHAPTER 28-5
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed, typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on August 12, 1988.

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

Martha J. Wise — Clerk

August 12, 1988 — Date

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Miami-Dade Water and Sewer Authority Department to construct three 900 kW methane gas fueled internal combustion engines, each with an associated electrical generator, at the South District Wastewater Treatment Plant located at 8950 SW 232nd Street, Miami, Dade County, Florida.

The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

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

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Southeast District
1900 S. Congress Ave., Suite A
West Palm Beach, Florida 33406

Dade County Department of Environmental
Resources Management
Jose Marti Building
801 SW 3rd Avenue, 2nd Floor
Miami, Florida 33130

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

Technical Evaluation
and
Preliminary Determination

Miami-Dade Water and Sewer Authority Department
South District Wastewater Treatment Plant
Dade County
Miami, Florida

Construction Permit Number:
AC 13-146961

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

August 11, 1988

I. Application

A. Applicant

South District Wastewater Treatment Plant
Miami-Dade Water and Sewer Authority Department
3575 South LeJeune Road
Miami, Florida 33133

B. Project and Location

The applicant proposes to construct/install three new 900 kW methane gas fueled internal combustion engines (prime movers) and associated electrical generators.

The facility is located at 8950 Southwest 232nd Street, Miami, Dade County, Florida. The UTM coordinates are Zone 17, 565.2 km East and 2826.9 km North.

C. Process and Controls

Methane gas is generated from the digesting of sewage sludge. The collected gas will be scrubbed using chlorinated effluent water to remove hydrogen sulfide (H_2S) gas, which is a contaminant in digester methane gas. Two scrubber control systems will be constructed/installed.

After scrubbing the gas, it will be stored in two new 60-foot diameter storage spheres. Total storage capacity is estimated to be 580,000 scf at a maximum 40 psig.

The gas will then be transferred from the storage spheres to the prime movers for combustion. Of the three proposed new stationary sources, the applicant proposes to operate only two of them at a maximum of 8,400 hours each per year, while the other new source will be placed on a stand-by basis. The total annual hours of operation, all units, will not exceed 16,800.

II. Rule Applicability

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (FAC) Rules 17-2 and 17-4. The application was deemed complete June 9, 1988.

The existing facility is a minor facility for all polluants in accordance with FAC Rule 17-2.100(116).

The facility does not belong to any of the facility categories listed in Table 500-1, Major Facility Categories, and the sum of the potential emissions (see Table 1) of all the pollutants projected to be emitted from the proposed sources are

not equal to or greater than 250 TPY. Therefore, the proposed project's emissions are not subject to new source review requirements pursuant to FAC Rule 17-2.500, Prevention of Significant Deterioration (PSD).

Table 1

Source	Projected Potential Pollutant Emissions							
	NOx		SO_2		CO		NMHC	
	lbs/hr	TPY	lbs/hr	TPY	lbs/hr	TPY	lbs/hr	TPY
1 Unit	9.7	40.8	1.2	5.0	5.6	23.5	1.4	5.9
2 Units		81.6		10.0		47.0		11.8

Note:

- Unit: An internal combustion engine with an associated generator (900 KW; 1270 BHP; 14,090 scfh; 720 RPM; and, Coopers Ind. 12 GTL(B)-or equal)
- SO_2 - sulfur dioxide CO - carbon monoxide
- Based on 8,400 hours of operation per source with a maximum total hours of operation, all units, of 16,800
- One of the three proposed new sources is on a stand-by basis
- NOx potential emissions are based on 250 ppm by volume, corrected to 15 % O_2 on a dry basis
- SO_2 emissions are based on the projected H_2S input, assuming that 100% of the H_2S is converted to SO_2-SO_3 upon combustion
- CO emissions estimated from the manufacturer's guarantee: 2.0 gms/BHP-hr
- NMHC emissions estimated from the manufacturer's guarantee: 0.5 gm/BHP (estimated at 10% of total hydrocarbons)

The existing facility is located in Dade County, which is an area designated nonattainment for the pollutant ozone, pursuant to FAC Rule 17-2.410(1)(d). Volatile organic compounds (VOC), which are defined in FAC Rule 17-2.100(211), are precursors to ozone and are, therefore, reviewed in accordance with FAC Rule 17-2.510, New Source Review for Nonattainment Areas. Since the projected VOC emissions, in this case nonmethane hydrocarbons (NMHC), are less than 100 TPY, the emissions are not subject to review pursuant to FAC Rule 17-2.510.

Therefore, the proposed project's emissions are subject to review pursuant to FAC Rule 17-2.520, Sources Not Subject to PSD or Nonattainment Requirements.

For these proposed new sources, there is not an emission limiting and performance standard contained in FAC Rule 17-2.600, Specific Source Emission Limiting Standards, nor in FAC Rule 17-2.650(1), Reasonably Available Control Technology - Volatile Organic Compounds. Therefore, the proposed modification shall be

permitted in accordance with FAC Rule 17-2.610(2), General Visible Emissions Standard, and FAC Rule 17-2.620(2), General Pollutant Emission Limiting Standards - Objectionable Odors Prohibited.

In accordance with FAC Rule 17-2.610(2), no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere any air pollutants from new, or existing sources, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart, the opacity of which is equal to or greater than 20 percent.

In accordance with FAC Rule 17-2.620(2), no person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor. Therefore, objectionable odors shall not be allowed off plant property.

The applicant requested a NOx emission limit of 700 ppm by volume, corrected to 15% oxygen on a dry basis, which is the same limiting standard for NOx as presented in a proposed new source performance standard, 40 CFR 60, Subpart FF. However, with the manufacturer's guarantee of 105 ppm by volume, corrected to 15% oxygen on a dry basis, and the fact that the NOx emission standards in Subpart FF are going to be revisited and purported to be reduced dramatically, the Bureau feels that a NOx emission limiting standard of 250 ppm by volume, corrected to 15% oxygen on a dry basis, is achievable, provides a margin of safety for compliance purposes, and gives the Department the reasonable assurance that the source is being operated properly. With this emission limiting standard and by placing a cap on the total annual hours of operations, the proposed project is not subject to new source review pursuant to FAC Rule 17-2.500, PSD.

Compliance tests for visible emissions and NOx shall be required and shall be performed in accordance with FAC Rule 17-2.700, Stationary Point Source Emission Test Procedure. Visible emissions tests shall be performed using EPA Method 7. Frequency of tests, reporting, notification, etc., shall be in accordance with FAC Rule 17-2.700.

III. Summary of Emissions and Air Quality Analysis

A. Emission Limitations

The regulated pollutant emission rates/limits from this facility will be NOx and visible emissions. Table 2 will display the pollutants, their emission limiting standards, and the allowable emission limits for the proposed new sources:

Table 2

Source	Pollutant	Emission Limiting Standard	Allowable Emission Limit lbs/hr	Allowable Emission Limit TPY
1 Unit	NOx	250 ppm by vol., corrected to 15% O_2 on a dry basis	9.7	40.8
All Units	NOx			81.6
All Units	Visible Emissions		Less than 20% opacity	

Note:
- o Allowable emission limit is based on 8,400 hours per unit, with a maximum total hours of operation, all units, of 16,800.
- o One of the three proposed new sources is on a stand-by basis.

The permitted emissions are in compliance with all applicable requirements of FAC Rules 17-2 and 17-4.

B. Air Quality Impacts

From a technical review of the application package and supplementary material, an ambient air quality analysis was not required.

IV. Conclusion

The emission limiting standard for NOx of 250 ppm by volume, corrected to 15% oxygen on a dry basis, has been determined to be reasonable and shall become a condition in the proposed construction permit.

The permitted emissions should not have a significant impact on the ambient air quality standards.

The General and Specific Conditions listed in the proposed construction permit (attached) will assure compliance with all applicable requirements of FAC Rules 17-2 and 17-4.

Florida Department of Environmental Regulation

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

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

PERMITTEE:
South District Wastewater
Treatment Plant
Miami-Dade Water and
Sewer Authority Dept.
3575 S. LeJeune Road
Miami, FL 33133

Permit Number: AC 13-146961
Expiration Date: December 31, 1990
County: Dade
Latitude/Longitude: 25° 33' 33" N
80° 21' 04" W
Project: Construction of Three (3) 900 kW Methane Gas (Digester Gas) Fueled Combustion Engines, Each With an Associated Electrical Generator

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (FAC) Rules 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved 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 construction/installation of three 900 kW methane gas (digester gas) fueled internal combustion engines, each with an associated electrical generator. Each prime mover will have 12 cylinders and will be turbocharged. The UTM coordinates are Zone 17, 565.2 East and 2826.9 km North. The South District Wastewater Treatment Plant is located at 8950 SW 232nd Street, Miami, Dade County, Florida.

Construction shall be in accordance with the permit application and plans, documents, amendments, and drawings submitted, except as noted in the General Conditions and the Specific Conditions.

Attachments to be Incorporated:

1. Application package to Construct Air Pollution Sources, DER Form 17-1.202(1), received by the SE Florida District on February 22, 1988.
2. Mr. Garrett Sloan's letter and processing fee received March 14, 1988.
3. Mr. C. H. Fancy's letter dated April 12, 1988.
4. Mr. Robert A. Cuevas's letter with enclosures received June 9, 1988.
5. Technical Evaluation and Preliminary Determination dated August 11, 1988.

PERMITTEE:
South District Wastewater Treatment Plant

Permit Number: AC 13-146961
Expiration Date: December 31, 1990

GENERAL CONDITIONS:

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

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

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

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

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

GENERAL CONDITIONS:

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

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

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and,

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

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

a. a description of and cause of non-compliance; and

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

PERMITTEE:
South District Wastewater
Treatment Plant

Permit Number: AC 13-146961
Expiration Date: December 31, 1990

GENERAL CONDITIONS:

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

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

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

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

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

13. This permit also constitutes:

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

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

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

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

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

SPECIFIC CONDITIONS:

1. Maximum annual hours of operation shall not exceed 8,400 per electrical generating unit (prime mover and associated generator).

2. Maximum total hours of operation for all three electrical generating units shall not exceed 16,800 hours per year.

3. Each electrical generating unit shall be equipped with a timing device to record the actual time of operation and it shall be electrically interlocked with the starter.

