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

SERVE • CONSERVE

June 24, 1997

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[signature]

Mr. Alvaro Linero, P.E.
Professional Engineer Administrator
Florida Department of Environmental Protection
Air Resources Management
2600 Blair Stone Road
Mail Station 5505
Tallahassee, FL 32399-2400

RE: Application for Air Construction Permit Application for Three Diesel Engine Driven Generator Sets at Central District Wastewater Treatment Plant

Dear Mr. Linero: 0250476-002-AC/PSD-FL-240

In accordance with Chapter 62-213, Florida Administrative Code (FAC), enclosed please find the referenced application. This submittal augments the Title V application currently being considered for this facility and includes:

1) One (1) signed and sealed full application.
2) Three (3) additional signed and sealed signature pages.
3) Four (4) diskettes copies of the application in the Electronic Submission of Application System (ELSA) format.

Should you have any questions about this submittal, please call me at (305) 669-7668 or Ms. Bertha M. Goldenberg, P.E. at (305) 669-5711.

Sincerely,

[signature]

Robert C. Ready, P.E.
Assistant Director
Treatment Facilities

CC: NPS
EPA
Syed Arif, BAR
SED
Dade
Cleve Holladay, BAR

RCR/BMG/rsl

Enclosures

cc: David E. Lindberg, P.E., CH2MHILL

L729DEP.WPD

MIAMI-DADE WATER AND SEWER DEPARTMENT
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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOUTHEAST FLORIDA DISTRICT
400 N. CONGRESS AVE.
W. PALM BEACH, FL 33401

DADE COUNTY FLORIDA COUNTY COMMISSIONERS MAYOR Harvey Ruvin CLERK

⑈091894⑈ ⑆067006432⑆ 2696206503470⑈

CH2MHILL *TRANSMITTAL*

TO: Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

FROM: David Lindberg, P.E.
800 Fairway Drive Suite 350
Deerfield Beach, FL 33441

ATTN: Mr. Alvaro Linero

DATE: July 22, 1997

RE: Application for Air Construction Permit

PROJECT NUMBER: 139633.AP

WE ARE SENDING YOU:

- ♦ ATTACHED
- UNDER SEPARATE COVER VIA
- SHOP DRAWINGS
- ♦ DOCUMENTS
- TRACINGS
- PRINTS
- SPECIFICATIONS
- CATALOGS
- COPY OF LETTER
- OTHER:

QUANTITY	DESCRIPTION
3	Application for Air Construction Permit for Three Diesel-Engine Driven Generator Sets at the Central District Wastewater Treatment Plant with original signatures
3	Application for Air Construction Permit for Three Diesel-Engine Driven Generator Sets at the Central District Wastewater Treatment Plant with copies

IF MATERIAL RECEIVED IS NOT AS LISTED, PLEASE NOTIFY US AT ONCE

REMARKS:

COPY TO:

Application for Air Construction Permit for

Three Diesel Engine-Driven Generator Sets at the Central District Wastewater Treatment Plant Miami, Florida

Prepared for:

Miami-Dade Water and Sewer Department

Prepared by:

CH2MHILL

June 1997

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Acronyms

ARC	ambient reference concentration
acfm	actual cubic feet per minute
BACT	Best Achievable Control Technology
BSFC	Brake-Specific Fuel Consumption
CAA	Clean Air Act
CO	carbon monoxide
m^3/s	cubic meters per second
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FP&L	Florida Power & Light
GEP	Good Engineering Practice
g/m^2	gram(s) per square meter
g/s	gram(s) per second
HAP	hazardous air pollutant
HC	hydrocarbon
HHV	Higher Heating Value
hp	horsepower
IC	internal combustion
IR	Fuel Injection Timing Retard
ISC	Industrial Source Complex
kW	kilowatt
kW-hr	kilowatt-hour
LAER	Lowest Achievable Emission Rate
LHV	Lower Heating Value
m/s	meter(s) per second
$\mu g/m^3$	microgram per cubic meter
NAAQS	National Ambient Air Quality Standards
NO_x	nitrogen oxides
NO_2	nitrogen dioxide
PAH	polynuclear aromatic hydrocarbon
PM-10	Particulate matter less than 10 micrometers in diameter
ppm	part(s) per million

Acronyms, continued

PSD	Prevention of Significant Deterioration
RBLC	RACT/BACT/LAER Clearinghouse
rpm	revolutions per minute
SCR	selective catalytic reduction
SO_2	sulfur dioxide
EPA	Environmental Protection Agency (United States)
VOC	volatile organic compound
WASD	Water and Sewer Department (Miami-Dade)
WWTP	wastewater treatment plant

SECTION 1

Introduction

The Miami-Dade Water and Sewer Department (WASD) proposes to increase operation of three existing (and previously exempt) standby electricity generators at its Central District Wastewater Treatment Plant (WWTP) on Virginia Key in Miami, Florida. Miami-Dade WASD desires to increase operation of its generator sets to provide power generation capacity during periods of load-sharing with the local utility, Florida Power and Light (FP&L); during power failure events; or as needed under other circumstances.

Each generator set is rated to produce 2,500 kilowatts (kW) of electric power at continuous, full load operating conditions. The generators are capable of operating at partial load conditions, as well as short durations (less than 2 hours) at peaking duty conditions (110 percent load or 2,750 kW). The generators are driven by 3,600-horsepower (hp) diesel engine prime movers. The 3,600-hp engines burn transportation-grade diesel fuel, which has a low sulfur content (0.05 weight percent sulfur).

The air quality impact analyses conducted in support of this application have demonstrated that operation of the standby generators will not cause an adverse impact on air quality at any location, or pose any threats to ambient air quality standards or prevention of significant deterioration (PSD) increments. This permit application was prepared with the assistance of the consulting firm, CH2M HILL. Questions regarding CH2M HILL's participation can be addressed to the individuals listed below at Miami-Dade WASD in Coral Gables, Florida, or CH2M HILL in San Diego, California:

Ms. Bertha M. Goldenberg, P.E.
Environmental Coordinator
Miami-Dade Water and Sewer Department
4200 Salzedo Street
Coral Gables, FL 33146
Telephone (305) 669-5711
FAX (305) 669-5717

Mr. David E. Lindberg, P.E
Project Engineer
CH2M HILL
701 B Street, Suite 700
San Diego, CA 92101
Telephone (619) 687-0110
FAX (619) 687-0111

The completed air permit application is provided as Appendix A.

SECTION 2

Facility Description

2.1 General

Facility Name: Central District Wastewater Treatment Plant

Owner: Miami-Dade Water and Sewer Department

Contact: Ms. Bertha M. Goldenberg, P.E.
Environmental Coordinator
Miami-Dade Water and Sewer Department
4200 Salzedo Street
Coral Gables, Florida 33146
(305) 669-5711
FAX (305) 669-5717

2.2 Site Description

The Central District WWTP is located on Virginia Key in Miami, Florida, as shown in Figure 2-1. Also located on the island are public beaches; two small lakes (Lamar Lake to the east of the facility and Duck Lake to the south of the facility); the Marine Stadium to the west of the facility; and the Virginia Beach County Park, Miami Seaquarium, and University of Miami Marine Laboratory to the south of the facility. The facility is approximately 1.0 mile north of the north end of Key Biscayne (3.0 miles north of residential areas), 0.5 miles south of Fisher Island (residential), 1.0 mile south of Miami Beach, and 2.5 miles east of downtown Miami.

A public access road runs from Rickenbacher Causeway to the facility. A plant layout is included as Figure 2-2. The facility consists of two parallel wastewater treatment trains, including the following processes and associated structures:

- Liquid processes consisting of identical grit chamber buildings at both plants, aeration tanks at plant 1, oxygenation tanks at plant 2, final settling tanks at both plants, and chlorination buildings at both plants.

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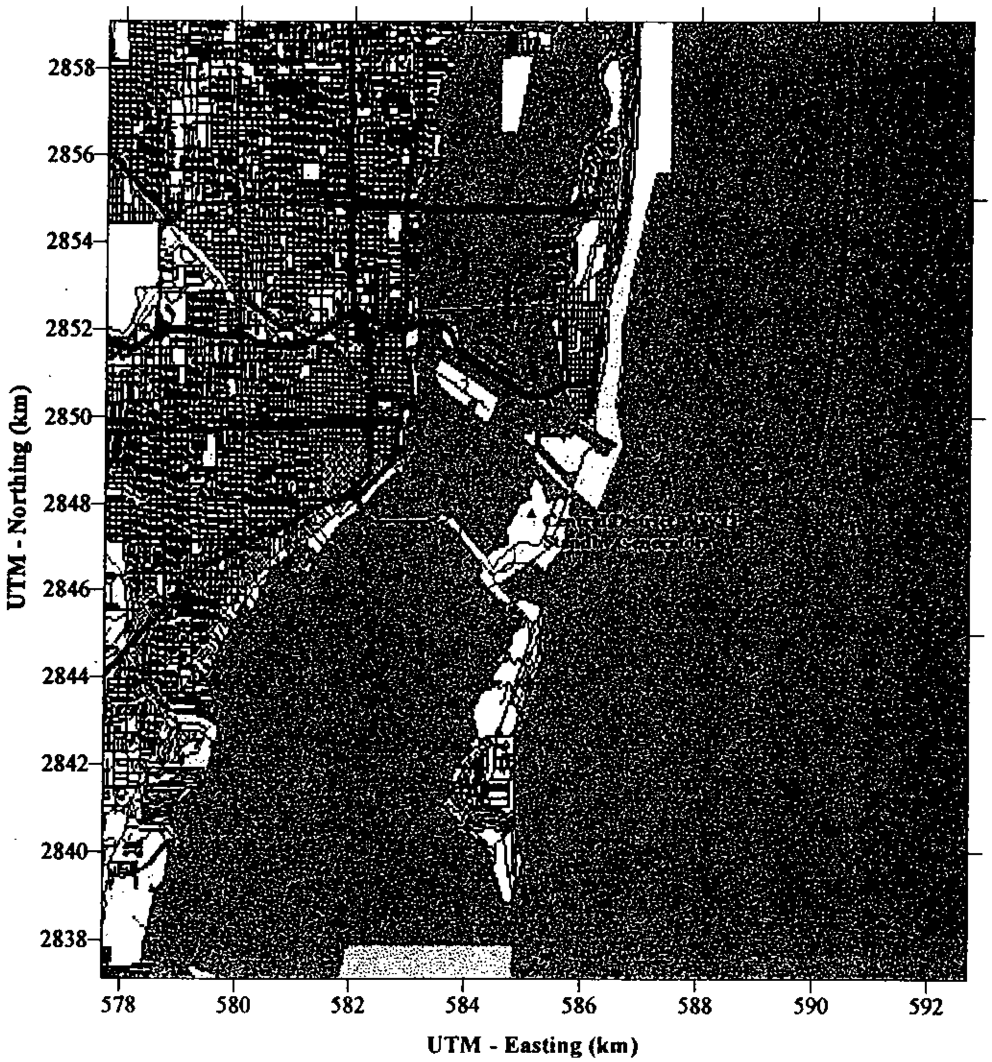

Figure 2-1
Site Location Map

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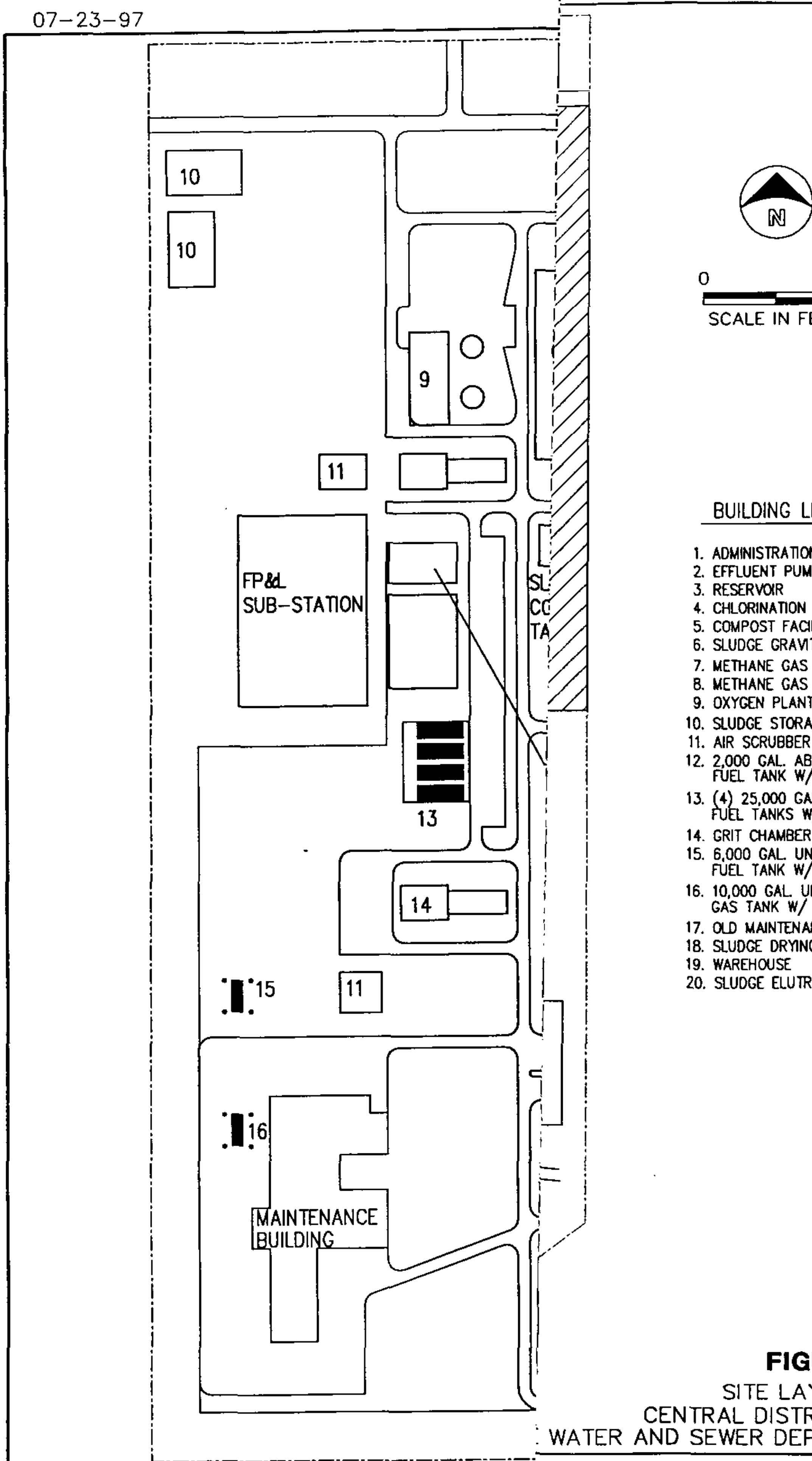

BUILDING LEGEND

1. ADMINISTRATION BUILDING
2. EFFLUENT PUMPING STATION
3. RESERVOIR
4. CHLORINATION BUILDING
5. COMPOST FACILITY
6. SLUDGE GRAVITY THICKENERS
7. METHANE GAS SCRUBBERS
8. METHANE GAS SPHERES
9. OXYGEN PLANT
10. SLUDGE STORAGE BUILDING
11. AIR SCRUBBER
12. 2,000 GAL. ABOVEGROUND DIESEL FUEL TANK W/ CONTAINMENT
13. (4) 25,000 GAL. ABOVEGROUND DIESEL FUEL TANKS W/ CONTAINMENT
14. GRIT CHAMBERS
15. 6,000 GAL. UNDERGROUND DIESEL FUEL TANK W/ 4 MONITORING WELLS
16. 10,000 GAL. UNDERGROUND UNLEADED REGULAR GAS TANK W/ 4 MONITORING WELLS
17. OLD MAINTENANCE BUILDING
18. SLUDGE DRYING BUILDING
19. WAREHOUSE
20. SLUDGE ELUTRIATION

FIGURE 2-2
SITE LAYOUT MAP
CENTRAL DISTRICT WWTP
WATER AND SEWER DEPARTMENT

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- Solids processes consisting of 8 gravity sludge concentration tanks, 24 anaerobic digesters, 2 sludge thickener tanks, a sludge dewatering building, and a dried sludge storage building.
- Other processes and structures, including a maintenance building, a blower and cogeneration building, four scrubber buildings, an electrical switchgear building, an oxygen plant, and the three standby generator enclosures.

2.3 Description of the Standby Generators

The sources include three 3,600-hp EMD model 20-645E4 internal combustion (IC) engines, each coupled to a 2,500-kW continuous-rated electrical generator. All engines are diesel-fueled 20-cylinder, 2-cycle, and turbocharged. Exhaust emissions (for nitrogen oxides [NO_x]) will be controlled using Best Achievable Control Technology (BACT), which will consist of fuel injection timing retard (IR) plus turbocharger aftercoolers. In addition, the engines will continue to burn low sulfur (0.05 weight percent) diesel fuel, which is representative of BACT for sulfur dioxide (SO_2). The combination of low-sulfur diesel fuel and combustion modifications is also representative of BACT for particulate matter with a diameter less than or equal to 10 micrometers (PM-10). Use of BACT will reduce emissions of NO_x in the engine exhaust by approximately 28 percent. The stacks are located approximately 25 feet apart, and each generator is located within a sound-attenuating, all-weather enclosure.

2.4 Operation

Table 2-1 summarizes the exhaust and operating characteristics of each generator set. This permit application includes an assessment of air quality impacts based on operation of the standby generators to 21,750,000 kilowatt-hour (kW-hr) power output annually. This level of operation corresponds to 2,900 hours per year at full load conditions. When operation of the generators is necessary, Miami-Dade WASD intends to operate at least one standby generator at partial load conditions instead of all generators at full load conditions. This will be done for the purpose of maintaining additional load capacity, thereby allowing the generators to accommodate sudden load changes.

The standby generators are physically capable of operating at 110 percent load conditions for peaking duty, but they are limited to 2 hours at this setting. The facility, however, does not intend to operate any of its generators in the peaking duty mode. Engine operating conditions will range from minimum load (20 percent) for short periods to full load (100 percent), with typical operation at some level of partial load. Table 2-1 shows that brake-specific fuel consumption (BSFC) increases as the engine loads are decreased.

Table 2-1
Summary of Exhaust and Operating Characteristics
EMD Model 20-645E4 Standby Generators
Miami-Dade Water and Sewer Department Central District WWTP

EMD Model 20-645E4 Generator Sets		
Number of units		3
Generator Capacity		
– Peaking (110% load - 2 hours max)		2,750 kW, each
– Continuous (full load - 100 %)		2,500 kW, each
Brake Specific Fuel Consumption (lb/bhp-hr)		
– Peaking - 110%		0.375, each
– Full Load - 100%		0.375, each
– Partial Load - 75%		approx. 0.394, each
– Partial Load - 50%		approx. 0.413, each
– Minimum Load - 20%		approx. 0.469, each
Operating Speed		900 rpm
Exhaust Characteristics		
– Height	(m)	6.40
	(ft)	21
– Diameter	(m)	0.91
–	(ft)	3.0
– Exhaust Flow	(m^3/s)	10.85
	(acfm)	23,000
– Exhaust Velocity	(m/s)	16.7
	(ft/s)	54.2
– Temperature	(°K)	669
	(°F)	735

Notes:
lb/bhp-hr = pounds per brake horsepower-hour
rpm = revolutions per minute
m = meter
ft = feet
m^3/s = cubic meters per second
acfm = actual cubic feet per minute
°K = degrees Kelvin
°F = degrees Fahrenheit

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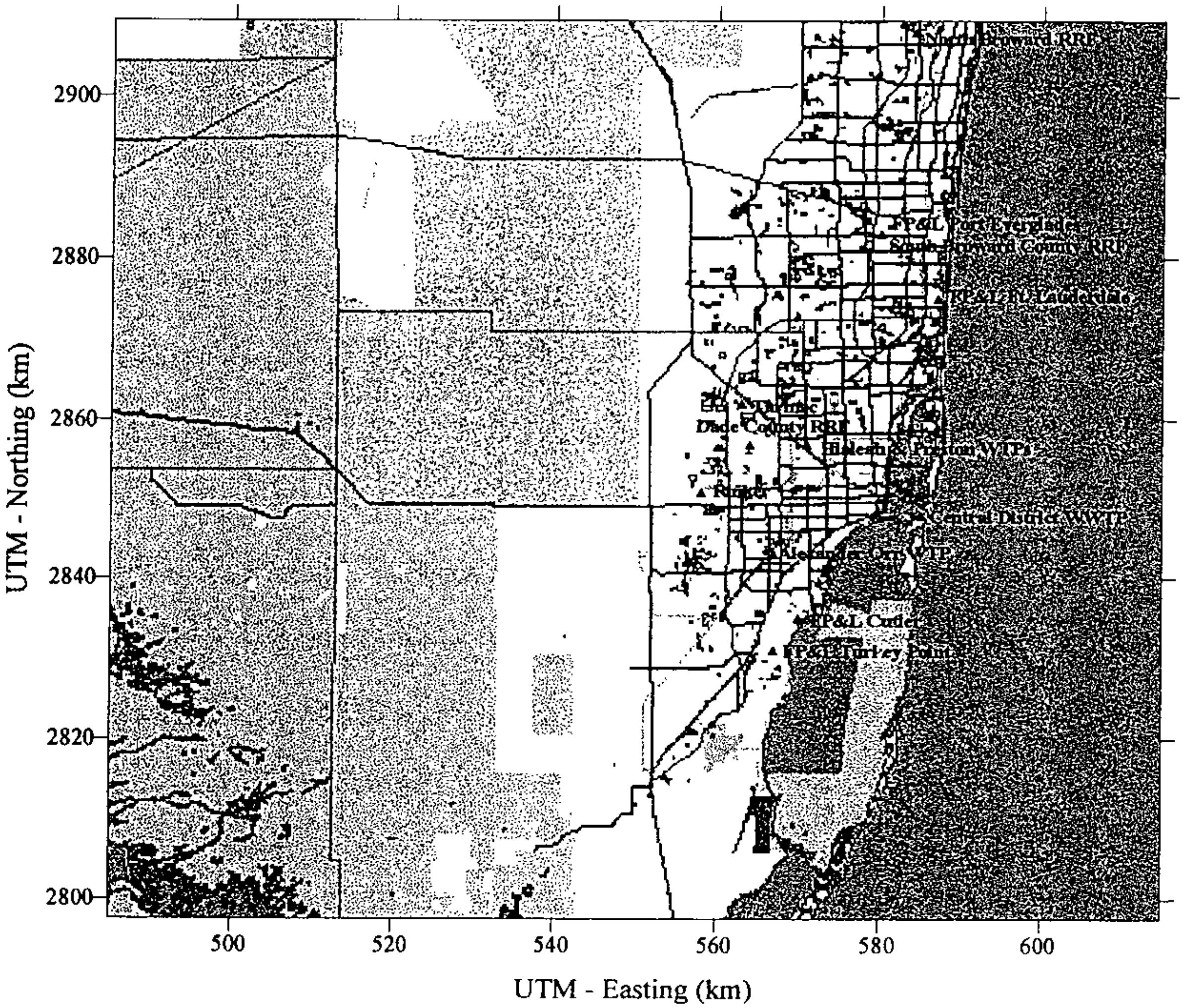

Figure 3-1
Map of Regional Emissions Sources

SECTION 3

Emission Source Information

3.1 Standby Generator Set Emissions

3.1.1 Regulated Pollutants

A summary of the annual emissions from all three generator sets operating under a range of load conditions is presented in Table 3-1. Because of air emissions, energy efficiency, and maintenance considerations, the IC engines will not be operated at partial loads less than 25 percent of their respective full load rating except during startup.

Table 3-1
Proposed Annual and PSD Significant Emission Rates
EMD Model 20-645E4 Standby Generators (3)
Miami-Dade Water and Sewer Department

	Emissions (tons/yr)				Significant Emission
Pollutant	25% load[1]	50% load[2]	75% load[3]	100% load[4]	Rate (tons/yr)
CO	50.1	20.4	14.5	17.6	100
NO_x	197	226	216	253	40
SO_2	5.4	6.6	6.3	6.0	40
PM/PM-10	5.7	6.6	6.3	6.0	25/15
VOC	8.4	9.9	9.6	9.0	40

[1] Continuous operation (8,760 hours per year), each generator.
[2] Operating 5,800 hours per year, each generator.
[3] Operating 3,866 hours per year, each generator.
[4] Operating 2,900 hours per year, each generator.

The estimates of emission rates were determined using the following assumptions:

- Reduction of NO_x emissions by 28 percent from uncontrolled levels and PM-10 emissions by 25 percent from uncontrolled levels using IR plus aftercoolers
- Reduction of SO_2 emissions by using low-sulfur diesel fuel (0.05 weight percent)
- All particulate emissions are less than or equal to 10 micrometers (PM-10)
- Operation at 2,900 hours per year at full load, 3,688 hours per year at 75 percent load, 5,800 hours per year at 50 percent load, or continuous at 25 percent load

Emissions data provided by the engine manufacturer for carbon monoxide (CO) and NO_x indicate that hp-specific emissions reach a minimum at 75 percent load conditions (approximately 2,700 hp). No hp-specific emissions data were provided for PM-10 or volatile organic compounds (VOCs). Hp-specific emissions of SO_2 decrease with increasing engine power output because of the decrease in BSFC (more efficient operation) for engine power output approaching the engine's rated capacity.

For all pollutants summarized in Table 3-1, maximum emissions of all pollutants except CO occur when operating at full load. Maximum emissions of CO occur at 25 percent load conditions. Because no hp-specific emissions data are available for PM-10 and VOCs, maximum emissions are assumed to coincide with full load operation. As shown in Table 3-1, only emissions of NO_x are expected to exceed the corresponding PSD significant emission rates. Detailed emissions calculations for the standby generators are provided in Appendix B.

Because NO_x emissions exceed PSD thresholds, the project is a major source of NO_x as defined by the regulations governing PSD. As such, a PSD permit is required, including a demonstration of BACT, and an air quality impact analysis to demonstrate that there will not be a violation of any National Ambient Air Quality Standards (NAAQS) or exceedance of any PSD increments.

3.1.2 Non-regulated Pollutants

The Environmental Protection Agency's (EPA's) guidance on the assessment of non-regulated "toxic pollutants" requires that permit applicants evaluate emissions of toxic air emissions for those pollutants that the proposed source could emit in amounts potentially of concern to the public. In the case of IC engines, potential toxic air pollutants could include benzene, toluene, xylenes, formaldehyde, acetaldehyde, acrolein, propylene, and polynuclear aromatic compounds (PAHs). None of these pollutants are expected to be emitted in significant quantities. A more complete analysis of these non-regulated pollutants is provided in Section 6.

3.2 Other Emission Sources

To facilitate the determination of PSD increment consumption and compliance with the NAAQS in the vicinity of the Central District WWTP, an inventory of permitted emission sources was requested from the Florida Department of Environmental Protection (FDEP). The inventory, which included all emission sources in Broward and Dade Counties, was screened to identify sources with the potential to interact with emissions from the standby generators at the Central District WWTP. Based on FDEP guidance, all sources having an annual emission rate (in tons) less than 20 times their distance (in kilometers [km]) from the Central District WWTP were excluded from the air quality impact analysis on the basis that they would not likely have any significant impact on the area impacted by the standby generators. The resulting list of sources is provided in Table 3-2, and the relative locations of these sources is shown in Figure 3-1.

Emissions from all sources listed in Table 3-2 were included in the air quality impact analysis to demonstrate that ambient concentrations of nitrogen dioxide (NO_2) at all receptors impacted by the standby generators will be below the NAAQS. Sources installed or modified before the baseline date for NO_2 (March 28, 1988) were identified as "baseline" sources. Emissions from these sources were excluded from determination of PSD increment consumption, because (by definition) they do not consume increment. Emissions from identified PSD sources (non-baseline sources) were included in the air quality impact analysis to demonstrate that consumption of PSD increment resulting from operation of the standby generators will be within acceptable limits at all receptor locations.