SPECIFIC CONDITIONS:

4. Maximum allowable pollutant emissions are as follows:

Source	Pollutant	Emission Limiting Standard	Allowable Emission Limit lbs/hr	TPY
1 Unit	NOx	250 ppm by vol., corrected to 15% O_2 on a dry basis	9.7	40.8
All Units	NOx			81.6
All Units	Visible Emissions		Less than 20% opacity	

Note: o 1 unit - based on 8,400 annual hours of operation
o All units - based on 16,800 total annual hours of operation
o NOx - nitrogen oxides

5. Objectionable odors shall not be allowed off plant property.

6. Compliance tests shall be required in accordance with FAC Rule 17-2.700. NOx and visible emissions compliance tests shall be performed using EPA Method 7 and 9, respectively. Test reports shall be submitted to the DER's Southeast Florida District office and the Dade County Environmental Resources Management (DERM) office within 45 days after the last completed test run. For compliance testing, each office shall be notified 15 days prior to testing, or within a time frame coordinated and approved by each office.

7. To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, compliance test results, and Certificate of Completion to the Department's Southeast Florida District office and the DERM office 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all terms of the construction permit until its expiration date. Operation beyond the construction permit's expiration date requires a valid permit to operate in accordance with FAC Rules 17-2 and 17-4.

PERMITTEE:
South District Wastewater
Treatment Plant

Permit Number: AC 13-146961
Expiration Date: December 31, 1990

SPECIFIC CONDITIONS:

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct, which can take up to 90 days to process a complete application in accordance with FAC Rule 17-4.

8. Any change in the method of operation, raw materials and chemicals processed, equipment, or operating hours pursuant to FAC Rule 17-2.100(118), Modification, shall be submitted for approval to the DER's Bureau of Air Quality Management office, the DER's Southeast Florida District office, and the DERM office.

Issued this_____day of_____, 1988

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

_____
Dale Twachtmann, Secretary

PM
7 June 1988
Miami, FL

File Copy

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

P. O. BOX 330316
MIAMI, FLORIDA 33233-0316

Main Office
3575 S. LeJeune Road
Telephone 665-7471

May 13, 1988

RECEIVED
JUN 9 1988
DER - BAQM

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

Re: Air Construction Permit Numbers: AC13-146961 thru 63 - MDWASAD C.N. S-328

Dear Mr. Fancy:

Enclosed, please find the information required by your letter to us dated April 12, 1988. Enclosure includes:

1. Two copies each of pages 3, 4, 5, and 6 of the application for permit to construct the power generating facility of the subject permit numbers. These have been revised. Please discard the old pages and insert these new ones.

2. Two copies of the engine emission calculations based on data provided by the manufacturer of the specified engines. Please discard the old copies and insert these new ones.

   Each set of emission calculations includes the following attachments:

   a. Copies of letters from Cooper Industries about emissions using digester gas.

   b. Copy of the results of a test for CO2 content in digester gas.

   c. Copy of the record of H2S content in gas to engines.

If you have any questions, please contact Roger Varona of our staff at (305) 665-7471, extension 296.

Sincerely,

Robert A. Cuevas, P.E.
Chief Engineer

Copied: Barry Andrews, CAR/BT } 6.16.88

RAC/RV/ih
Enclosures
cc: Stephanie Brooks, DER, S.E. District
Patrick Wong, DERM
B. Wells, MDWASAD

FROM
MIAMI - DADE
WATER AND SEWER AUTHORITY
P. O. Box 330316
MIAMI, FLORIDA 33133
RETURN POSTAGE GUARANTEED

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 50 ;

if power plant, hrs/yr_____; 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

   a. If yes, has "offset" been applied? NO

   b. If yes, has "Lowest Achievable Emission Rate" been applied? NO

   c. If yes, list non-attainment pollutants. OZONE

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. NO

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? NO

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

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.

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: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
NOx	4.2	17.6	N/A	N/A	4.2	17.6	
CO	5.6	23.5	"	Proposed NSPS 700 ppm	5.6	23.5	
NMHC	1.4	5.9	"	N/A	1.4	5.9	
SO2	1.2	5.0	"	N/A	1.2	5.0	
OPACITY	< 20%		< 20%				

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 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).

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	
Digester Gas	0.014*	0.014*	9.3*
		* Per engine operating	

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

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: 0

Density: 0.063 lbs/~~gal~~ C.F. Typical Percent Nitrogen: 0

Heat Capacity: 10,472 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: 40 ft. Stack Diameter: 1.5 ft.

Gas Flow Rate: 7,384 ACFM 2,758 DSCFM Gas Exit Temperature: 780 °F.

Water Vapor Content: 12% % Velocity: 70 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.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ 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: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 50 ;

if power plant, hrs/yr_____; 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

   a. If yes, has "offset" been applied? NO

   b. If yes, has "Lowest Achievable Emission Rate" been applied? NO

   c. If yes, list non-attainment pollutants. OZONE

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. NO

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? NO

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

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.

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: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
NOx	4.2	17.6	N/A	N/A	4.2	17.6	
CO	5.6	23.5	"	Proposed NSPS 700 ppm	5.6	23.5	
NMHC	1.4	5.9	"	N/A	1.4	5.9	
SO2	1.2	5.0	"	N/A	1.2	5.0	
OPACITY	< 20%		< 20%				

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 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).

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	
Digester Gas	0.014*	0.014*	9.3*
		* Per engine operating	

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

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: 0

Density: 0.063 lbs/~~gal~~ C.F. Typical Percent Nitrogen: 0

Heat Capacity: 10,472 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: 40 ft. Stack Diameter: 1.5 ft.

Gas Flow Rate: 7,384 ACFM 2,758 DSCFM Gas Exit Temperature: 780 °F.

Water Vapor Content: 12% % Velocity: 70 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.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ 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: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

SOUTH DISTRICT WASTEWATER TREATMENT PLANT
DIGESTER GAS UTILIZATION
Contract Number S-328

ENGINE EMISSIONS
(May 25, 1988)

I. ENGINE GENERATORS

Three (3) new identical units provided called Generator #1, Generator #2 and Generator #3. These consist of gas engines direct driving electric generators.

Engine characteristics are as follows:
Type: Stationary internal combustion engines.
Model: Cooper Industries 12GTL(B), or equal.
BMEP: 150 psig.
Speed: 720 RPM

Engine-generator performance:
Electrical output: 900 KW
Generator efficiency: 95%
Fuel requirements: 7300 BTU/BHP-HR*

*Based on LHV of fuel gas, per manufacturers data.

II. GAS USE

The gas composition shown below is average for scrubbed digester gas at the Central District Wastewater Treatment Plant. The attached gas analysis is for a typical day and varies slightly from average. Average composition is used for design for most realistic results.

The gas analyses of the Central District Wastewater Treatment Plant have been used for design of the generating facility at the South District Wastewater Treatment Plant for the following reasons:

The sewage treated, the treatment process and the sludge digestion are similar at both plants.

No gas scrubbers presently exist at the South Plant. This project includes the installation of scrubbers that are similar to those existing at the Central Plant.

For the above reasons, it is safe to assume that the scrubbed digester gas composition will be similar for both plants.

GAS COMPOSITION:
(From plant data, design average)

CH4: 72.1 % by volume
CO2: 27.9 % by volume
H2S: 33 grains per 100 SCF of gas

LHV: .721 X 913 = 658 BTU/SCF
S.G.: .823
M.W.: 23.83 (average)

GAS USED PER ENGINE

$$900\ KW \times \frac{1\ BHP}{0.746\ KW} \times \frac{1}{.95(Eff)} = 1270\ BHP$$

$$1270\ BHP \times \frac{7300\ BTU}{BHP\text{-}HR} \times \frac{SCF}{658\ BTU} = 14{,}090\ SCFH$$

MAXIMUM YEARLY USE OF ANY ENGINE:

$$24\ \frac{HRS}{DAY} \times 7\ \frac{DAYS}{WEEK} \times 50\ \frac{WEEKS}{YEAR} = 8{,}400\ \frac{HRS}{YEAR}$$

III. ENGINE MANUFACTURERS DATA

(See attached letters from Cooper Industries)

GUARANTEED MAXIMUM EMISSION RATES:

NOx: 1.5 gms/BHP-HR
CO: 2.0 gms/BHP-HR
NMHC*: 0.5 gms/BHP-HR

*Non methane hydrocarbons

OTHER ENGINE MANUFACTURER DATA:

NOx: 203 ppm @ 9.5% 02
NOx: 105 ppm @ 15% 02
THC**: 5.0 gms/BHP-HR

**Total hydrocarbons

IV. PRODUCTS OF COMBUSTION

Gas used = 14,090 SCFH (per part II of this report)

Gas composition

CH4: .721 x 14090 = 10,159 SCFH

$$10{,}159\ \frac{SCF}{hr} \times \frac{1\ Lb\text{-}mol}{379.5\ SCF} \times \frac{16.03\ LB}{Lb\text{-}mol} = 429.1\ LB/hr$$

CO2: 14,090 - 10,159 = 3,931 SCFH

$$3{,}931\ \frac{SCF}{hr} \times \frac{1\ Lb\text{-}mol}{379.5\ SCF} \times \frac{44\ LB}{Lb\text{-}mol} = 455.8\ LB/hr$$

Consider first stoichiometric combustion:

			SCFH	LB/hr
To Engines	CH4:		10,159	429.1
	CO2:		3,931	455.8
	Air:	10,159 X 9.53	96,815	
		429.1 X 17.22		7,389.1
				8,724.0
	CO2:	10,159 X 1 + 3,931	14,090	
From Engines		429.1 X 2.74 + 455.8		1,631.5
	N2:	10,159 X 7.53	76,497	
		429.1 X 13.23		5,677.0
	H2Ovapor:	10,159 X 2	20,318	
		429.1 X 2.25		965.5
	Total products of combustion		110,905	8,274.0
	Dry products of combustion		90,587	7,308.5

For 9.5% O2 in dry products:

(Actual engine operations, per manufacturers data)