Table 3-2
Regional Emission Source Inventory
Miami-Dade Water and Sewer Department

Source	Location (UTM) Northing (km)	Easting (km)	Emission Rate (g/s)	Stack Parameters Height (m)	Temp (K)	Velocity (m/s)	Diameter (m)	Baseline?
MDWASD Central District WWTP Gas Engines	2847.66	585.12	5.37	7.62	741	0.1	7.85	No
MDWASD Central District WWTP Blower Engines	2847.66	585.12	4.62	10.66	875	31.0	0.2	Yes
MDWASD Alexander Orr WTP Standby Generators	2843.38	566.59	42.31	3.5	608	45.2	0.53	No
MDWASD Alexander Orr WTP Pump Engines	2843.51	566.68	16.84	8.53	735	10.0	0.24	Yes
MDWASD Alexander Orr Lime Plant	2843.31	566.41	0.02	4.57	228	0.15	0.0	Yes
MDWASD Preston WTP Standby Generators	2857.11	571.49	49.65	8.8	608	45.2	0.53	No
MDWASD Hialeah Lime Plant	2856.85	571.35	0.84	22.85	330	8.25	0.85	Yes
South Broward County RRF	2883.3	579.6	68.55	59.44	381	18.0	3.96	No
North Broward County RRF	2907.6	583.6	64.00	58.5	381	18.0	3.96	No
Tarmac Kiln 1	2861.7	562.9	21.14	60.96	465	12.8	2.44	No
Tarmac Kiln 2	2861.7	562.9	12.89	60.96	422	9.11	2.44	No
Tarmac Kiln 3 Modified	2861.7	562.9	68.18	60.96	450	11.0	4.57	No
Tarmac Kiln 3 Baseline	2861.7	562.9	-60.80	60.96	472	10.78	4.57	Yes
Dade County RRF Kilns 1 & 2	2857.39	564.4	35.38	76.2	405	15.86	3.66	No
Dade County RRF Kilns 1 & 2 Baseline	2857.39	564.4	-22.50	45.72	472	12.20	2.74	Yes
Dade County RRF Kilns 3 & 4	2857.39	564.4	35.38	76.2	405	15.86	3.66	No
Dade County RRF Kilns 3 & 4 Baseline	2857.39	564.4	-22.53	45.72	472	12.20	2.74	Yes
Dade County RRF Kiln 5	2857.4	564.3	13.24	76.2	400	15.74	2.97	No
FP&L Ft Lauderdale CT 1-4	2883.3	580.1	135.7	45.72	411	10.97	4.88	No
FP&L Ft Lauderdale CT 1-12	2883.3	580.1	508.0	13.72	733	121.34	5.49	Yes
FP&L Ft Lauderdale CT 13-24	2883.3	580.1	508.0	13.72	733	121.34	5.49	Yes
FP&L Ft Lauderdale 4-5 Baseline	2883.3	580.1	-70.6	46.00	422	14.63	4.27	Yes
FP&L Cutler Unit 5	2834.9	570.4	51.15	45.72	408	11.58	4.57	Yes
FP&L Cutler Unit 6	2834.9	570.4	86.82	45.72	408	14.33	4.57	Yes
FP&L Port Everglades 1-2	2875.3	587.4	313.78	104.85	416	18.59	4.27	Yes
FP&L Port Everglades 3-4	2875.3	587.4	508.27	104.55	408	19.2	5.52	Yes
FP&L Port Everglades CT 1-12	2875.3	587.4	498.95	15.54	733	21.34	5.49	Yes
FP&L Turkey Point 1-2	2831.2	567.2	475.24	121.92	408	19.2	5.52	Yes
Rinker Kilns 1 & 2	2851.3	558.2	20.19	41.76	400	7.62	4.57	Yes
South Florida Cogeneration	2850.9	580.5	6.21	39.6	389	16.46	2.74	Yes

Notes:
UTM = universal transverse mercator
km = kilometer
g/s = grams per second

SECTION 4

Applicable Regulations

4.1 Applicable Pollutants

Total allowable annual emissions of NO_x and CO from the Central District WWTP currently exceed 250 tons/year for each of these pollutants. Therefore, the Central District WWTP constitutes a major source of emissions under the regulations governing PSD (40 CFR 52.21). Estimated emissions of NO_x from the standby generators for the proposed level of operation will exceed the corresponding PSD significant emission rate (see Table 3-1). As a result, an ambient air quality impact analysis and demonstration of BACT are required for NO_x.

4.2 Air Quality Impact Analysis Requirements

The air quality regulations that the proposed project must comply with are the NAAQS for NO_2 (40 CFR 50 and Chapter 62-204.240(5), Florida Administrative Code [FAC]); and the PSD Class II and Class I increments for NO_2 (40 CFR 52 and Chapter 62-204.260, FAC). These limits are summarized in Table 4-1 along with the corresponding limits for SO_2 and PM-10. Analyses of the proposed emissions from the standby generators (Section 6) demonstrate that the standby generators will be in compliance with all state and federal ambient air quality regulations.

Also listed in Table 4-1 are the "significant" impact levels for each pollutant. The area of significant impact for the Central District WWTP consists of the area covered by all receptors having predicted concentrations in excess of significant impact levels for each PSD pollutant. When the ambient concentrations at a particular location attributable to a given facility are below the significant impact levels, the impact of the facility at that location is considered to be insignificant.

Table 4-1
Ambient Air Quality Standards and Significant Impact Levels
(Concentrations in $\mu g/m^3$)

		NAAQS		PSD Increments		Significant Impact Level	
Pollutant and Averaging	Period	Primary	Secondary	Class II	Class I	Class II	Class I[a]
SO_2							
	3-hour	-	1,300[b]	512[b]	25[b]	25	1.0
	24-hour	365[b]	-	91[b]	5[b]	5	0.2
	Annual	80	-	20	2	1	0.1
NO_2							
	Annual	100	100	25	2.5	1	0.1
PM-10							
	24-hour	150[b]	150[b]	30	8	5	0.3
	Annual	50	50	17	4	1	0.2

Notes:
[a] Proposed by the National Park Service, July 23, 1996.
[b] Concentrations not to be exceeded more than once per year, on an average basis.

4.3 Emission Limits and Performance Standards

While there are no federal or state regulations specifically applicable to IC engines, any source subject to PSD is required to install or comply with BACT. A discussion of BACT for the standby generators is provided in Section 5.

4.4 Monitoring Requirements

4.4.1 Pre-construction Monitoring

FDEP has indicated that they consider data available from an air quality monitoring station on Virginia Key representative of air quality and meteorological conditions at the facility. Therefore, pre-application meteorological monitoring will not be required for this project.

Dispersion modeling performed for the standby generators have indicated that the predicted air quality impacts (Section 6) attributable to NO_x emissions from the sources are above EPA-defined *de minimis* ambient impact levels. Background levels of NO_2 at the Virginia Key monitoring station, provided by FDEP, are included in Section 6.5.3. These data were used in conjunction with dispersion modeling analyses of existing and permitted emission sources in the Miami area to demonstrate compliance with the NAAQS.

4.4.2 Operational Monitoring

The Central District WWTP will comply with all applicable operational monitoring requirements imposed by federal and state regulations. Annual emissions monitoring will be conducted to verify compliance with BACT for NO_x. The facility will also comply with any other operational monitoring and reporting requirements as may be determined necessary by FDEP to ensure compliance with federal or state rules or regulations (such as maintaining documentation of diesel fuel sulfur content). This will include any applicable future monitoring, reporting, and recordkeeping required under Title V (Operating Permits) of the Clean Air Act (CAA) Amendments of 1990.

SECTION 5

Demonstration of BACT

5.1 General

Under PSD regulations, a new or modified "major source" is required to apply BACT for any pollutant emitted in "major" or "significant" amounts. As discussed in Section 3, the proposed standby generators have the potential to emit NO_x in "significant" quantities. A BACT analysis is therefore required for this pollutant.

The purpose of this review is to demonstrate that the air pollution control measures to be utilized at these facilities represent BACT as defined by Section 169 of the CAA:

> "An emission limitation (including a visible emissions standard) based on the maximum degree of reduction of each pollutant subject to regulations under the Act which would be emitted from any proposed major stationary source or major modification, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, economic impacts and other costs, determines is achievable for such source or modifications through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment of innovative fuel combination techniques for control technology resulting in emissions of any pollutant which will exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the EPA determines that technological or economic limitations on the application of measurement methodology to a particular emission unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirements for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results."

Both FDEP and EPA have indicated that demonstration of BACT described above must follow a "top-down" approach. The "top-down" process requires that all available control technologies be ranked in descending order of control effectiveness. This process ensures that the BACT demonstration considers the most stringent level of control technology available. That control option is established as BACT, unless it can be demonstrated that energy, environmental, or economic impacts justify a conclusion that the most stringent technology is not achievable. The next most stringent alternative is then considered. The process continues until the BACT level under consideration cannot be eliminated by any substantial or unique economic or environmental objectives.

The purpose of this section is to demonstrate that the proposed emission control systems and methods will be representative of BACT. To facilitate the demonstration, information obtained from EPA's RACT/BACT/LAER Clearinghouse (RBLC) database for diesel engines is presented in Table 5-1. The following paragraphs summarize the control technology options available for diesel engines, and the proposed BACT for NO_x.

5.2 Nitrogen Oxides (NO_x)

NO_x is formed during the fuel combustion process in the presence of atmospheric nitrogen. Nitrogen and oxygen dissociate into their atomic states under high temperature and pressure conditions present inside combustion engines. Atomic oxygen and nitrogen quickly react with each other to form seven different oxides of nitrogen: NO, NO_2, NO_3 N_2O, N_2O_3, N_2O_4, and N_2O_5. Only nitric oxide (NO) and NO_2 are formed in significant quantities, and NO accounts for approximately 95 percent of total NO_x emissions. NO is eventually converted to NO_2 in the atmosphere.

5.2.1 Selective Catalytic Reduction

The RBLC database indicates that the top method of controlling emissions of NO_x from diesel engines is selective catalytic reduction (SCR). The database indicates that SCR has been applied to diesel engines at a single facility in Philadelphia, Pennsylvania (PA-0006 and 0007 in Table 2). Philadelphia is in an ozone transport nonattainment region where new and modified facilities are required to comply with regulations that limit NOx emissions

Table 5-1
Summary of NO_x Control Technology Determinations for Diesel Engines as of 7/6/97

RBLCID	Permit Date	Process	Pollutant	Primary Emissions		Ctrl Description	% Effic	Asis
AK-0026	7/26/93	Generator, Wartsilla #2 & #6	NO_2	135	lb/hr	3 Degree Timing IR	66	BACT-PSD
AK-0026	7/26/93	Generator, Transportable	NO_x	26.3	lb/hr	Restricted to 3,000 Hrs/Yr	0	BACT-PSD
AK-0026	7/26/93	Generator, Caterpillar #1, #2 & #3	NO_x	71.1	lb/hr	Restricted to 1,690,000 kW-hr	0	BACT-PSD
AK-0028	6/21/96	6.5 mW Power Generation, Diesel	NO_2	632.6	tons/yr	Limit Operating Hours; Aftercoolers	0	BACT-PSD
AK-0029	6/27/96	3.4 mW Power Generation, Diesel	NO_2	427	tons/yr	Aftercoolers	0	BACT-PSD
CA-0417	12/2/91	410 hp Diesel Generator, Emergency	NO_x	0.0		Turbo/Aftercooler, 4 Deg. Timing IR	40	BACT-PSD
CA-0422	1/6/92	211 bhp @ 1800 Rpm Diesel Generator	NO_x	2.88	lb/hr	Timing IR, Turbo/Water Injection*	64	BACT-PSD
CA-0453	12/2/91	410 hp Diesel Engine	NO_x	0.0		Turbo/Aftercooler	40	BACT-PSD
CA-0562	6/18/93	953 bhp Engine	NO_x	6.6	g/bhp-hr	Turbo/Aftercooler, 4 Deg Timing IR	40	BACT-OTH
CA-0586	6/15/93	Generator, Diesel	NO_x	4.0	degrees IR	4 Degree Timing IR	0	BACT-OTH
HI-0011	11/25/91	7.86 mW Diesel Engine Generators (4)	NO_x	590	ppmvd	Variable IR, Turbo/Aftercooler	18.6	BACT-PSD
HI-0016	11/8/95	2.2 mW Diesel Engine Generators (3)	NO_x	656	ppmvd	Timing IR; Intake Air Cooling	0	BACT-PSD
HI-0017	5/4/96	2.2 mW Diesel Engine Generators (3)	NO_x	656	ppmvd	Timing IR; Intake Air Cooling	0	BACT-PSD
MN-0022	3/1/95	2.7 MMBtu/Hr Diesel Fire Pump	NO_x	5.0	lb/hr	Timing IR; Turbo/Aftercooling	0	BACT-PSD
NY-0044	6/6/95	3000 kW Generator, Emergency	NO_x	2.6	lb/MMBtu		0	LAER
NY-0047	9/1/92	1.3 MMBtu/Hr Diesel Fire Pump	NO_x	1.3	lb/MMBtu	Lean Burn Engine	0	BACT-OTH
NY-0047	9/1/92	1.5 MMBtu/Hr Nat. Gas Emgcy Gen.	NO_x	1.3	lb/MMBtu	Lean Burn Engine	0	BACT-OTH
NY-0072	12/10/94	22.00 MMBtu/Hr Diesel Generator	NO_x	1.166	lb/MMBtu	No Controls	0	BACT-OTH
NY-0072	12/10/94	1.5 MMBtu/Hr Fire Pump	NO_x	4.25	lb/MMBtu	No Controls	0	BACT-OTH
PA-0083	5/3/91	1135 kW Diesel Generators (2)	NO_x	36	lb/hr each		0	OTHER
PA-0096	10/15/92	1156 kW Diesel Engines (11)	NO_x	2.0	g/bhp-hr	Selective Catalytic Reduction	80	BACT-OTH
PA-0097	10/15/92	1635 kW Diesel Engines (7)	NO_x	2.0	g/bhp-hr	Selective Catalytic Reduction	80	BACT-OTH
SC-0027	7/15/92	400 kW Diesel Generator, Emergency	NO_x	13.1	lb/hr		0	BACT
VA-0191	1/28/93	1200 kW Diesel Generators (3)	NO_x	137.3	lb/hr	Turbo/Aftercooler	0	BACT-OTH
VA-0207	7/30/93	748,000 Gal/Yr Diesel Generators (6)	NO_x	33.2	lb/hr	5 Degree Timing IR	21.7	NSPS
WI-0083	11/23/94	Diesel Generator, Back-Up	NO_x	67.5	lb/hr	Low Sulfur (0.05%) Diesel Fuel	0	BACT-PSD

Source: U.S. EPA RACT/BACT/LAER Clearinghouse through the imposition of reasonably achievable control technology (RACT) or lowest achievable emission rate (LAER). SCR was specifically installed at this facility to comply with a locally-mandated emission limit of 2 grams NO_x per horsepower-hour (hp-hr). As such, it is more representative of LAER than BACT. Because SCR has been installed at only one facility and under conditions that effectively required the use of LAER for NO_x emission control, the use of SCR is considered to exceed what would be considered BACT for MDWASD's diesel engines.

SCR process reduces NO_x emissions by injecting ammonia (NH_3) into the exhaust stream, where the NH_3 and NO_x react in the presence of a catalyst to form water and nitrogen:

$$NH_3 + NO_x \text{ ----> } N_2 + H_2O \text{ (unbalanced)}$$

The catalyst reactor is usually a honeycomb configuration consisting of either a ceramic or metal substrate and the active catalyst coating. Several types of catalysts are available, including vanadium oxides, titanium oxides, or precious metals. Zeolite catalysts are also available in which the catalyst is distributed uniformly throughout the extruded crystalline reactor structure. Because SCR requires the injection of ammonia upstream of the reactor, an ammonia injection system and storage facilities are required.

The presence of higher oxygen concentrations in the exhaust of lean-burn engines (all diesel engines) makes SCR applicable. SCR applies most effectively to natural-gas-fired lean-burn engines with constant load carrying operation. NO_x emission reduction levels from SCR typically range from 75 percent to 95 percent without any corresponding increase in hydrocarbon (HC) or CO emissions, and NH_3 concentrations in the exhaust between from 20 to 30 parts per million (ppm). Backpressure on the engine increases by approximately 2 to 4 inches water with installation of SCR. A small, 0.5 percent increase in BSFC is associated with the 4-inch backpressure, and power output is estimated to decrease by approximately 2 percent for turbocharged engines.

Fuel characteristics and engine duty cycle may reduce the effectiveness of SCR technology. Contaminants present in diesel fuel and engine lube oils, including sulfur, phosphorus, and ash, can poison or mask the surface of the catalyst and reduce or terminate its activity. Fuel sulfur, which oxidizes to SO_2 during combustion, is oxidized to SO_3 in some catalysts and reacts with NH_3 to form ammonium sulfate and ammonium bisulfate salts. These salts form a coating over the catalyst surface, reducing its effectiveness. Particulate emissions from diesel engines also mask or foul surfaces of the catalyst.

Because exhaust temperature and NO_x emissions depend on engine power output, variable load applications may also cause exhaust temperatures and NO_x concentrations that pose a problem for SCR. Under varying load situations, off-stoichiometric quantities of NH_3 are injected into the exhaust, leading to either reduced NO_x reduction efficiency or the release of unreacted NH_3 in the exhaust (commonly called "ammonia slip"). Because the Central District WWTP standby generators will be accommodating fluctuations in load, this problem is a significant disadvantage to the application of SCR. Exhaust temperatures, which fluctuate significantly under varying load conditions, may not be within the temperature range for optimum catalyst performance. Because of these technical problems, SCR is not well-suited for the standby generators and is not representative of BACT.

5.2.2 Fuel Injection Timing Retard/Combustion Air Precooling

The next most stringent method of controlling emissions of NO_x is a combination of IR and precooling of combustion air. As shown in Table 5-1, this combination of NO_x emission control technologies is the second most stringent technology applied to diesel engines.

In a diesel engine, injection of fuel into the cylinder starts the combustion process. Retarding the timing of fuel injection until the piston is in its downward motion increases the volume of the combustion chamber, which reduces combustion temperature and pressure, subsequently reducing the formation of NO_x. However, IR generally increases black smoke and cold smoke (white smoke during start up) emissions, as well as increasing exhaust temperatures. The increase in exhaust temperatures affect turbocharger performance and may be detrimental to exhaust valve life. A small increase in BSFC (2 percent) and a significant increase in particulate emissions (25 percent) usually result from the application of IR alone to diesel engines. To counteract this problem, it has been demonstrated that the installation of a device to cool the combustion air upstream of the cylinder alleviates most of the negative side effects of IR.

In large bore diesel engines equipped with a turbocharger, the combustion air precooler consists of a heat exchanger located downstream of the turbocharger, and is typically referred to as an aftercooler. Cooler air box temperatures reduce bulk combustion temperature, which reduces NO_x formation. Because cooler air is denser, the cylinders are charged with a greater mass of air that generally helps reduce emissions of unburned HC, CO, and particulate matter. Manufacturer's test results of the 20E4 and 20F4B series-engines have shown that installation of four-pass aftercoolers piped to the engine's cooling system reduce uncontrolled emissions of NO_x and PM-10 by up to 10 percent while slightly lowering BSFC (0.5 to 1.0 percent). Tests have also shown that combining a 4-degree IR with the installation of a four-pass aftercooler will reduce NO_x emissions by 28.0 percent, PM-10 emissions by 7.0 percent, and BSFC by 0.7 percent. Documentation of the aftercooler technology is included in Appendix B.

According to the *Alternative Control Techniques Document - NO_x Emissions from Reciprocating Internal Combustion Engines (EPA, July 1993),* the cost effectiveness for application of IR to a diesel engine that operates continuously is approximately $500 per ton of NO_x emissions reduction. According to cost estimates provided by equipment manufacturers to Miami-Dade WASD, most of the cost may be offset by the addition of turbocharger/aftercooling that provides additional NOx reduction without increasing BSFC (there may actually be a slight decrease in BSFC). Depending on system performance, maintenance requirements, and fuel consumption, the cost-effectiveness of this technology is approximately $50/ton.

SECTION 6

Air Quality Impact Analysis

The dispersion modeling analyses documented here were designed to assess the potential impact on ambient air quality of the three standby generator sets located at the Central District WWTP in Miami, Florida. Prior to initiation of the air quality impact analysis as described herein, a modeling protocol was submitted to FDEP for review and approval. Verbal approved of the protocol was obtained from FDEP in March 1997. A copy of the modeling protocol is included in Appendix D. The dispersion models, meteorological data, modeling methodology, and results of the analyses described in this application are discussed in the following subsections.

6.1 Dispersion Model

Dispersion modeling results were obtained using EPA's short-term Industrial Source Complex Model (ISCST3), version 96113 (EPA, 1996). the ISCST3 model was used to determine long-term (annual average) concentrations only because NO2 has a single annual average standard.

6.2 Meteorological Input Data

The meteorological database used in the air quality modeling analyses consisted of 5 years (1987 - 1991) of surface observations from Miami International Airport, and upper air data from West Palm Beach, Florida, as recommended by FDEP. The Miami International Airport station where surface data were obtained is approximately 14 kilometers (km) to the northwest of the proposed project site. These data were processed by EPA's meteorological data preprocessor program PCRAMMET, and the results made ready for input into the ISCST3 model.

6.3 Receptor Grids

A polar-based receptor grid was used for all analyses, with a radial spacing of 10 degrees (i.e., 10°, 20°, 30°, etc.). Initial modeling was performed with a coarsely-defined receptor grid. The coarse grid, shown in Figure 6-1, consists of receptors at 50-meter spacings along the property fenceline, and along each of the 36 radials at the following distances:

- 250-meter spacings from r = 250 m to r = 2,000 m
- 500-meter spacings from r = 2,000 m to r = 5,000 m
- 1,000-meter spacings from r = 5,000 m to r = 16,000 m

In addition, 28 receptors along the northern and eastern boundaries of Everglades National Park and 4 receptors within the northeast corner of the park were included in the modeling analysis. Everglades National Park Receptors are shown in Figure 6-2.

Subsequent refined modeling was performed with a refined receptor grid with receptors out to the maximum radius of significant impact. The fine grid, shown in Figure 6-3, consists of receptors located at 50-meter spacings along the property fenceline, and along each of the 36 radials at the following distances:

- 100-meter spacings from r = 200 m to r = 1,000 m
- 250-meter spacings from r = 1000 m to r = 2,500 m
- 500-meter spacings from r = 2,500 m to r = 5,000 m

There were no offsite receptors located within 100 meters of the standby generators.

6.4 Other Modeling Considerations

The ISCST3 model contains options that determine the way in which calculations are made. The choice of options was made consistent with EPA's current recommended approach, including the regulatory default option. The options utilized in the analysis included stack tip downwash, final plume rise, buoyancy-induced dispersion, and rural stability coefficients. The ISCST3 calms processor was used to account for calm winds in the calculations. Terrain elevations were omitted from the model because of the relatively flat topography of the area. Rural stability coefficients were used.

Emissions from the standby generators are released from three identical 21-foot exhaust stacks 25 feet apart. For modeling purposes, the standby generators were modeled as a single point source with all emissions occurring at the middle stack. Based on the dimension of the adjacent structures, these stacks are less than the calculated good engineering