$(90,587 + O2 + N2)\ 0.095 = O2$

Where O2 is Oxygen in excess air
N2 is nitrogen in excess air

$N2 = 3.764\ O2$

$(90,587 + O2 + 3.764\ O2)\ 0.095 = O2$
$O2 = 15,721$ SCFH

Excess air: $15,721 \times 4.764 = 74,895$ SCFH

Total exhaust (dry basis)

$90,587 + 74,895 = 165,482$ DSCFH

Exhaust temperature = 780 °F

Actual exhaust volume (including water vapors)

$$\frac{(110,905 + 74,895)}{(460 + 60)} \frac{(460 + 780)}{} = 443,062 \text{ ACFH}$$

For 15% O2 in dry products:

(Calculated at 15% for checking per New Source standard)

$(90,587 + O2 + N2)\ 0.15 = O2$

$(90,587 + O2 + 3.764\ O2)\ 0.15 = O2$
$O2 = 47,611$ SCFH

Excess air: $47,611 \times 4.764 = 226,819$ SCFH

Total exhaust products (dry basis):

90,587 + 226,819 = 317,406 DSCFH

Exhaust flow in stack:

(At actual operating conditions of 9.5% O2)

Dry gases:

$$165{,}482 \frac{\text{DSCF}}{\text{hr}} \times \frac{1 \text{ hr}}{60 \text{ mn}} = 2{,}758 \text{ DSCFM}$$

Actual:

$$443{,}062 \frac{\text{ACF}}{\text{hr}} \times \frac{1 \text{ hr}}{60\text{mn}} = 7{,}384 \text{ ACFM}$$

Stack flow area: $\left(\frac{1.5}{2}\right)^2 \pi = 1.767$ S.F.

Initial exhaust gas velocity:

$$7{,}384 \frac{\text{CF}}{\text{min}} \times \frac{1 \text{ min}}{60 \text{ sec}} \times \frac{1}{1.767 \text{ S.F.}} = 70 \text{ F.P.S.}$$

Water vapor content:

Water vapor as product of combustion = 20,318 SCFH

Consider supply air to engine as 85°F, 50% R.H.

Additional moisture converted into vapor

$$(96{,}815 + 74{,}895) \frac{\text{SCF}}{\text{hr}} \times 0.076 \frac{\text{LB}}{\text{SCF}} \text{ Air} \times \frac{0.011 \text{ LbH2O}}{\text{Lb Air}} = 143.5 \frac{\text{Lb H2O}}{\text{hr}}$$

Additional vapor in exhaust:

$$\frac{143.5}{18} \times 379.5 = 3025 \text{ SCFH}$$

Total exhaust = 110,905 + 74,895 + 3,025 = 188,825 SCFH

Total vapor inexhaust = 20,318 + 3,025 = 23,343 SCFH

Vapor content = $\frac{23{,}343}{188{,}825} = 0.12$

or 12%

V. EMISSIONS CALCULATIONS

Per manufacturer's guarantee:

NOx

$$1270 \text{ BHP} \times \frac{1.5 \text{ gms}}{\text{BHP-Hr}} \times \frac{1 \text{ lb}}{454 \text{ gm}} = 4.2 \text{ lbs/hr}$$

CO

$$1270 \text{ BHP} \times \frac{2.0 \text{ gm}}{\text{BHP - Hr}} \times \frac{1 \text{ LB}}{454 \text{ gm}} = 5.6 \text{ lb/hr}$$

NMHC*

*Non methane hydrocarbons

$$1270 \text{ BHP} \times \frac{0.5 \text{ gm}}{\text{BHP-Hr}} \times \frac{1 \text{ LB}}{454 \text{ gm}} = 1.4 \text{ lb/hr}$$

VI. OTHER EMISSION CALCULATIONS

NOx:
Per manufacturer's calculated data:
Assume 97% NO2 3% NO3

$\overline{MW} = .97\ (46) + .03\ (62) = 46.5$

NOx emissions:

$$\frac{\text{PPM} \times \overline{MW}}{\text{Molar Volume}}$$

At 9.5% O2 in exhaust gases

203 PPM of NOx (per manufacturer's data)

$$203 \times 10^{-6} \times \frac{46.5 \text{ Lb}}{\text{Lb-mol}} \times \frac{1 \text{ Lb-mol}}{379.5 \text{ SCF}} = 24.87 \times 10^{-6} \text{ Lb/SCF}$$

$$165{,}482 \frac{\text{SCF}}{\text{hr}} \times 24.87 \times 10^{-6} \frac{\text{Lb}}{\text{SCF}} = 4.1 \text{ Lb/SCF}$$

Agrees with guarantee

At 15% O2 in exhaust gases

105 PPM of NOx (per manufacturer's data)

$$105 \times 10^{-6} \times 46.5 \frac{\text{Lb}}{\text{Lb-mol}} \times \frac{1 \text{ Lb-mol}}{379.5 \text{ SCF}} = 12.87 \times 10^{-6} \text{ Lb/SCF}$$

$$317{,}406 \frac{\text{SCF}}{\text{hr}} \times 12{,}87\ 10^{-6} \frac{\text{Lb}}{\text{SCF}} = 4.1 \text{ Lb/SCF}$$

Agrees with guarantee

THC**

Per manufacturer's calculated data.

** Total hydrocarbons

$$1270 \text{ BHP} \times \frac{5 \text{ gm}}{\text{BHP-HR}} \times \frac{1 \text{ LB}}{454 \text{ gm}} = 14.0 \text{ LB/hr}$$

SO2

Per average composition of scrubbed digester gas

$$\text{H2S in gas: } \frac{33 \text{ grains}}{100 \text{ SCF}} \times \frac{1 \text{ LB}}{7000 \text{ grains}} \times 14{,}090 \frac{\text{SCF}}{\text{Hr}} = 0.66 \frac{\text{LB}}{\text{Hr}}$$

$$\text{S: } \frac{0.66 \text{ LB}}{\text{Hr}} \times \frac{32 \text{ (MW of S)}}{34 \text{ (MW of H2S)}} = 0.62 \text{ LB/hr}$$

$$\text{SO2: } 0.62 \frac{\text{LB}}{\text{HR}} \times \frac{64 \text{ (MW of SO2)}}{32 \text{ (MW of S)}} = 1.24 \text{ LB/hr}$$

VII. EMISSIONS SUMMARY

	LB/hr	Tons/year
NOx	4.2	17.6
CO	5.6	23.5
NMHC	1.4	5.9
THC	14.0	58.8
SO2	1.2	5.0

MEMORANDUM

DADE COUNTY FORM 107.07-17A

TO ROGER VARONA, Special Projects Engineer - Room 208

DATE MAY 12, 1988

SUBJECT REMOVAL OF CARBON DIOXIDE BY SCRUBBERS

FROM YVONNE W. WALTON, Chemist 2
Central District WWTP

Yvonne Walton

The gas to and from Plant #1 scrubbers was analysed on May 11, 1988 for Carbon Dioxide content: to scrubbers 35.0%
from scrubbers 27.0%

Plant #2 scrubbers had an average Carbon Dioxide content of 35.6% in and 26.8% out for April 1988.

YWW/ah

cc: R. Aceto
R. Culmer

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

CENTRAL DISTRICT WASTEWATER TREATMENT PLANT

RECORD OF H2S CONTENT IN GAS TO ENGINES

Below is a summary of the average H2S content of the scrubbed digester gas at the plant.

Month	H2S in gas to engines, Average (grains per 100 C.F.)
Jan., 1987	43.9
Feb., 1987	45.0
March, 1987	25.0
April, 1987	29.0
May, 1987	28.4
June, 1987	15.7
July, 1987	34.8
August, 1987	28.7
Sept., 1987	37.0
Oct., 1987	33.4
Nov., 1987	41.5
Dec., 1987	37.9
	33.3

Monthly averages calculated from daily analyses of gas as shown in the plat operating records. Computed by Rogelio Varona, P.E., May 18, 1988.

Rogelio Varona
May 18, 1988

AJAX-SUPERIOR

April 28, 1988

Mr. Roger Varona
Miami Dade Water and Sewer Authority Department
P.O. Box 33036
Miami, FL 33233-0316

Re: South District Wastewater Treatment Plant
Digester Gas Utilization

Subject: Superior 12GTLB Gensets (900 KWe)
Site Emissions Guarantee

Dear Mr. Varona:

Based on the digester gas composition you submitted to us for review, Cooper Industries, Ajax-Superior Division hereby guarantees that the 12GTLB CleanBurn II engines quoted on referenced project will not exceed the following emissions levels at full load rating of 1270 BHP/720 RPM;

NOx	1.5 gms/BHP-HR
CO	2.0 gms/BHP-HR
NMHC	0.5 gms/BHP-HR

In the event that the 12GTLB engines furnished for this WWTP project fail to meet guaranteed emission levels, Superior will modify the engine or its components in order to comply with stated guarantee. This modification will be carried out by Superior at no charge to Miami Dade Water and Sewer Authority.

Yours truly

L. R. Peltier

L. R. Peltier
Senior Application Engineer

/clb

cc: T. Lamberth - ESG/Metairie
H. Ballard - Spfld

1401 Sheridan Ave., P.O. Box 540
Springfield, Ohio 45501
(513) 327-4200 Telex: ITT 4946775

COOPER INDUSTRIES **AJAX-SUPERIOR**

May 2, 1988

Mr. Roger Varona
Miami Dade Water and Sewer Authority Dept.
3575 S. Le Jeane Road
Miami, Florida 33146-2221

Re: South District Wastewater Treatment Plant
Digester Gas Utilization Project

Subject: Additional Emissions Data
12GTLA Gensets (900 KWe)

Dear Roger:

With reference to the attached site emissions guarantee letter for this project, we are submitting the following additional data to assist you in your response to the State of Florida, Department of Environmental Regulations. Please note, this data is based on digester gas composition per your submission and operating load of 1270 BHP/720 RPM.

1) It is our understanding that you intend to operate these engines on digester gas, only. Superior will build these engines with high compression ratio pistons (10:1) to optimize BSFC. At 1270 BHP/720 RPM, we would guarantee a fuel consumption rate of not exceeding 7300 BTU/BHP-HR (plus 3% for site measurement tolerance) based on the LHV of the digester gas.