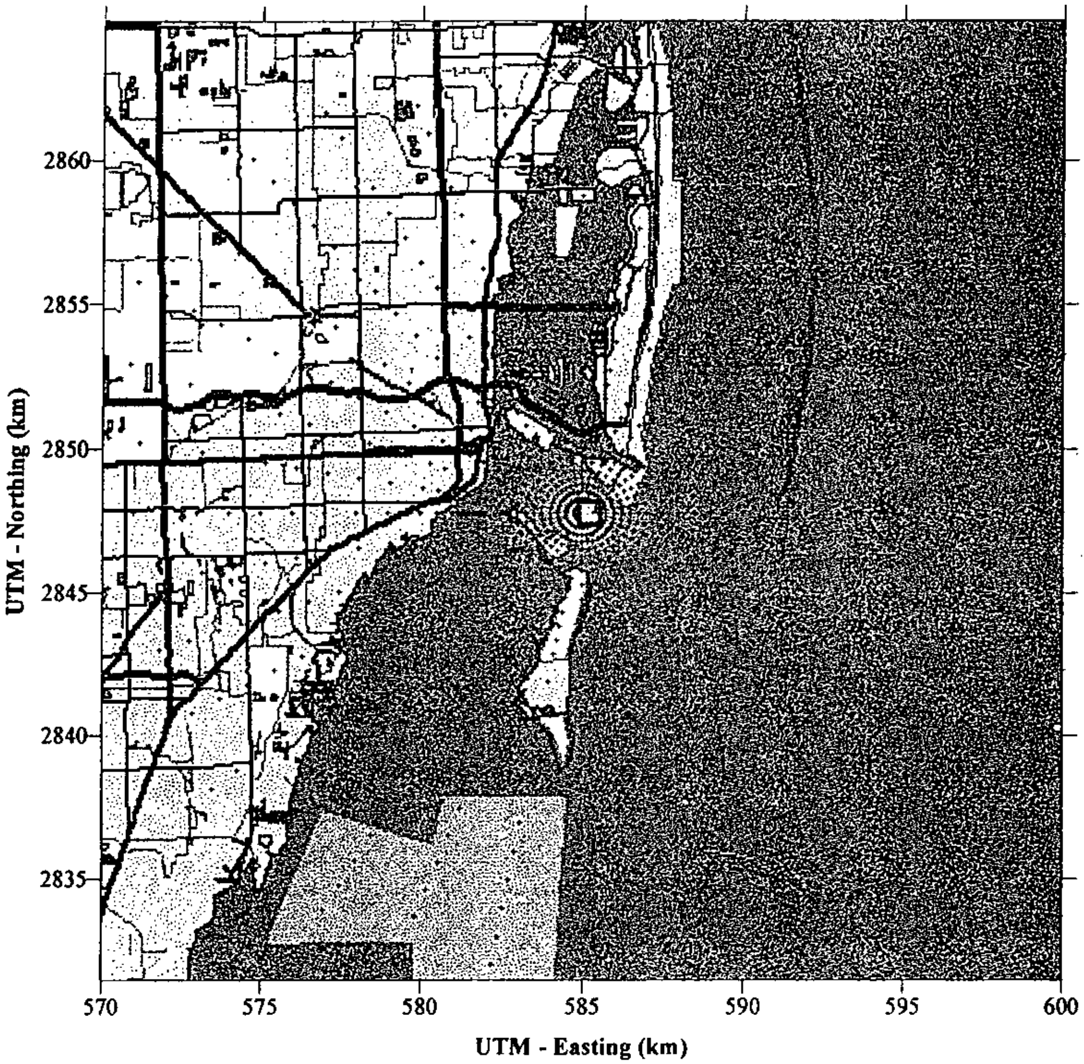

Figure 6-1
Coarse Grid Receptor Locations

139633.AP.01 6/97 DFB

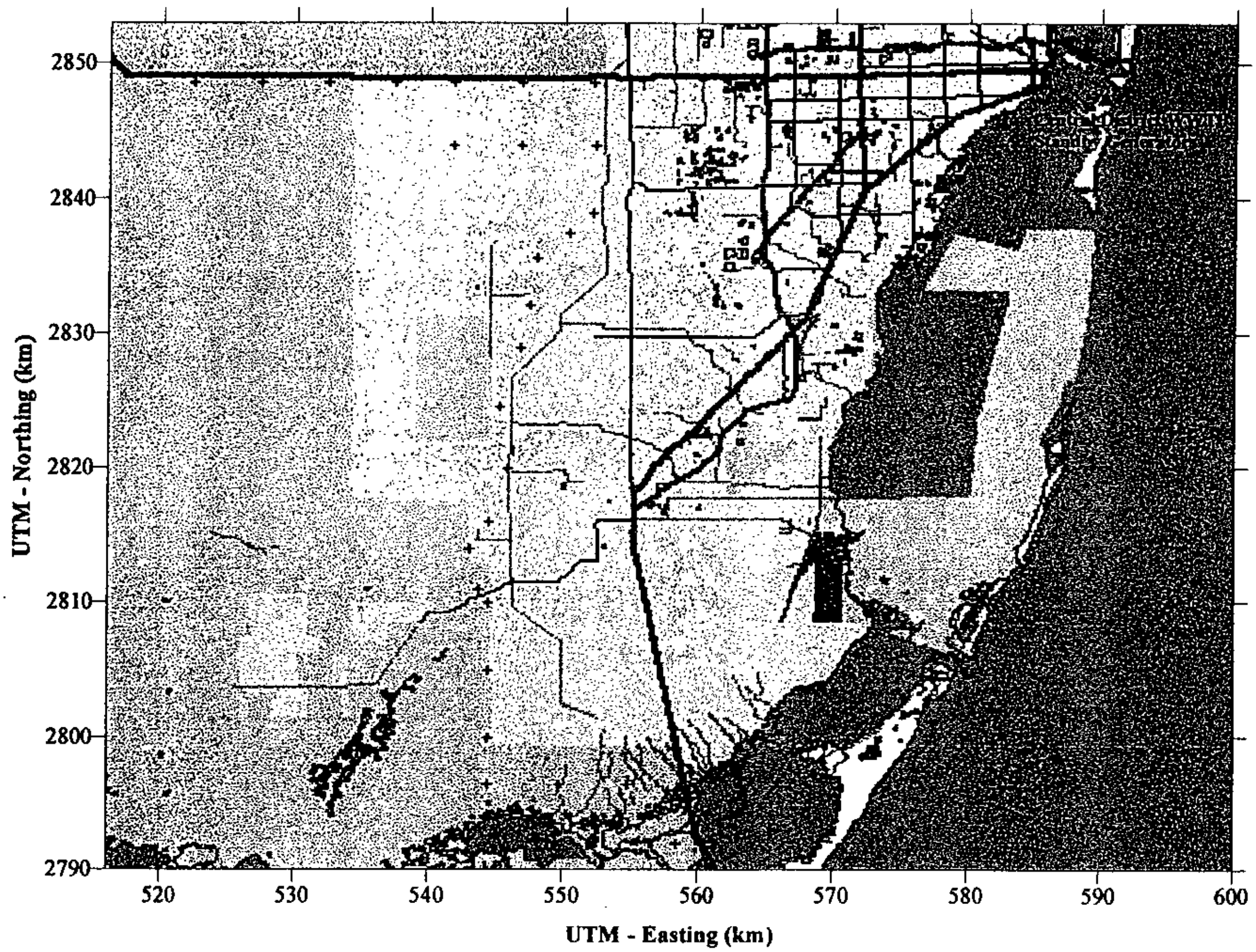

Figure 6-2
Everglades National Park Receptors

CH2MHILL

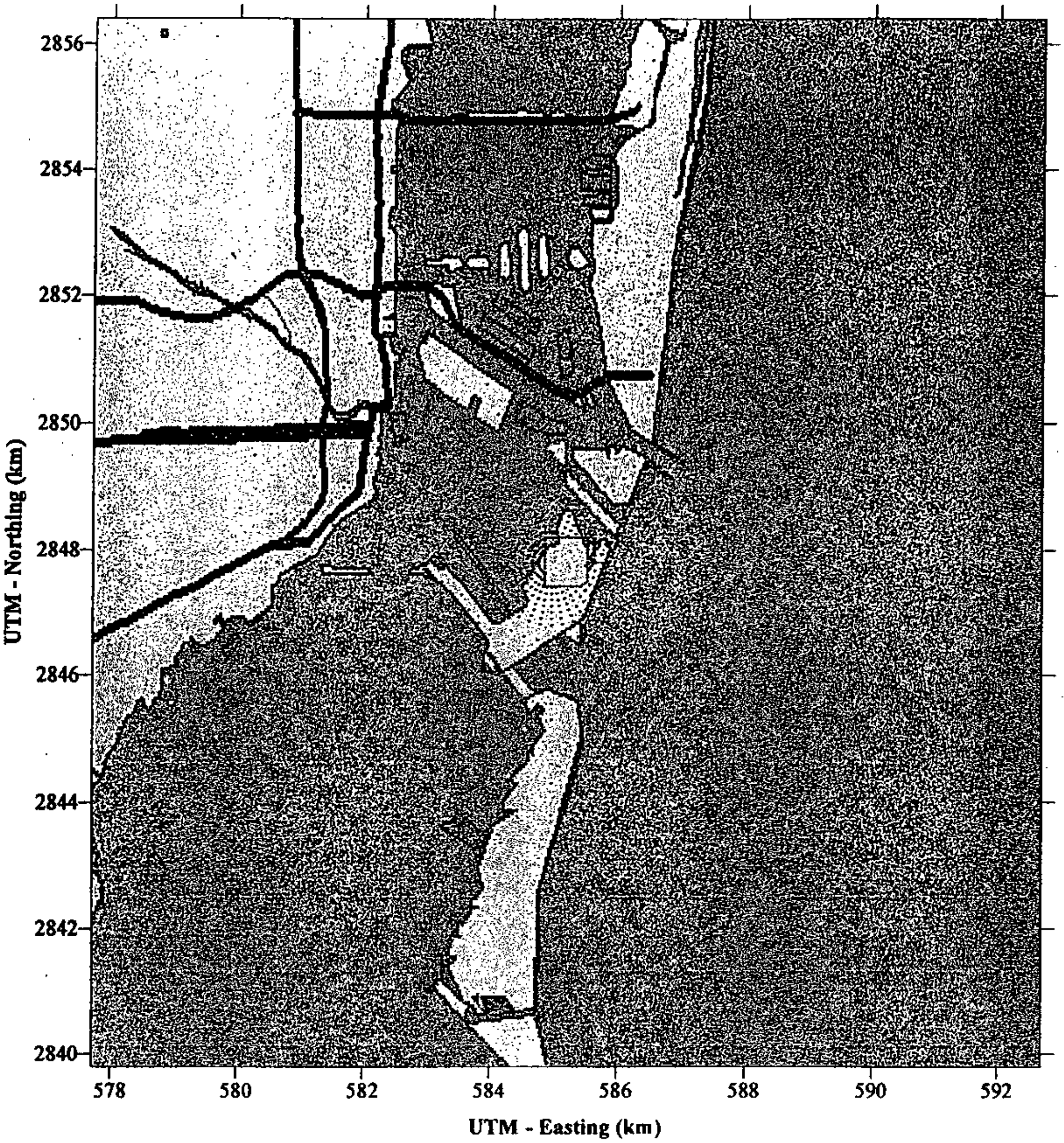

Figure 6-3
Fine Grid Receptor Locations

practice (GEP) stack height of 100 feet (i.e., 2.5 times the height of Scrubber Building No. 2). The dispersion modeling was designed to incorporate building wake and downwash effects attributable to scrubber building Nos. 2 and 4, the electrical switchgear building, grit chamber structure No. 2, and the standby generator enclosure structures.

Emissions from four identical cogeneration engines and three diesel blower engines at the Central District WWTP were also included in the refined modeling. Both of these sources were included in the determination of ambient concentrations for comparison to the NAAQS, but only the cogeneration engines were included in the determination of PSD Class II increment consumption, as the diesel blower engines are baseline sources of NO_x emissions (installed prior to March 28, 1988). The cogeneration engines are equipped with horizontal exhaust, and were modeled as a single source of emissions with an exit velocity of 0.1 meter per second (m/s). The blower engines are equipped with vertical exhausts, and were also modeled as a single source of emissions. The dispersion modeling also incorporated wake and downwash effects from the blower building, which houses the cogeneration engines and diesel blower engines.

6.5 Dispersion Modeling Methodology and Results

The dispersion modeling results reported in this section are based on exhaust and operating characteristics for the standby generators presented in Table 2-1, emissions data for full load operation of the standby generators presented in Table 3-1, and exhaust and emission data for regional sources presented in Table 3-2. It is noted that emissions from the standby generators as shown in Table 3-1 also are representative of BACT as demonstrated in Section 5.

The modeling analyses described in this report were based on three objectives to determine or demonstrate: (1) the maximum impact and radius of significant impact of the proposed sources during maximum/full load operation, (2) PSD increment consumption in the area surrounding the sources, and (3) compliance with the NAAQS. In accordance with EPA and FDEP guidance, if maximum predicted impacts from the operation of the proposed sources are found to be less than the EPA-defined level of significant impacts (see Table 4-1), further modeling analysis to demonstrate compliance with the applicable PSD increments and NAAQS is not required.

Initial modeling was performed using an emission rate of 1 gram per second (g/s) from a single stack. The results were adjusted to the actual NO_x emission rate of 7.29 g/s to obtain conservative estimates of predicted concentrations. Total conversion of NO_x to NO_2 was assumed for the initial or "tier 1" screening. Subsequent refined modeling revealed that this assumption resulted in exceedance of PSD class II increment. In accordance with the *Multi-Tiered Screening Approach for Estimating Annual NO_2 Concentrations from Point Sources* (60 FR 40469), an empirically-derived NO_x to NO_2 conversion of 75 percent was used for the "tier 2" screening to adjust the model results. Using this assumption, predicted NO_x concentrations were multiplied by 0.75 to obtain predicted NO_2 concentrations. Selected sections of the dispersion modeling input and output files are contained in Appendix E.

6.5.1 Maximum Impact and Radius of Significant Impact

The maximum impact and radius of significant impact for NO_x emissions from the standby generators was determined by modeling the maximum expected emissions under full load. This analysis indicates that NO_x is the only pollutant emitted in excess of PSD significant emission rates (see Table 4-1). Maximum hourly NO_x emission rates are 58.2 lb/hr (7.34 g/s) and 174.5 lb/hr (22.01 g/s) for individual and combined generator sets, respectively. Because the facility is proposing to limit annual operation to 21,750,000 kW-hr (2,900 hours per year, each, at full load), the equivalent annual-average emission rate was obtained by adjusting the maximum hourly rate by the ratio of 2,900 hours/8,760 hours. Using this method, the equivalent annual-average NO_x emission rates are 19.3 lb/hr (2.43 g/s) and 57.8 lb/hr (7.29 g/s) for the individual and combined generator sets, respectively.

The results of the screening analysis are summarized in Table 6-1. Using 1987-1991 meteorological data, predicted offsite concentrations attributable to the standby generators exceeded the significant impact levels for the annual averaging period. The area exceeding the PSD Class II significant impact concentration of 1 $\mu g/m^3$ for NO_2 is shown in Figure 6-4. The maximum offsite predicted NO_2 concentration attributed to the standby generators is 9.19 $\mu g/m^3$, occurring at the property fenceline approximately 175 meters northwest of the source.

Table 6-1
Summary of Initial Dispersion Modeling Results
EMD Model 20-645E4 Standby Generators (3)
Miami-Dade Water and Sewer Department Central District WWTP

	Significant Impact Level ($\mu g/m^3$)		Maximum Predicted Offsite NO_2 Concentration ($\mu g/m^3$)[1]				
	Class I	**Class II**	**1987**	**1988**	**1989**	**1990**	**1991**
Everglades NP Class I Area	0.1	-	0.060	0.048	0.062	0.079	0.056
Class II Area	-	1.0	5.87	8.11	9.19	8.12	6.58
Maximum ROI (m)	-	-	3500	4500	5000	3500	3000

Notes:
[1] Full load operation of all three generator sets, 2,900 hours per year, each.
Q_s = 7.29 g/s NO_x
NO_2:NO_x = 0.75

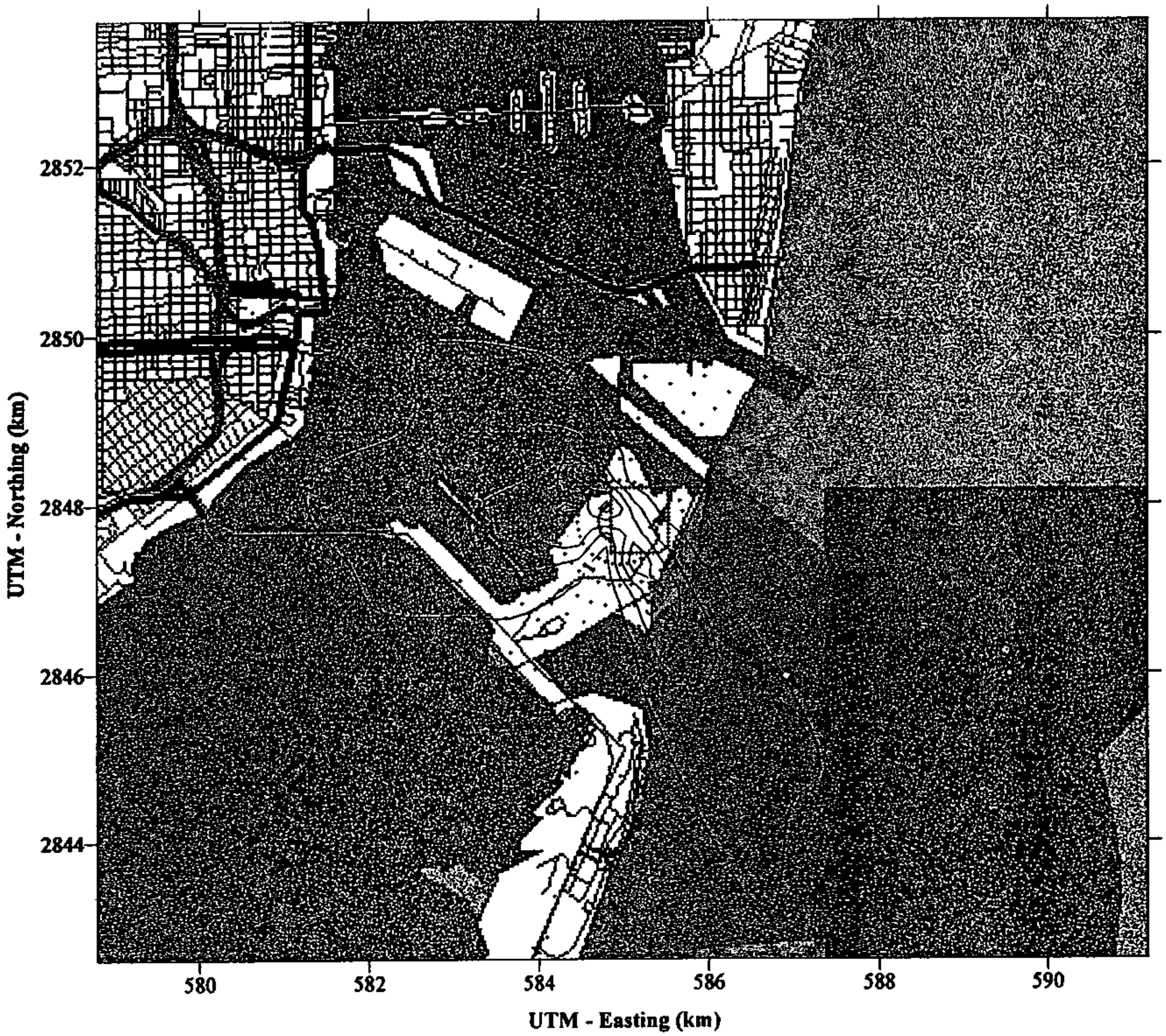

Figure 6-4
Area of Significant Impact - NO_2

Significant concentrations extend a maximum distance of 5 km from the source. Based on the initial modeling analyses, no significant air quality impacts are expected at distances greater than 5 km from the Central District WWTP.

The highest NO_2 concentration predicted at any receptor in the Everglades National Park Class I area was 0.079 $\mu g/m^3$. This concentration is below the PSD Class I significance criteria of 0.1 $\mu g/m^3$ proposed by the National Park Service.

6.5.2 PSD Class II Increment Consumption

Federal regulations (40 CFR 52) specify that the air quality in an area cannot deteriorate by more than a specified amount by establishing "PSD increments." The PSD increment is the allowable level of air quality degradation in an area. These increments, which were summarized in Table 4-1, represent the maximum allowable increase in ambient concentration in an area (by pollutant and averaging period) since the regulations were enacted in 1977, or since the first PSD increment consuming source was permitted, whichever is later. Currently, PSD increments exist for NO_2, SO_2, and PM-10. Prior to the issuance of a construction permit for a major new or modified source, a facility must demonstrate that the PSD increments are not exceeded in the area as a result of the operation of the proposed new or modified facility. In addition to the standby generators, FDEP identified 12 PSD increment-consuming sources that could impact the same area as the standby generators (see Table 3-2). Emissions from all PSD increment-consuming sources, including the proposed standby generators, were modeled to determine increment consumption. Maximum predicted NO_2 concentrations are compared to the allowable PSD Class II increment consumption criteria in Table 6-2. Model-predicted PSD increment consumption in the Class II area is shown graphically in Figure 6-5.

The analysis illustrates that the maximum predicted consumption of NO_2 increment is 24.54 $\mu g/m^3$. Because of the relatively low stack heights, the absence of a plume rise from the gas-fueled cogeneration engines, and the distance from the cogeneration engines to the property fenceline, the highest concentrations are predicted to occur in a small area along and adjacent to the property fenceline. The maximum predicted concentration on the property fenceline occurs approximately 150 meters northwest of the source. Predicted increment consumption decreases rapidly with increasing distance from the source.

Table 6-2
Summary of Maximum Predicted PSD Increment Consumption - NO_2
EMD Model 20-645E4 Standby Generators (3)
Miami-Dade Water and Sewer Department Central District WWTP

	PSD Increment Consumption - Annual Average NO_2 ($\mu g/m^3$)				
	1987	1988	1989	1990	1991
Contribution - Standby Generators	2.78	8.09	9.18	8.11	6.58
Contribution - Cogeneration Engines	16.30	12.62	14.70	13.93	13.57
Contribution - Other PSD Sources	0.91	0.79	0.66	0.76	0.76
Maximum Predicted Impact	19.99	21.50	24.54	22.80	20.91
Allowable PSD Limit	25.00	25.00	25.00	25.00	25.00
Location	(200 m, 230 deg)	(150 m, 317 deg)	(150 m, 317 deg)	(150 m, 317 deg)	(150 m, 317 deg)

Notes:
Q_s = 7.28 g/s NO_x
NO_2:NO_x = 0.75
$\mu g/m^3$ = micrograms per cubic meter

Full load operation 2,900 hours per year, each generator

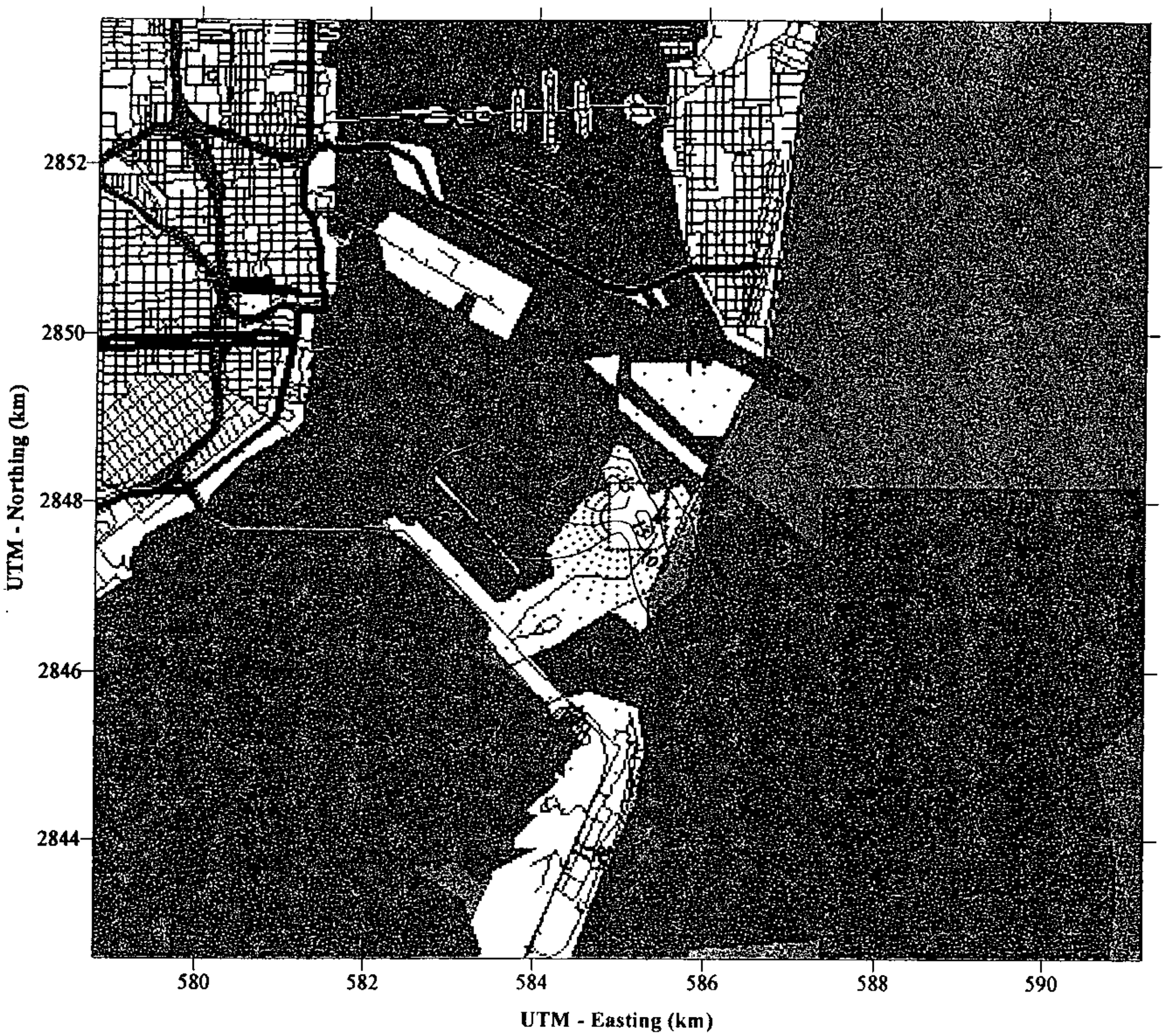

Figure 6-5
Predicted NO_2 PSD Increment Consumption

At the receptor with the highest increment consumption, the standby generators consume 37 percent of the increment, the cogeneration engines (permitted emissions of 248.9 tons NO_x per year) consume 59 percent of the increment, and other (offsite) PSD sources consume 3 percent of the increment.

6.5.3 Compliance with NAAQS

The proposed facility must comply with the NAAQS for NO_2, SO_2, PM-10, CO, lead (Pb), and ozone (40 CFR 50), which are the same air quality standards that have been adopted by the State of Florida (refer to Table 4-1 for the NAAQS). However, the dispersion modeling analysis was only conducted for NO_2, as it is the only pollutant emitted in significant quantities. The approach used to demonstrate compliance with the NAAQS in the area impacted by the standby generators at the Central District WWTP was to assess the combined impact of 1) the proposed facility, 2) all existing emission sources in the area as identified by FDEP, and 3) existing background air quality.

A summary of the dispersion modeling results for all existing and permitted sources of emissions identified in Table 3-2 is provided in Table 6-3. The estimates in the table are conservatively based on the sum of the maximum predicted concentrations attributable to the standby generators and all other regional sources and the background NO_2 concentration at Virginia Key. Model predicted ambient NO_2 concentrations in the Class II area are shown graphically in Figure 6-6.

The maximum predicted annual average NO_2 concentration in the area is 58.24 $\mu g/m^3$, which is well below the NAAQS of 100 $\mu g/m^3$. The location of the maximum impact is along the property fenceline approximately 175 meters northwest of the source. The standby generators account for 18 percent and the gas-fueled cogeneration engines account for 24 percent of the predicted impact, excluding background. Because of limitations of the ISCST3 model, a separate source group was not created for the diesel blower engines, which are a baseline source. The combined contribution of the diesel blowers and offsite sources account for 58 percent of the impact. Background NO_2 concentration data from the Rosenstiel School-Virginia Key monitoring station, measured in 1996, were provided by FDEP from the 1996 ALLSUM database. It is concluded that no threat exists to any NAAQS as a result of operating the standby generators at the Central District WWTP.

Table 6-3
Summary of Maximum Predicted Ambient Concentrations - NO_2
EMD Model 20-645E4 Standby Generators (3)
Miami-Dade Water and Sewer Department Central District WWTP

	Ambient Concentration - Annual Average NO_2 ($\mu g/m^3$)				
	1987	**1988**	**1989**	**1990**	**1991**
Contribution - Standby Generators	1.78	8.09	9.18	8.11	6.58
Contribution - Cogeneration Engines	16.92	10.73	14.71	13.93	13.57
Contribution - Other Sources[1]	26.53	25.90	20.29	21.21	21.59
Maximum Impact All Sources	45.24	44.72	44.18	43.26	41.74
Background Conc. - Virginia Key[2]	13.00	13.00	13.00	13.00	13.00
Maximum Predicted Concentration	58.24	57.72	57.18	56.26	54.74
NAAQS - NO_2	100.00	100.00	100.00	100.00	100.00
Location	(174 m, 216 deg)	(174 m, 216 deg)	(150 m, 317 deg)	(150 m, 317 deg)	(150 m, 317 deg)

Notes:
[1] Includes diesel blower engines.
[2] Arithmetic mean background NO_2 concentration for Rosenstiel School-Virginia Key monitoring station, 1996 ALLSUM database, as provided by FDEP.
Q_s = 7.28 g/s No_x
NO_2:NO_x = 0.75
Full load operation 2900 hours per year, each generator

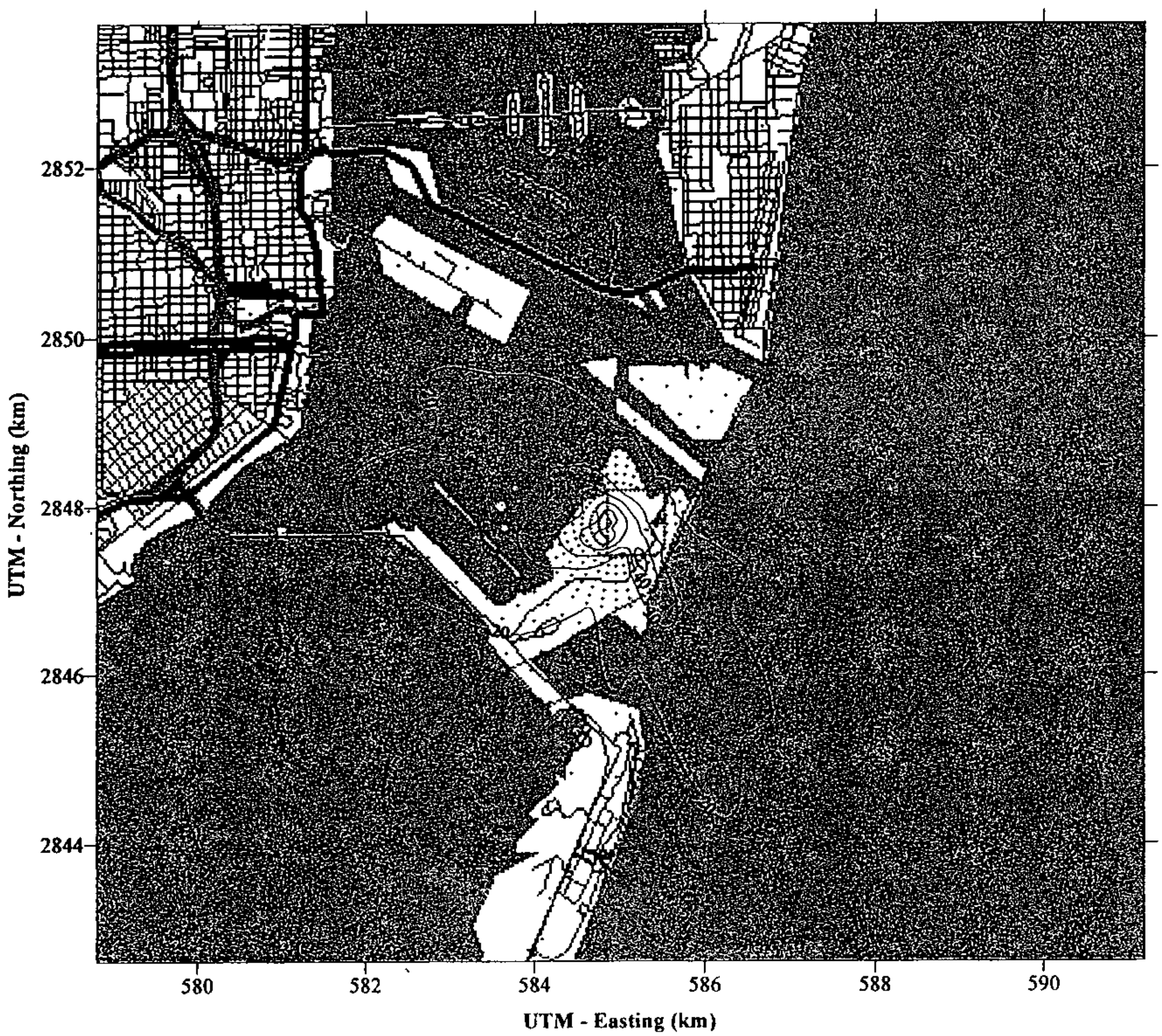

Figure 6-6
Predicted Annual Average NO_2 Concentrations

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6.5.4 Air Toxics Impact Assessment

The EPA's guidance on the assessment of non-regulated "toxic pollutants" requires that permit applicants evaluate emissions of toxic air pollutants that the Facility could emit in amounts potentially of concern to the public. Additional information is therefore provided on the potential impacts of the following toxic pollutants that may be emitted from diesel engines: benzene, toluene, xylenes, formaldehyde, acetaldehyde, acrolein, and numerous PAH compounds.

FDEP has an air toxics policy, the purpose of which is to evaluate the potential impacts of hazardous air pollutants (HAPs) during the new source (construction) permitting process.

FDEP's air toxics policy requires that new and modified sources seeking approval to construct air emission facilities demonstrate that, for compounds included in the Florida Air Toxic Working List, maximum offsite 8-hour average, 24-hour average, and annual average concentrations do not exceed acceptable ambient reference concentrations (ARCs) adopted by the state.

Estimates of short- and long-term air toxic emissions from operation of the standby generators are provided in Table 6-4. The estimates are based on emission factors obtained from EPA publication AP-42. FDEP has adopted ARCs for all of the toxic pollutants listed in Table 3-1 except propylene.