2) The 1.5/BHP-HR (actual) for NOx in the exhaust is equal to 203 ppm. Per New Source Standard, NOx corrected to 15% O2, day basis is 105 ppm.

3) Combustion air flow is 11.2 lbs/BHP-HR which is 237 lbs/min at 1270 BHP.

4) Oxygen content of the exhaust at 1270 BHP is 9.5%, dry basis.

5) Total hydro carbon (THC) emission (actual) is 5.0 gms/BHP-HR.

We trust this information is satisfactory for your purposes and if you require additional assistance, please contact me at your convenience.

Yours very truly,

L. R. Peltier

L. R. Peltier
Senior Application Engineer

cc: T. Lamberth - ESG/Metairie
H. Ballard - Springfield

/clb

1401 Sheridan Ave., P.O. Box 540
Springfield, Ohio 45501
(513) 327-4200 Telex: ITT 4946775

SOUTH DISTRICT WASTEWATER TREATMENT PLANT
DIGESTER GAS UTILIZATION
Contract Number S-328

ENGINE EMISSIONS
(May 25, 1988)

I. ENGINE GENERATORS

Three (3) new identical units provided called Generator #1, Generator #2 and Generator #3. These consist of gas engines direct driving electric generators.

Engine characteristics are as follows:
Type: Stationary internal combustion engines.
Model: Cooper Industries 12GTL(B), or equal.
BMEP: 150 psig.
Speed: 720 RPM

Engine-generator performance:
Electrical output: 900 KW
Generator efficiency: 95%
Fuel requirements: 7300 BTU/BHP-HR*

*Based on LHV of fuel gas, per manufacturers data.

II. GAS USE

The gas composition shown below is average for scrubbed digester gas at the Central District Wastewater Treatment Plant. The attached gas analysis is for a typical day and varies slightly from average. Average composition is used for design for most realistic results.

The gas analyses of the Central District Wastewater Treatment Plant have been used for design of the generating facility at the South District Wastewater Treatment Plant for the following reasons:

The sewage treated, the treatment process and the sludge digestion are similar at both plants.

No gas scrubbers presently exist at the South Plant. This project includes the installation of scrubbers that are similar to those existing at the Central Plant.

For the above reasons, it is safe to assume that the scrubbed digester gas composition will be similar for both plants.

GAS COMPOSITION:
(From plant data, design average)

CH4: 72.1 % by volume
CO2: 27.9 % by volume
H2S: 33 grains per 100 SCF of gas

LHV: .721 X 913 = 658 BTU/SCF
S.G.: .823
M.W.: 23.83 (average)

GAS USED PER ENGINE

$$900\ KW \times \frac{1\ BHP}{0.746\ KW} \times \frac{1}{.95(Eff)} = 1270\ BHP$$

$$1270\ BHP \times \frac{7300\ BTU}{BHP\text{-}HR} \times \frac{SCF}{658\ BTU} = 14{,}090\ SCFH$$

MAXIMUM YEARLY USE OF ANY ENGINE:

$$24\ \frac{HRS}{DAY} \times 7\ \frac{DAYS}{WEEK} \times 50\ \frac{WEEKS}{YEAR} = 8{,}400\ \frac{HRS}{YEAR}$$

III. ENGINE MANUFACTURERS DATA

(See attached letters from Cooper Industries)

GUARANTEED MAXIMUM EMISSION RATES:

NOx: 1.5 gms/BHP-HR
CO: 2.0 gms/BHP-HR
NMHC*: 0.5 gms/BHP-HR

*Non methane hydrocarbons

OTHER ENGINE MANUFACTURER DATA:

NOx: 203 ppm @ 9.5% 02
NOx: 105 ppm @ 15% 02
THC**: 5.0 gms/BHP-HR

**Total hydrocarbons

IV. PRODUCTS OF COMBUSTION

Gas used = 14,090 SCFH (per part II of this report)

Gas composition

CH4: .721 x 14090 = 10,159 SCFH

$$10{,}159\ \frac{SCF}{hr} \times \frac{1\ Lb\text{-}mol}{379.5\ SCF} \times \frac{16.03\ LB}{Lb\text{-}mol} = 429.1\ LB/hr$$

CO2: 14,090 - 10,159 = 3,931 SCFH

$$3{,}931\ \frac{SCF}{hr} \times \frac{1\ Lb\text{-}mol}{379.5\ SCF} \times \frac{44\ LB}{Lb\text{-}mol} = 455.8\ LB/hr$$

Consider first stoichiometric combustion:

			SCFH	LB/hr
To Engines	CH4:		10,159	429.1
	CO2:		3,931	455.8
	Air:	10,159 X 9.53	96,815	
		429.1 X 17.22		7,389.1
				8,724.0
	CO2:	10,159 X 1 + 3,931	14,090	
From Engines		429.1 X 2.74 + 455.8		1,631.5
	N2:	10,159 X 7.53	76,497	
		429.1 X 13.23		5,677.0
	H2Ovapor:	10,159 X 2	20,318	
		429.1 X 2.25		965.5
	Total products of combustion		110,905	8,274.0
	Dry products of combustion		90,587	7,308.5

For 9.5% O2 in dry products:

(Actual engine operations, per manufacturers data)

$(90,587 + O2 + N2)\ 0.095 = O2$

Where O2 is Oxygen in excess air
N2 is nitrogen in excess air

$N2 = 3.764\ O2$

$(90,587 + O2 + 3.764\ O2)\ 0.095 = O2$
$O2 = 15,721$ SCFH

Excess air: $15,721 \times 4.764 = 74,895$ SCFH

Total exhaust (dry basis)

$90,587 + 74,895 = 165,482$ DSCFH

Exhaust temperature = 780 °F

Actual exhaust volume (including water vapors)

$$\frac{(110,905 + 74,895)}{(460 + 60)} \frac{(460 + 780)}{} = 443,062 \text{ ACFH}$$

For 15% O2 in dry products:

(Calculated at 15% for checking per New Source standard)

$(90,587 + O2 + N2)\ 0.15 = O2$

$(90,587 + O2 + 3.764\ O2)\ 0.15 = O2$
$O2 = 47,611$ SCFH

Excess air: $47,611 \times 4.764 = 226,819$ SCFH

Total exhaust products (dry basis):

90,587 + 226,819 = 317,406 DSCFH

Exhaust flow in stack:

(At actual operating conditions of 9.5% O2)

Dry gases:

$$165{,}482 \frac{\text{DSCF}}{\text{hr}} \times \frac{1 \text{ hr}}{60 \text{ mm}} = 2{,}758 \text{ DSCFM}$$

Actual:

$$443{,}062 \frac{\text{ACF}}{\text{hr}} \times \frac{1 \text{ hr}}{60\text{mm}} = 7{,}384 \text{ ACFM}$$

Stack flow area: $\left(\frac{1.5}{2}\right)^2 \pi = 1.767$ S.F.

Initial exhaust gas velocity:

$$7{,}384 \frac{\text{CF}}{\text{min}} \times \frac{1 \text{ min}}{60 \text{ sec}} \times \frac{1}{1.767 \text{ S.F.}} = 70 \text{ F.P.S.}$$

Water vapor content:

Water vapor as product of combustion = 20,318 SCFH

Consider supply air to engine as 85°F, 50% R.H.

Additional moisture converted into vapor

$$(96{,}815 + 74{,}895) \frac{\text{SCF}}{\text{hr}} \times 0.076 \frac{\text{LB}}{\text{SCF}} \text{ Air} \times \frac{0.011 \text{ LbH2O}}{\text{Lb Air}} = 143.5 \frac{\text{Lb H2O}}{\text{hr}}$$

Additional vapor in exhaust:

$$\frac{143.5}{18} \times 379.5 = 3025 \text{ SCFH}$$

Total exhaust = 110,905 + 74,895 + 3,025 = 188,825 SCFH

Total vapor inexhaust = 20,318 + 3,025 = 23,343 SCFH

Vapor content = $\frac{23{,}343}{188{,}825} = 0.12$

or 12%

V. EMISSIONS CALCULATIONS

Per manufacturer's guarantee:

NOx

$$1270 \text{ BHP} \times \frac{1.5 \text{ gms}}{\text{BHP-Hr}} \times \frac{1 \text{ lb}}{454 \text{ gm}} = 4.2 \text{ lbs/hr}$$

CO

$$1270 \text{ BHP} \times \frac{2.0 \text{ gm}}{\text{BHP - Hr}} \times \frac{1 \text{ LB}}{454 \text{ gm}} = 5.6 \text{ lb/hr}$$

NMHC*

*Non methane hydrocarbons

$$1270 \text{ BHP} \times \frac{0.5 \text{ gm}}{\text{BHP-Hr}} \times \frac{1 \text{ LB}}{454 \text{ gm}} = 1.4 \text{ lb/hr}$$

VI. OTHER EMISSION CALCULATIONS

NOx:
Per manufacturer's calculated data:
Assume 97% NO2 3% NO3

$\overline{MW} = .97\ (46) + .03\ (62) = 46.5$

NOx emissions:

$$\frac{\text{PPM} \times \overline{MW}}{\text{Molar Volume}}$$

At 9.5% O2 in exhaust gases

203 PPM of NOx (per manufacturer's data)

$$203 \times 10^{-6} \times 46.5 \frac{\text{Lb}}{\text{Lb-mol}} \times \frac{1 \text{ Lb-mol}}{379.5 \text{ SCF}} = 24.87 \times 10^{-6} \text{ Lb/SCF}$$

$$165{,}482 \frac{\text{SCF}}{\text{hr}} \times 24.87 \times 10^{-6} \frac{\text{Lb}}{\text{SCF}} = 4.1 \text{ Lb/SCF}$$

Agrees with guarantee

At 15% O2 in exhaust gases

105 PPM of NOx (per manufacturer's data)

$$105 \times 10^{-6} \times 46.5 \frac{\text{Lb}}{\text{Lb-mol}} \times \frac{1 \text{ Lb-mol}}{379.5 \text{ SCF}} = 12.87 \times 10^{-6} \text{ Lb/SCF}$$

$$317{,}406 \frac{\text{SCF}}{\text{hr}} \times 12{,}87\ 10^{-6} \frac{\text{Lb}}{\text{SCF}} = 4.1 \text{ Lb/SCF}$$

Agrees with guarantee

THC**

Per manufacturer's calculated data.