In addition to calculation of annual average concentrations, results from initial (screening) modeling of the standby generators were calculated for a 1-hour averaging period. This was done to facilitate determination of 8-hour average and 24-hour average concentrations of toxic pollutants for comparison to the Florida ARCs. Emission rates and maximum predicted concentrations for each pollutant and averaging period are summarized in Table 6-4. Actual 1-hour average concentrations were calculated by scaling the model output concentration to the appropriate emission rate. The 8-hour average and 24-hour average concentrations were then determined by adjusting the 1-hour concentration by factors of 0.7 and 0.4, respectively. Annual average concentrations were determined by directly scaling the model-predicted annual average results.

Table 6-4
Summary of Predicted Toxic Pollutant Concentrations
EMD 20-645E4 Standby Generators (3)
Miami-Dade Water and Sewer Department Central District WWTP

	Emission Rate (mg/s)		Maximum Predicted Concentration (μg/m³)[1]			Florida Ambient Reference Concentration (μg/m³)		
Pollutant	max hourly	annual avg	8-hr Avg[2]	24-hr Avg[3]	Annual Avg	8-hr Avg	24-hr Avg	Annual Avg
Benzene	7.67	2.54	0.660	0.377	0.23	30	7	0.12
Toluene	2.78	0.92	0.239	0.137	0.008	1880	448	400
Xylenes	1.91	0.63	0.164	0.094	0.006	4340	1033	80
Formaldehyde	0.78	0.26	0.067	0.038	0.002	3.7	0.9	0.077
Acetaldehyde	0.25	0.08	0.021	0.012	0.001	450	107	0.5
Acrolein	0.08	0.03	0.007	0.004	<0.001	2.3	0.5	0.02
Naphthalene	1.29	0.43	0.111	0.063	0.004	50	119	-
Flourene	0.13	0.04	0.011	0.006	<0.001	2.0	0.5	50
Benz(a)anthracene	<0.01	<0.01	<0.001	<0.001	<0.001	-	-	0.0011
Chrysene	0.02	0.01	0.001	<0.001	<0.001	2.0	0.5	-
Benzo(a)pyrene	<0.01	<0.01	<0.001	<0.001	<0.001	-	-	0.0003
Dibenz(a,h)anthracene	<0.01	<0.01	<0.001	<0.001	<0.001	-	-	0.000071

Notes:
[1] Concentrations associated with operation of all 3 standby generators at full load conditions.
[2] 1-hour average concentration * 0.7 = 8-hour average concentration
[3] 1-hour average concentration * 0.4 = 24-hour average concentration

Estimated maximum impacts shown in Table 6-4 show that none of the toxic pollutants emitted from the standby generators exceed any of the Florida ARCs. It is concluded that HAP emissions from operation of the standby generators does not present any significant threat to any offsite receptor.

SECTION 7

Additional Impact Analyses

As required by PSD regulations, this section addresses possible impacts on visibility, vegetation and soils, growth, PSD Class I areas, and nonattainment areas.

7.1 Effects on Visibility in PSD Class I Areas

A Level I screening analysis was performed using the EPA VISCREEN model to evaluate the impact of the standby generators on visibility in the Everglades National Park Class I area. The Shark Valley Tower observation point, located 62 km west of the standby generators, is the closest Everglades vista to the source. The minimum and maximum viewing distances from the source to locations on the park boundary are 33.8 km and 131 km, respectively. The viewing distances are measured along a radial line extending 11.25 degrees north of the line directly between the Shark Valley Tower and the standby generators. The minimum viewing distance corresponds to where this line first enters the park, and the maximum viewing distance corresponds to where the line exits the park. Relative locations of the Shark Valley Tower and the standby generators are shown in Figure 7-1. The minimum viewing distance is the distance from the generators to the northeastern park boundary, and the maximum viewing distance is the distance from the generators to the northwestern park boundary.

The Level I analysis assumes a highly stable meteorological condition (stability Class F) and low wind speed (1 m/s) to provide a conservative estimate of visibility impacts intended for screening purposes. The VISCREEN model was run using maximum hourly NOx and PM-10 emission rates of 22.01 g/s and 0.53 g/s, respectively. Worst-case Everglades National Park Class I meteorological data, provided by the National Park Service, were used in the Level I analysis instead of the Level I default data. Use of the Everglades meteorological data would be more likely to result in a significant visibility impact. This data indicated that fall was the worst-case season (easiest to see a plume), with a background ozone concentration of 0.047 parts per million (ppm) and a standard visibility range of 63 km. Results from the Level I screening analysis are summarized in Appendix F. Results

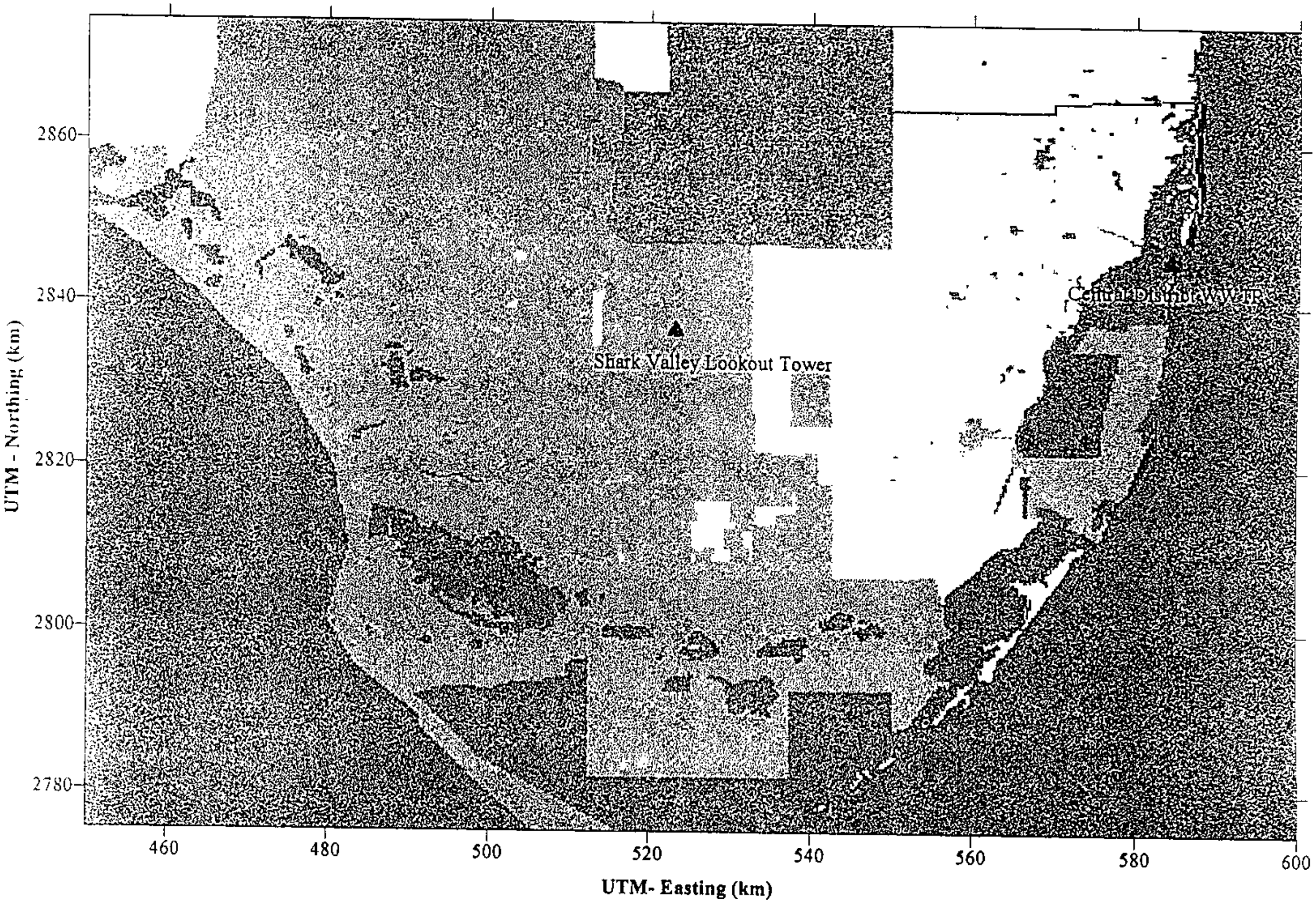

Figure 7-1
Location of Everglades National Park Class I Vista Shark Valley Tower

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indicate that the standby generators are not expected to have any significant impact on visibility in the Everglades Class I area or in any Class II areas.

7.2 Effects on Vegetation and Soils

One indicator of potential vegetation and soils effects is a comparison of predicted ambient concentrations with ambient air quality standards. Of most significance here is that the secondary NAAQS were established to prevent adverse "welfare" effects, such as direct damage to vegetation and harmful contamination of soils. The secondary NAAQS for NO_2 is the same as the primary standard—100 µg/m^3. Because it has been shown that the operation of the standby generators will not result in a threat to any NAAQS, primary or secondary, there should not be any discernible effects on vegetation and soils.

Vegetation and soils are also affected by acid deposition. Acid deposition is caused by the conversion of SO_2 and NO_2 in exhaust gases to sulfuric and nitric acids (H_2SO_4 and HNO_3, respectively) in the presence of water in the air. The acids are then deposited onto vegetation and soils by fog, rain, or snow (snow is an extremely rare occurrence in the Everglades). The maximum ambient concentration of NO_2 at any receptor in the Everglades National Park Class I area associated with operation of the standby generators, as predicted in the screening analysis, was used to calculate HNO_3 deposition in Class I area. The calculation was performed assuming all NO_x emissions were converted to HNO_3.

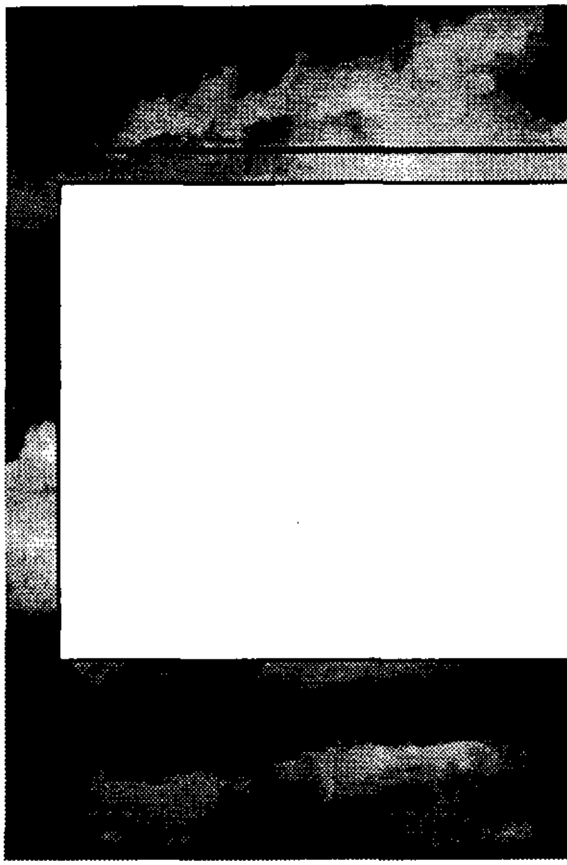
The maximum predicted NO_x concentration at any receptor in the Everglades Class I area associated with operation of the standby generators is 0.105 µg/m^3. This corresponds to an HNO_3 deposition rate of 0.144 µg/m^3 per second. The HNO_3 deposition rate is multiplied by its averaging period, which in this case is 1 year or 31,536,000 seconds, and by the deposition velocity, which is 0.05 m/s for HNO_3. The resulting HNO_3 deposition rate is 4.55 grams per square meter (g/m^2), or 318 µg per hectare.

7.3 Effects on Associated Growth

While the need to operate the standby generators and to maintain power generation capacity is dictated by the size of the plant and its associated power demand, the standby generators will not have any direct or indirect impact on the capacity of the plant to treat wastewater. Because it is the capacity of the plant to treat wastewater is linked to growth, the standby generators will not have any significant impact on growth in the area. In addition, employment at the Central District WWTP for the purpose of maintaining the standby generators is not expected to increase. Therefore, increased operation of the standby generators, as proposed in this application, is not expected to promote growth in the area.

7.4 Impacts on Nonattainment Areas

There are no nonattainment areas for any pollutant in Florida, nor are there any nonattainment areas within 200 km of the Central District WWTP. Dade County was previously classified as a nonattainment area for ozone; however, this area was reclassified in April 1995 as an attainment area (air quality maintenance areas) for all pollutants. The facility is not expected to impact any nonattainment areas based on the air quality impact analysis performed.



SECTION 8
References

SECTION 8

References

Florida Air Toxics Working List. Florida Department of Environmental Protection.

U.S. Environmental Protection Agency. Industrial Source Complex Model, Version 96113. Office of Air Quality Planning and Standards. Available from EPA TTN Electronic Bulletin Board System (919) 541-5742. 1996.

Multi-Tiered Screening Approach for Estimating Annual NO_2 Concentrations from Point Sources, Federal Register, Vol. 60, No. 153, p. 40469. August 9, 1995.

U.S Environmental Protection Agency. Interagency Workgroup On Air Quality Modeling (IWAQM) Phase I Report: Interim Recommendations for Modeling Long Range Transport and Impacts on Regional Visibility. EPA-454/R-93-015. April 1993.

Department of
Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Identification of Facility Addressed in This Application

1. Facility Owner/Company Name : Miami-Dade Water & Sewer Department	
2. Site Name : Central District Wastewater Treatment Pl	
3. Facility Identification Number : 130476	[ ] Unknown
4. Facility Location : Central District WWTP Street Address or Other Locator : Virginia Key City : Miami County : Dade	Zip Code : 33146-
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official : Name : Robert C. Ready, P.E. Title : Asst. Director of Treatment Facilit
2. Owner or Authorized Representative or Responsible Official Mailing Address : Organization/Firm : Miami-Dade Water & Sewer Department Street Address : 4200 Salzedo Street City : Coral Gables State : FL Zip Code : 33146-0316
3. Owner/Authorized Representative or Responsible Official Telephone Numbers : Telephone : (306)669-7668 Fax : (305)669-3753
4. Owner/Authorized Representative or Responsible Official Statement : *I, the undersigned, am the owner or authorized representative* of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions units.* Signature ____________________ Date ____________

* Attach letter of authorization if not currently on file.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type
No Id	3 Standby Generator Sets (20E4)	AF2A

Purpose of Application and Category

Category I : All Air Operation Permit Applications Subject to Processing Under Chapter 62-213, F.A.C.

This Application for Air Permit is submitted to obtain :

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for an existing facility which is classified as a Title V source.