** Total hydrocarbons

$$1270 \text{ BHP} \times \frac{5 \text{ gm}}{\text{BHP-HR}} \times \frac{1 \text{ LB}}{454 \text{ gm}} = \underline{14.0} \text{ LB/hr}$$

SO2

Per average composition of scrubbed digester gas

$$\text{H2S in gas: } \frac{33 \text{ grains}}{100 \text{ SCF}} \times \frac{1 \text{ LB}}{7000 \text{ grains}} \times 14{,}090 \frac{\text{SCF}}{\text{Hr}} = 0.66 \frac{\text{LB}}{\text{Hr}}$$

$$\text{S: } \frac{0.66 \text{ LB}}{\text{Hr}} \times \frac{32 \text{ (MW of S)}}{34 \text{ (MW of H2S)}} = 0.62 \text{ LB/hr}$$

$$\text{SO2: } 0.62 \frac{\text{LB}}{\text{HR}} \times \frac{64 \text{ (MW of SO2)}}{32 \text{ (MW of S)}} = \underline{1.24} \text{ LB/hr}$$

VII. EMISSIONS SUMMARY

	LB/hr	Tons/year
NOx	4.2	17.6
CO	5.6	23.5
NMHC	1.4	5.9
THC	14.0	58.8
SO2	1.2	5.0

MEMORANDUM

DADE COUNTY FORM 107.07-17A

TO ROGER VARONA, Special Projects Engineer - Room 208

DATE MAY 12, 1988

SUBJECT REMOVAL OF CARBON DIOXIDE BY SCRUBBERS

FROM YVONNE W. WALTON, Chemist 2
Central District WWTP

Yvonne Walton

The gas to and from Plant #1 scrubbers was analysed on May 11, 1988 for Carbon Dioxide content: to scrubbers 35.0%
from scrubbers 27.0%

Plant #2 scrubbers had an average Carbon Dioxide content of 35.6% in and 26.8% out for April 1988.

YWW/ah

cc: R. Aceto
R. Culmer

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

CENTRAL DISTRICT WASTEWATER TREATMENT PLANT

RECORD OF H2S CONTENT IN GAS TO ENGINES

Below is a summary of the average H2S content of the scrubbed digester gas at the plant.

Month	H2S in gas to engines, Average (grains per 100 C.F.)
Jan., 1987	43.9
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Nov., 1987	41.5
Dec., 1987	37.9
	33.3

Monthly averages calculated from daily analyses of gas as shown in the plat operating records. Computed by Rogelio Varona, P.E., May 18, 1988.

Rogelio Varona
May 18, 1988

AJAX-SUPERIOR

April 28, 1988

Mr. Roger Varona
Miami Dade Water and Sewer Authority Department
P.O. Box 33036
Miami, FL 33233-0316

Re: South District Wastewater Treatment Plant
Digester Gas Utilization

Subject: Superior 12GTLB Gensets (900 KWe)
Site Emissions Guarantee

Dear Mr. Varona:

Based on the digester gas composition you submitted to us for review, Cooper Industries, Ajax-Superior Division hereby guarantees that the 12GTLB CleanBurn II engines quoted on referenced project will not exceed the following emissions levels at full load rating of 1270 BHP/720 RPM;

NOx	1.5 gms/BHP-HR
CO	2.0 gms/BHP-HR
NMHC	0.5 gms/BHP-HR

In the event that the 12GTLB engines furnished for this WWTP project fail to meet guaranteed emission levels, Superior will modify the engine or its components in order to comply with stated guarantee. This modification will be carried out by Superior at no charge to Miami Dade Water and Sewer Authority.

Yours truly,

L. R. Peltier

L. R. Peltier
Senior Application Engineer

/clb

cc: T. Lamberth - ESG/Metairie
H. Ballard - Spfld

1401 Sheridan Ave., P.O. Box 540
Springfield, Ohio 45501
(513) 327-4200 Telex: ITT 4946775

AJAX-SUPERIOR

May 2, 1988

Mr. Roger Varona
Miami Dade Water and Sewer Authority Dept.
3575 S. Le Jeane Road
Miami, Florida 33146-2221

Re: South District Wastewater Treatment Plant
Digester Gas Utilization Project

Subject: Additional Emissions Data
12GTLA Gensets (900 KWe)

Dear Roger:

With reference to the attached site emissions guarantee letter for this project, we are submitting the following additional data to assist you in your response to the State of Florida, Department of Environmental Regulations. Please note, this data is based on digester gas composition per your submission and operating load of 1270 BHP/720 RPM.

1) It is our understanding that you intend to operate these engines on digester gas, only. Superior will build these engines with high compression ratio pistons (10:1) to optimize BSFC. At 1270 BHP/720 RPM, we would guarantee a fuel consumption rate of not exceeding 7300 BTU/BHP-HR (plus 3% for site measurement tolerance) based on the LHV of the digester gas.

2) The 1.5/BHP-HR (actual) for NOx in the exhaust is equal to 203 ppm. Per New Source Standard, NOx corrected to 15% 02, day basis is 105 ppm.

3) Combustion air flow is 11.2 lbs/BHP-HR which is 237 lbs/min at 1270 BHP.

4) Oxygen content of the exhaust at 1270 BHP is 9.5%, dry basis.

5) Total hydro carbon (THC) emission (actual) is 5.0 gms/BHP-HR.

We trust this information is satisfactory for your purposes and if you require additional assistance, please contact me at your convenience.

Yours very truly,

L. R. Peltier

L. R. Peltier
Senior Application Engineer

cc: T. Lamberth - ESG/Metairie
H. Ballard - Springfield

/clb

1401 Sheridan Ave., P.O. Box 540
Springfield, Ohio 45501
(513) 327-4200 Telex: ITT 4946775

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. XXX Show to whom delivered, date, and addressee's address. †(Extra charge)† 2. ☐ Restricted Delivery †(Extra charge)†

3. Article Addressed to:	4. Article Number
Mr. Garrett Sloan, Director Miami-Dade Water and Sewer Authority Department P.O. Box 330316 Miami, FL 33233-0316	P 274 010 487 Type of Service: ☐ Registered ☐ Insured XXX Certified ☐ COD ☐ Express Mail Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Addressee X R Downing	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery 4 15 88	

PS Form **3811,** Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

P 274 010 487

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. Garrett Sloan, Director ~~Miami-Dade H2O & Sewer Autho.~~	
Street and No. P.O. Box 330316	
P.O., State and ZIP Code Miami, FL 33233-0316	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 04/12/88 Permits: AC 13-146961, -62, -63, PSD-FL-132	

PS Form 3800, June 1985 ★ U.S.G.P.O. 1985-480-794

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

April 12, 1988

Mr. Garrett Sloan, Director
Miami Dade Water and Sewer Authority
Department
Post Office Box 330316
Miami, Florida 33233-0316

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Re: Completeness Review For Miami-Dade Water and Sewer Authority Department.
Air Construction Permit Numbers: AC 13-146961, AC 13-146962, and AC 13-146963

Dear Mr. Sloan:

The Bureau is in receipt of the above referenced applications for the construction/installation of three 900 KW digester gas-fueled engine-generators located at 8950 SW 232 Street, Miami, Florida. The applications have been deemed incomplete and the following information, including all assumptions and calculations, shall be submitted to the Bureau before further processing will resume:

1. Provide documentation of the fuel composition for hydrogen sulfide.

2. The emission factors for CO, HC, and VOC should be based on either test results or engine manufacturers data for digester gas firing. The use of Table 3.3.2-1 from AP-42 is not appropriate since these emission factors are based on using natural gas not digester gas as the combustion fuel.

If there are any questions, please call Barry Andrews at (904) 488-1344 or write to me at the above address.

Sincerely,

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

CHF/BA/ss

cc: Robert Cuevas, P.E.
Stephanie Brooks, SE Dist.
Patrick Wong, DERM

file

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

March 22, 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: Miami-Dade Water and Sewer Authority
State Permit Numbers: AC 13-146961, -962, -963
Federal Permit Number: PSD-FL-132

Enclosed for your review and comment are the permits for the above referenced company. If you have any comments or questions, please contact Barry Andrews at the above address or call him at (904)488-1344 by April 12, 1988.

Sincerely,

M. V. Janes

Margaret V. Janes
Planner
Bureau of Air Quality
Management

/mj

enclosure

cc: B. Andrews, DER
S. Brooks, SE Dist.

MIAMI–DADE WATER AND SEWER AUTHORITY DEPARTMENT
POOLED CASH FUND
P.O. BOX 330316 • MIAMI, FLORIDA 33133

CHECK NO. 44414

DATE	PAYEE NAME 2269			
03/10/88	STATE OF FLORIDA, DEPT, OF ENVIRONMENTAL REGULATION			
INVOICE DATE	INVOICE NUMBER	AMOUNT	PURCHASE ORDER NUMBER	DESCRIPTION
03/08/88		$1,500.00		Permit Fee for the Central District Digester Gas Generators.

The attached check represents the amount due for services performed by you for the benefit of Dade County to date, as shown on file in the Clerk's Office

63-60
660

METRO-DADE

STATE OF FLORIDA-COUNTY OF DADE-MIAMI, FLORIDA 44414

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT-POOLED CASH FUND

SUN BANK/MIAMI N.A.
MIAMI, FLORIDA

VOID AFTER SIX MONTHS

2269

AUDIT NUMBER

Date	Warrant Number	Amount of Check
03/10/88	44414	$1,500.00

PAY EXACTLY **********1,500 DOLLARS AND*******00 CENTS

To The Order Of
STATE OF FLORIDA
DEPT, OF ENVIRONMENTAL REGULATION

BOARD OF COUNTY COMMISSIONERS
Stephen P. Clark
MAYOR
Richard G. Fisher
CLERK

[redacted]

This project consists of digester gas scrubbers, gas pipeline, gas compressors, gas storage spheres and gas fueled engines powering electrical generators. A check for the required application fee of $1,500 is also enclosed.

If you have any questions on the application, please call me or Robert Cuevas at 305-665-7471.

Very truly yours,

Garrett Sloan
Director

GS/REF/fb

1031

Federal Express
Airbill # 6190859872

PM
3·11·88
Miami, FL

File Copy

2269

MIAMI-DADE WATER AND SEWER AUTHORITY DEPARTMENT

P. O. BOX 330316
MIAMI, FLORIDA 33233-0316

Main Office
3575 S. LeJeune Road
Telephone 665-7471

Receipt # 117533
V# 44414
$1,500.00

FEDERAL EXPRESS

March 11, 1988

AC 13-146961
AC 13-146962
AC 13-146963

Mr. Bill Thomas
Central Air Permitting Section
State of Florida
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Dade County Miami-Dade Water and Sewer Authority Department South District Wastewater Treatment Plant Digester Gas Utilization Project Construction Permit Application

Dear Mr. Thomas:

As directed by Ms. Stephanie S. Brooks of the Southeast Florida District in her letter of February 25, 1988, please find enclosed the construction permit application forms for the South District Wastewater Treatment Plant digester gas utilization project. This project consists of digester gas scrubbers, gas pipeline, gas compressors, gas storage spheres and gas fueled engines powering electrical generators. A check for the required application fee of $1,500 is also enclosed.

If you have any questions on the application, please call me or Robert Cuevas at 305-665-7471.

Very truly yours,

Garrett Sloan
Director

GS/REF/fb

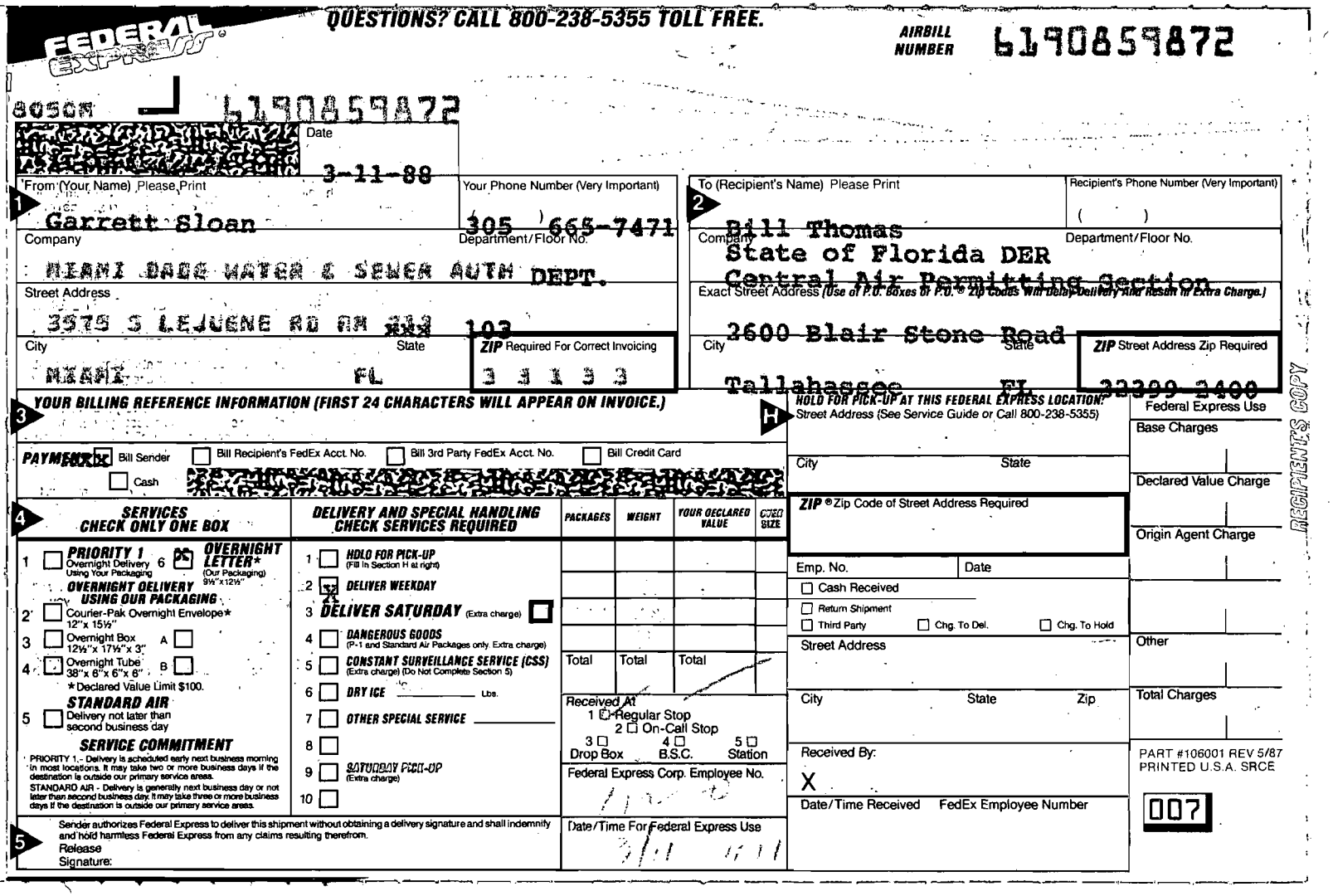
RECEIVED
DER-MAIL ROOM
1988 MAR 14 AM 10:50

Barry Andrews called Co.(?) on 3·21·88, copy of package already mailed to WPB Dist. Office and DERM

1031

copied: Wayne Aronson } 3·22·88
Miguel Flores

BEST AVAILABLE COPY



FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER 6190859872

8050M 6190859872

Date 3-11-88

1 From (Your Name) Please Print: Garrett Sloan
Your Phone Number (Very Important): 305 665-7471
Company: MIAMI DADE WATER & SEWER AUTH DEPT.
Department/Floor No.:
Street Address: 3575 S LEJUENE RD AM ### 103
City: MIAMI State: FL ZIP Required For Correct Invoicing: 3 3 1 3 3

2 To (Recipient's Name) Please Print: Bill Thomas
Recipient's Phone Number (Very Important): ( )
Company: State of Florida DER
Central Air Permitting Section
Department/Floor No.:
Exact Street Address (Use of P.O. Boxes or P.O. Zip Codes Will Delay Delivery and Result in Extra Charge.): 2600 Blair Stone Road
City: Tallahassee State: FL ZIP Street Address Zip Required: 32399-2400

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT: [X] Bill Sender [ ] Bill Recipient's FedEx Acct. No. [ ] Bill 3rd Party FedEx Acct. No. [ ] Bill Credit Card [ ] Cash

4 SERVICES CHECK ONLY ONE BOX

1 [ ] PRIORITY 1 Overnight Delivery Using Your Packaging
6 [X] OVERNIGHT LETTER* (Our Packaging) 9½"x12½"
OVERNIGHT DELIVERY USING OUR PACKAGING
2 [ ] Courier-Pak Overnight Envelope* 12"x 15½"
3 [ ] Overnight Box 12½"x 17½"x 3" A [ ]
4 [ ] Overnight Tube 38"x 6"x 6" B [ ]
*Declared Value Limit $100.
5 [ ] STANDARD AIR Delivery not later than second business day

SERVICE COMMITMENT
PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.
STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 [ ] HOLD FOR PICK-UP (Fill In Section H at right)
2 [X] DELIVER WEEKDAY
3 [X] DELIVER SATURDAY (Extra charge) [ ]
4 [ ] DANGEROUS GOODS (P-1 and Standard Air Packages only. Extra charge)
5 [ ] CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Do Not Complete Section 5)
6 [ ] DRY ICE _____ Lbs.
7 [ ] OTHER SPECIAL SERVICE _____
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]

PACKAGES	WEIGHT	YOUR DECLARED VALUE	CODD SIZE
Total	Total	Total	

Received At
1 ☐ Regular Stop
2 ☐ On-Call Stop
3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

Federal Express Corp. Employee No.

Date/Time For Federal Express Use

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.
Release Signature:

H HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION!
Street Address (See Service Guide or Call 800-238-5355)
City State
ZIP Zip Code of Street Address Required

Emp. No. Date
[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Origin Agent Charge
Other
Total Charges

PART #106001 REV 5/87
PRINTED U.S.A. SRCE

007

RECIPIENT'S COPY

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHEAST FLORIDA DISTRICT
1900 SOUTH CONGRESS AVENUE
WEST PALM BEACH, FLORIDA 33406

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Digester GAs Burning Generators [X] New[1] [ ] Existing[1]

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

COMPANY NAME: Miami DAde WAter and Sewer Authority Department
South District Wastewater Treatment Plant COUNTY: Dade

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) Stationary gas engines

SOURCE LOCATION: Street 8950 SW 232 Street City Miami, FL 33032

UTM: East 66,600m North 25,500m

Latitude 25 ° 33 ' 33 "N Longitude 80 ° 21 ' 04 "W

APPLICANT NAME AND TITLE: Garrett Sloan, Director

APPLICANT ADDRESS: 3575 South LeJeune Road, Miami, FL 33133

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Miami Dade Water and Sewer Auth. Dept.

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: Garrett Sloan

Garrett Sloan, Director
Name and Title (Please Type)

Date: Telephone No. 305-665-7471

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

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

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.

Signed Robert A. Cuevas

Robert A. Cuevas, P.E.
Name (Please Type)

Miami-Dade Water & Sewer Authority Department
Company Name (Please Type)

3575 South LeJeune Road Miami, FL 33146-2221
Mailing Address (Please Type)

Florida Registration No. 6285 Date: _____ Telephone No. 305 665-7471

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.

The construction of a facility to generate electricity from digester gas. Consisting of three (3) engine-generators and auxiliaries.

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

Start of Construction 1988 Completion of Construction 1990

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.)

Three (3) engine-generator sets for approximately $ 2,500,000.00

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

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 50 ;

if power plant, hrs/yr_____; 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

   a. If yes, has "offset" been applied? NO

   b. If yes, has "Lowest Achievable Emission Rate" been applied? NO

   c. If yes, list non-attainment pollutants. OZONE

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

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. NO

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? NO

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? NO

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.

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: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	
VOC	1.23	5.17	N/A	N/A	1.23	5.17	
NO_x	13.60	57.12	"	Proposed NSPS 700 ppm	13.60	57.12	
CO	3.92	16.46	"	N/A	3.92	16.46	
SO_2	1.12	4.70	"	N/A	1.12	4.70	
Opacity	≤20%		≤20%				

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 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).

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	
Digester Gas	0.0135*	0.0135*	9.46*
	0.0158**	0.0270**	18.92**

* Each engine-generator ** two engine-generators actual expected

*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.

_____

_____

_____

_____

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

Stack Height: 40 ft. Stack Diameter: 1.5 ft.

Gas Flow Rate: 6374 ACFM 2,673 DSCFM Gas Exit Temperature: 780 °F.

Water Vapor Content: 11 % Velocity: 60 FPS

SECTION IV: INCINERATOR INFORMATION N/A

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.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ 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: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: N/A

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

N/A

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.

9. The appropriate application fee in accordance with Rule 17-4.05. 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 N/A

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

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

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

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

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

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:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

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

j. Applicability to manufacturing processes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

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:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

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:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[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. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^2* _____ Wind spd/dir

Period of Monitoring _____/____/____ to _____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from ____/____/____ to ____/____/____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

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

C. Computer Models Used

1. _____ 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	_____ grams/sec
SO^2	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of 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.

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.

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.

SOUTH DISTRICT WASTEWATER TREATMENT PLANT
DIGESTER GAS UTILIZATION (S-328)

I. PROJECT DESCRIPTION

The Project consists of a facility to generate electric power using digester gas produced at the treatment plant.

Major equipment and service items are:

- Three (3) engine-generators
- Three (3) digester gas compressors
- Two (2) gas scrubbers
- Two (2) gas spheres

Gas produced at the digesters is transported to and from the scrubberss via low pressure gas lines.

Gas is compressed into engine intake manifold. Automatic control system directs excess gas produced to storage spheres, and allows shortages of gas to be made up by stored volume.

The electric power generated will be for in-plant consumpton only. At least one generating unit will be operated at any one time. No other fuels will be used to supplement digester gas production.

II. ENGINE GENERATORS

Three (3) new identical units provided called Generator #1, Generator #2 and Generator #3. These consist of gas engines direct driving electric generators.

Engine characteristics are as follows:

- Type: Stationary internal combustion engines.
- Model: Cooper Industries 12GTL(B), or equal.
- BMEP: 150 psig.
- Speed: 720 RPM

Engine-generator performance:

- Electrical output: 900 KW
- Generator efficiency: 95%
- Fuel requirements: 7,450 BTU/BHP-HR
- Design Fuel HHV: 700 BTU/SCF
- BHP: 1270

III. ENGINE UTILIZATION

Digester gas available: 378,000 SCFD
or 15,750 SCFH
(Calculated based on weight of volatile solids in raw sewage analysis)

Fuel required: $\frac{7450 \times 1270}{700} = 13{,}516$ SCFH
(at 100% capacity)

Maximum usage per year:

$$24 \frac{\text{hrs}}{\text{day}} \times 7 \frac{\text{days}}{\text{week}} \times 50 \frac{\text{weeks}}{\text{year}} = 8{,}400 \frac{\text{hrs}}{\text{year}}$$

(Any one of three generator sets)

IV. COMPOSITION OF DIGESTER GAS

Based on test data for Central District Watewater Treatment Plant. All plants are integrated in a regional network of treatment units and treat sewage of approximately similar composition, resulting in digester gas of similar compositon, also.

Composition below is average, after scrubbing.

CH4: 72.1% by volume
CO2: 27.8% by volume
H2S: 31 grains/100SCF

HHV: 703 BTU/SCF

V. EMISSION CALCULATIONS

(For one unit at 100% capacity)

1. Products of Combustion

Volume of Dry Combustion Products (at 0% Excess Air)

= Volume of Fuel [% CH_4 x (0.0856) + % Inerst x (0.01)]

= (13.516) [(72.1) (0.0856) + (27.8) (0.01)]

= (13.516) [6.17 + 0.278] = 87,151 SCFH

Assuming 15% 0_2 in combustion gases,

$$\text{Excess Airflow} = \frac{(87{,}151)\ (0.15)}{(1-0.15)} \quad \frac{1}{(0.21)} = 73{,}236 \text{ SCFM}$$

Total Exhaust Flow Volume = 87,151 + 73.236 = 160,387 SCFM

For exhaust temperature of 780 °F;

$$\text{Total Exhaust Flow Volume} = (160{,}387)\ \frac{[460 + 780]}{460 + 60}$$

$$= 382{,}461 \text{ ACFH}$$

2. Pollutant Emission Rates (For Single Unit)

H_2S Emissions

For scrubbed digestor gas, H_2S concentration

is 31 grains/100 SCF of Digestor Gas.

$$H_2S \text{ Input Rate} = (13{,}516)\ \frac{\text{SCF}}{\text{hr}} \times \frac{(31)}{(100)}\ \frac{\text{gr}}{\text{SCF}} \times \frac{\text{lb}}{(7000)\ \text{gr}}$$

= 0.60 lbs/hr

3. NO_x Emissions

Using proposed EPA Standards for stationary gas engines.

NO_x in exhaust gases would be less than or equal to 700 ppm at 15% oxygen (0_2) on a dry basis.

Assume NO_2 @ 875°F

$$ug/m^3 = \frac{PPM \times Molecular\ Wt \times 1000}{Molar\ Volume\ in\ liters}$$

$T = 5/9\ [780-32] = 415.6\ °C$

$°K = 273 + 415.6 = 688.6$

$$Volume = (22.4)\ \left[\frac{688.6}{273}\right] = 56.5\ liters$$

$$ug/m^3 = \frac{(700) \times (14 + 32) \times (1000)}{(56.5)} = 569{,}912$$

$mg/m^3 = 569.91$

NO_x Emission Rate = (382,461 ACFH x (569.91) $\frac{mg}{m^3}$ X

$$\frac{1}{(1000)}\ \frac{gm}{mg} \times \frac{1}{(454)}\ \frac{lb}{gm} \times \frac{1}{(35.31}\ \frac{m^3}{ft^3} = 13.60\ lbs/hr$$

4. CO Emissions

CO Emission Rate = 1.4 gm/BHP-hr (Table 3.3.2-1 AP-42)

$$CO\ Emissions\ Rate = (1.4)\ \frac{gm}{BHP\text{-}hr} \times (1270)\ BHP \times \frac{lb}{(454)\ gm}$$

=3.92 lb/hr

5. HC Emissions (Total)

HC Emission Rate = 4.4 gm/BHP-hr (Table 3.3.2-1 AP-42)

$$HC\ Emission\ Rate = (4.4)\ \frac{gm}{BHP\text{-}hr} \times (1270)\ BHP \times \frac{lb}{(454)\ gm}$$

= 12.31 lbs/hr

6. VOC Emissions = (0.10) X (Total HC) = 1.23 lbs/hr

from Table 3.3.2-1 AP-42, Note C

7. Sulfide Dioxide

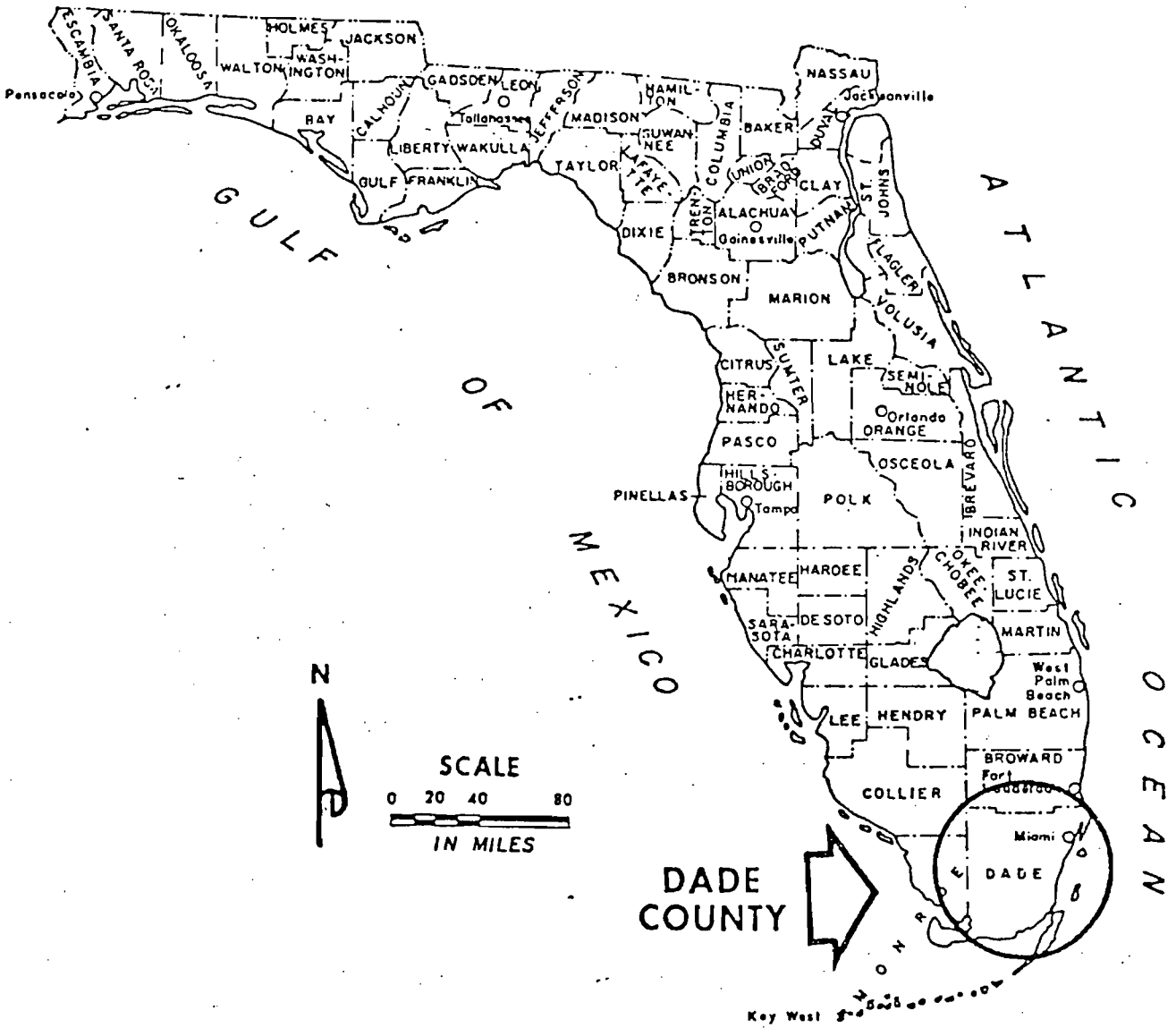
Sulfur Input = (0.6) $\frac{lb}{hr}$ X $\frac{(32)}{(34)}$ = 0.56 lbs/hr

SO_2 Emission Rate = (0.56) $\frac{lbs}{hr}$ X $\frac{(64)}{(32)}$ = 1.12 lbs/hr

VI. EMISSION SUMMARY

Yearly emission rate for one unit was calculated based on 8400 hours per year operation.
Emission rate for two units doubles one unit emission two allow for maximum possible usage of the generating facility while still keeping one unit as stand-by.

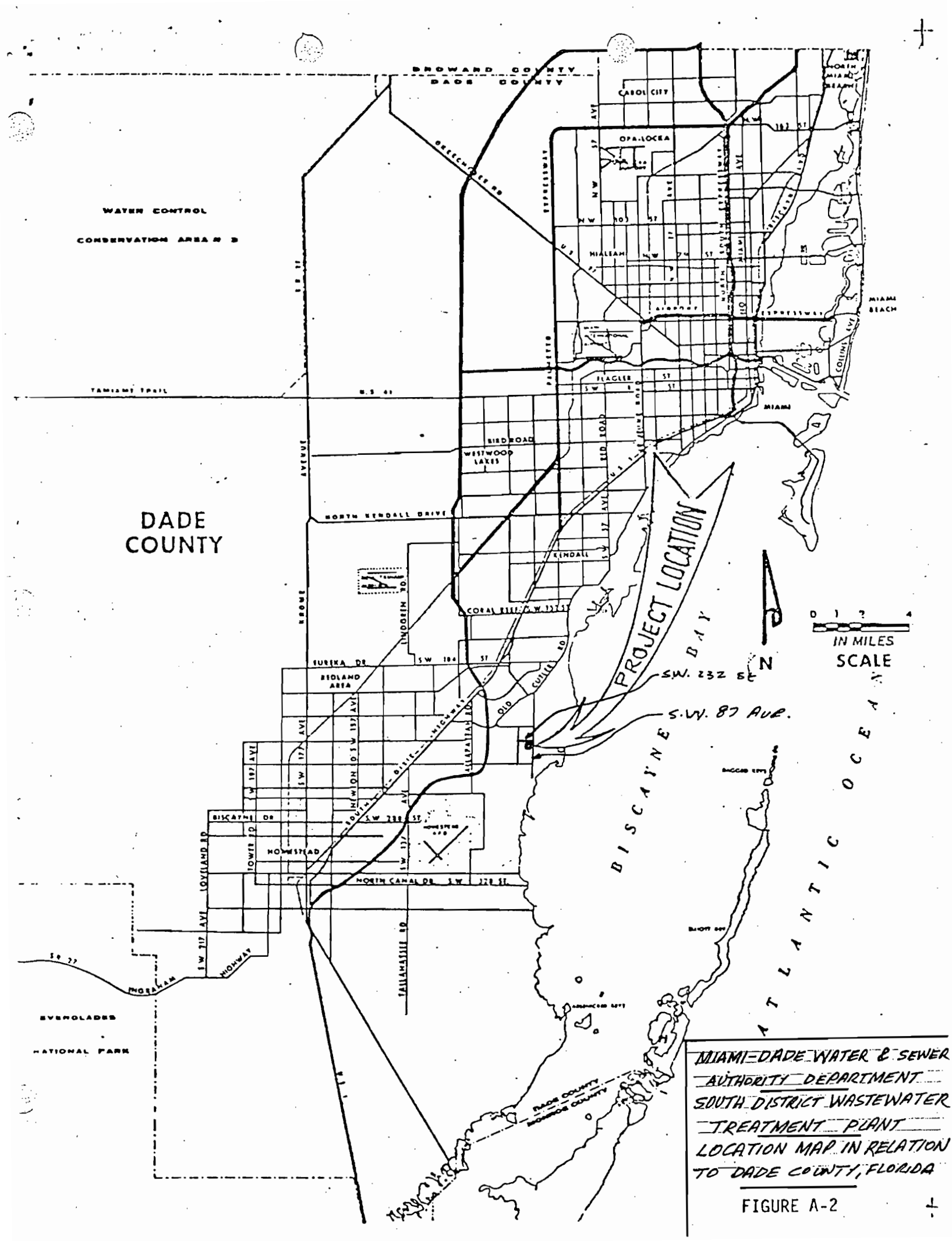
Pollutant	Emission Rate (1 Unit)		Emission Rate (2 Units)	
	lbs/hr	tons/yr	lbs/hr	tons/yr
NO_x	13.60	57.12	27.2	114.24
CO	3.92	16.46	7.84	32.92
VOC	1.23	5.17	2.46	10.34
SO_2	1.12	4.70	2.24	9.40



MIAMI-DADE WATER & SEWER AUTHORITY DEPARTMENT
SOUTH DISTRICT WASTEWATER TREATMENT PLANT

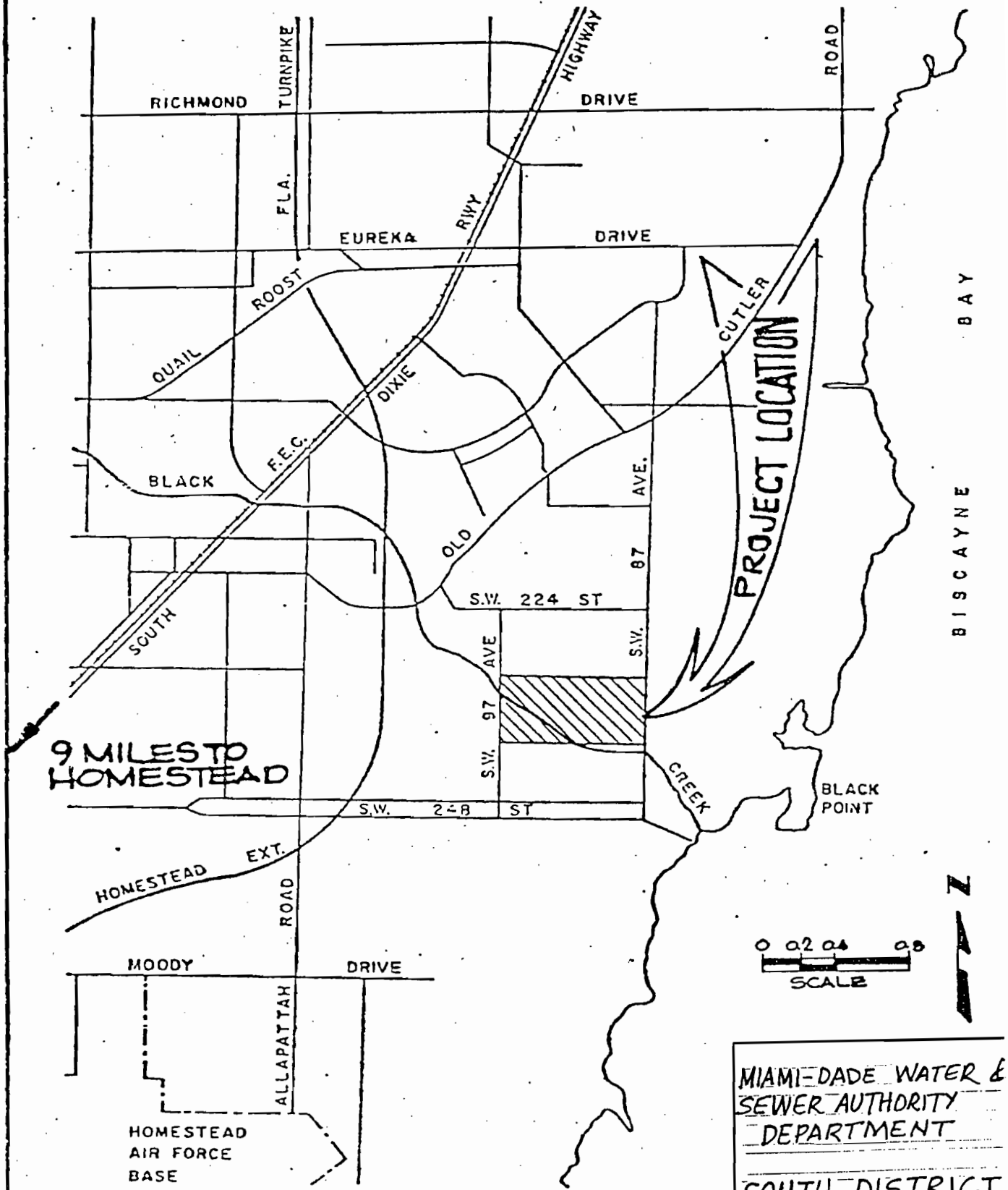
LOCATION OF DADE COUNTY WITH RESPECT TO STATE OF FLORIDA

FIGURE A-1



MIAMI-DADE WATER & SEWER AUTHORITY DEPARTMENT
SOUTH DISTRICT WASTEWATER TREATMENT PLANT
LOCATION MAP IN RELATION TO DADE COUNTY, FLORIDA

FIGURE A-2



MIAMI-DADE WATER & SEWER AUTHORITY DEPARTMENT

SOUTH DISTRICT WASTEWATER TREATMENT PLANT

LOCATION MAP IN DADE COUNTY, FLORIDA

FIGURE A-3

LOCATION MAP