[ ] Initial air operation permit under Chapter 62-213, F.A.C., for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number :

[ ] Air operation permit renewal under Chapter 62-213, F.A.C., for a Title V source.

Operation permit to be renewed :

[ ] Air operation permit revision for a Title V source to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number :

Operation permit to be revised :

[ ] Air operation permit revision or administrative correction for a Title V source to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application.

Operation permit to be revised/corrected :

[ ] Air operation permit revision for a Title V source for reasons other than construction or modification of an emissions unit.

Operation permit to be revised :

Reason for revision :

Category II : All Air Operation Permit Applications Subject to Processing Under Rule 62-210.300(2)(b), F.A.C.

This Application for Air Permit is submitted to obtain :

[ ] Initial air operation permit under Rule 62-210.300(2)(b), F.A.C., for an existing facility seeking classification as a synthetic non-Title V source.

Current operation/construction permit number(s) :

[ ] Renewal air operation permit under Fule 62-210.300(2)(b), F.A.C., for a synthetic non-Title V source.

Operation permit to be renewed :

[ ] Air operation permit revision for a synthetic non-Title V source.

Operation permit to be revised :

Reason for revision :

Category III : All Air Construction Permit Applications for All Facilities and Emissions Units

This Application for Air Permit is submitted to obtain :

[ ] Air construction permit to construct or modify one or more emissions units within a facility (including any facility classified as a Title V source).

Current operation permit number(s), if any :

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

Current operation permit number(s) :

[X] Air construction permit for one or more existing, but unpermitted, emissions units.

Application Processing Fee

Check one :

[X] Attached - Amount : $7500.00 [ ] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations : The purpose of this application is to obtain an after-the-fact construction permit for three existing standby generator sets at the Central District WWTP. The generator sets were installed in 1980 and were not permitted since they were originally intended for emergency use only. The facility wishes to increase their usage beyond exempt levels allowed by FDEP.
2. Projected or Actual Date of Commencement of Construction :
3. Projected Date of Completion of Construction :

Professional Engineer Certification

1. Professional Engineer Name : David E. Lindberg, P.E. Registration Number : 50036
2. Professional Engineer Mailing Address : Organization/Firm : CH2M HILL Street Address : 701 B Street, Suite 700 City : San Diego State : CA Zip Code : 92101-____
3. Professional Engineer Telephone Numbers : Telephone : (619)687-0110 Fax : (619)680-0111

4. Professional Engineer Statement :

I, the undersigned, hereby certified, except as particularly noted herein, that :*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollutant control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [✓] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

David Lindberg — 7/17/97

Signature — Date

* Attach any exception to certification statement.

David Lindberg 7/17/97

Application Contact

1. Name and Title of Application Contact : Name : Bertha Goldenberg, P.E. Title : Environmental Coordinator
2. Application Contact Mailing Address : Organization/Firm : Miami-Dade Water and Sewer Departme Street Address : 4200 Salzedo Street City : Coral Gables State : FL Zip Code : 33146-0316
3. Application Contact Telephone Numbers : Telephone : (305)669-5711 Fax : (305)669-5717

Application Comment

The purpose of this application is to obtain a permit to increase allowable operation of the standby generator sets to 21,750,000 kW-hours per year, total.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility, Location, and Type

1. Facility UTM Coordinates : Zone : 17 East (km) : 585.20 North (km) : 2848.10			
2. Facility Latitude/Longitude : Latitude (DD/MM/SS) : 25 44 43 Longitude (DD/MM/SS) : 80 8 55			
3. Governmental Facility Code : 3	4. Facility Status Code : A	5. Facility Major Group SIC Code : 49	6. Facility SIC(s) :
7. Facility Comment : The Central District Wastewater Treatment Plant is a publicly-owned treatment works.			

Facility Contact

1. Name and Title of Facility Contact : Thomas Maxwell Assistant Plant Superintendent
2. Facility Contact Mailing Address : Organization/Firm : Miami-Dade Water & Sewer Department Street Address : 4200 Salzedo Street City : Coral Gables State : FL Zip Code : 33146-0316
3. Facility Contact Telephone Numbers : Telephone : (305)361-5497 Fax : (305)365-3000

Facility Regulatory Classifications

1. Small Business Stationary Source?	N
2. Title V Source?	Y
3. Synthetic Non-Title V Source?	N
4. Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	Y
5. Synthetic Minor Source of Pollutants Other than HAPs?	N
6. Major Source of Hazardous Air Pollutants (HAPs)?	N
7. Synthetic Minor Source of HAPs?	N
8. One or More Emissions Units Subject to NSPS?	N
9. One or More Emission Units Subject to NESHAP?	N
10. Title V Source by EPA Designation?	N
11. Facility Regulatory Classifications Comment :	

B. FACILITY REGULATIONS

Rule Applicability Analysis

Not required for construction permit application.

B. FACILITY REGULATIONS

List of Applicable Regulations

62-296.320 - General Pollutant Emission Limiting Standards

62-204.240 - Ambient Air Quality Standards

62-204.260 - Prevention of Significant Deterioration Increments

C. FACILITY POLLUTANTS

Facility Pollutant Information

1. Pollutant Emitted	2. Pollutant Classification
NOX	A

D. FACILITY POLLUTANT DETAIL INFORMATION

Facility Pollutant Information Pollutant 1

1. Pollutant Emitted :	NOX
2. Requested Emissions Cap :	NA (lbs/hour) (tons/year)
3. Basis for Emissions Cap Code :	
4. Facility Pollutant Comment :	

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

[X] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? Check one :

[X] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

Emissions Unit Information Section 1

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : 3 Standby Generator Sets (20E4)		
2. Emissions Unit Identification Number : [X] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code : C	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code : 49
6. Emissions Unit Comment : Emission unit consists of three 3,600 hp diesel fueled internal combustion prime movers, each coupled to a 2,500 KW electrical generator.		

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

Emissions Unit Control Equipment 1

1. Description : BACT for NOx emissions from diesel engines is fuel injection timing retard (IR) + turbocharger aftercoolers.	
2. Control Device or Method Code :	

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

Emissions Unit Details

1. Initial Startup Date :	01-Jan-1980
2. Long-term Reserve Shutdown Date :	
3. Package Unit : Manufacturer : Electro-Motive Division of General Motor	Model Number : 20-645E4
4. Generator Nameplate Rating : 2.5 MW	
5. Incinerator Information : Dwell Temperature : NA Dwell Time : NA Incinerator Afterburner Temperature : NA	 Degrees Fahrenheit Seconds Degrees Fahrenheit

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate : NA	mmBtu/hr	
2. Maximum Incinerator Rate : NA	lb/hr	tons/day
3. Maximum Process or Throughput Rate : NA		
4. Maximum Production Rate : 2500	KW	
5. Operating Capacity Comment : Generator nameplate rating and maximum production rate listed above are for a single generator set.		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :	
hours/day	days/week
weeks/year	hours/year 8760

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

Rule Applicability Analysis

The increase in emissions of NOx associated with proposed operation of the standby generators constitues a major source. Therefore, this project is subject to the requirements of PSD review, as stated in Chapter 62-212.400, FAC.

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

List of Applicable Regulations

62-210.300 (1) - Air Construction Permits

62-212.400 - Prevention of Significant Deterioration

62-296.320(4)(b) - General Visible Emissions Standard

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram : 20E4 Gens	
2. Emission Point Type Code : 3	
3. Descriptions of Emission Points Comprising this Emissions Unit : A vertical stack located on top of each enclosure structure.	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :	
5. Discharge Type Code :	V
6. Stack Height :	21 feet
7. Exit Diameter :	3.00 feet
8. Exit Temperature :	735 °F
9. Actual Volumetric Flow Rate :	23,000 acfm
10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate :	dscfm
12. Nonstack Emission Point Height :	feet
13. Emission Point UTM Coordinates : Zone : 17 East (km) : 584.959 North (km) : 2,847.790	
14. Emission Point Comment :	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :

   Diesel fueled internal combustion engines (emissions related to thousand gallons burned or horsepower-hours run)

2. Source Classification Code (SCC) : 2-02-004-01

3. SCC Units : Thousand Gallons Burned (all liquid fuels)

4. Maximum Hourly Rate : 0.19

5. Maximum Annual Rate : 559.00

6. Estimated Annual Activity Factor :

7. Maximum Percent Sulfur : 0.05

8. Maximum Percent Ash :

9. Million Btu per SCC Unit : 135

10. Segment Comment :

    Maximum hourly and annual fuel rates are based on a single generator set consuming 193 gallons/hour diesel fuel (density = 7.0 lb/gal) and operating 2,900 hours per year. Total annual fuel consumption by all 3 standby generators is 1,679,000 gallons (21,750,000 kW-hr).

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - CO			NS
2 - NOX			EL
3 - SO2			WP
4 - PM10			NS
5 - VOC			NS

Emissions Unit Information Section 1
3 Standby Generator Sets (20E4)

Pollutant Information Section 2

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	AMBIENT			
2. Future Effective Date of Allowable Emissions :				
3. Requested Allowable Emissions and Units :	10.57	g/kW-hr		
4. Equivalent Allowable Emissions :	58.18	lb/hour	253.00	tons/year
5. Method of Compliance : Annual stack testing using EPA Method 7 or equivalent.				
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Monthly monitoring of total power output (kW-hr) and comparison of 12-month rolling total to annual limit of 21,750,000 kW-hr.				

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 1
3 Standby Generator Sets (20E4)

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype :
2. Basis for Allowable Opacity : RULE
3. Requested Allowable Opacity : Normal Conditions : 20 % Exceptional Conditions : % Maximum Period of Excess Opacity Allowed : min/hour
4. Method of Compliance : Annual opacity monitoring using EPA Method 9
5. Visible Emissions Comment :

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section ______

Continuous Monitoring System : Continuous Monitor ______

1. Parameter Code :	2. Pollutant :
3. CMS Requirement :	
4. Monitor Information : Manufacturer : Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment :	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

[ ] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

[X] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code :

PM : C SO2 : C NO2 : C

4. Baseline Emissions :

PM :	0.0000	lb/hour	0.0000	tons/year
SO2 :	0.0000	lb/hour	0.0000	tons/year
NO2 :			36.4000	tons/year

5. PSD Comment :

The standby generators were installed in 1980. Baseline NO2 emissions are based on 3 engines running 400 hours/yr, 10.19 g/bhp-hr NOx emissions at full load, and 75% conversion of NOx to NO2.

running 400 hours/yr, 10.19 g/bhp-hr NOx emissions at full load, and 75% conversion of NOx to NO2.

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 1

3 Standby Generator Sets (20E4)

Supplemental Requirements for All Applications

1. Process Flow Diagram :	NA
2. Fuel Analysis or Specification :	Attachment
3. Detailed Description of Control Equipment :	Attachment A
4. Description of Stack Sampling Facilities :	20e4stac.doc
5. Compliance Test Report :	12/6/96
6. Procedures for Startup and Shutdown :	standby.doc
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	Report
9. Other Information Required by Rule or Statue :	NA

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations :	NA
11. Alterntive Modes of Operation (Emissions Trading) :	NA

12. Identification of Additional Applicable Requirements :	NA
13. Compliance Assurance Monitoring Plan :	NA

14. Acid Rain Application (Hard-copy Required) :

NA	Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
NA	Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
NA	New Unit Exemption (Form No. 62-210.900(1)(a)2.)
NA	Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

AWARD SHEET

ADDENDUM NO. 1

[redacted] changes effective July 1, 1996:

	[redacted]	LO-SULPHUR CLEAR DIESEL	HI-SULPHUR DYED DIESEL
Federal Excise Tax	EXEMPT	EXEMPT	EXEMPT
State Excise Tax	.04	.04	EXEMPT
State Sales Tax	.085	.085	EXEMPT
Local Option & SCETS	.107	.117	EXEMPT
County Surcharge			
Dade	.06		
Broward	.03		
Palm Beach	.06		
other Counties	EXEMPT	EXEMPT	EXEMPT
Pollution Taxes (state & federal)	.022	.0207	.0207
Minimum Tax to be collected at time of sale	*.254*	*.2627*	*.0207*

1. TO QUALIFY FOR EXEMPTIONS, OR TO PURCHASE NON-TAXABLE DIESEL FUEL. MASS TRANSIT AND STATE AND LOCAL GOVERNMENT USERS MUST BE LICENSED.
2. PURCHASER IS EXEMPT FOR PAYMENT OF FEDERAL EXCISE TAX ON ALL FUEL AT THE TIME OF SALE: IN THE CASE OF TAXABLE FUELS, SELLER MUST FILE FOR A REFUND.
3. ALL STATE AND LOCAL OPTION TAXES ARE COLLECTED ON GASOLINE AND CLEAR TAXABLE LO SULPHUR DIESEL, HOWEVER THE PURCHASER MAY FILE FOR A PARTIAL REFUND.

ALL ELSE REMAINS THE SAME

WILLIAM GARVISO, CPPB

From R H Beaty [illegible] Aug 96

To: Greg Lane
R[illegible] Ritter

We must continue to buy low sulfur diesel fuel until we can determine [illegible]

02/28/97 13:03 NO.207 P03

CUSTOMER COPY - 2

EMERGENCY NUMBER CHEMTREC 1-800-424-93

Coastal Refining & Marketing, Inc
A SUBSIDIARY OF THE COASTAL CORPORATION
The Energy People

INSERT FOLLOWING WHEN REQUIRED BY FEDERAL OR STATE LAWS OR REGULATIONS

CC	T	STATE PERMIT OR LICENSE	VEHICLE LICENSE NO.	STATE MRT FUEL TAX RATE

"This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation."

"This is to also certify that the above-named materials are properly, classified, described, packaged, marked, and labeled according to the applicable regulations of the Federal Trade Commission and the Environmental Protection Agency."

Shipper's imprint in lieu of stamp; not a part of Bill of Lading approved by the Interstate Commerce Commission.

Shipper represents that in the production and manufacture of the goods and/or services covered by this invoice, it has fully complied with all the provisions of THE FAIR LABOR STANDARDS ACT OF 1938, as amended.

SEAL NOS.

SIGNED FOR COASTAL BY [signature] DATE 11-27-96

RECEIVED BY TRUCK DRIVER DATE

SHIPMENTS REQUIRE RAILROAD BILL OF LADING

GOODS RECEIVED: [signature]

PURCHASER:

SHIPPER

TRUCK NO. 6112 TRLR NO. 6205

If this shipment moves in other than Shipper's vehicle, it shall be governed by (a) the contract between shipper and carrier if carrier is a contract carrier or (b) the terms of the applicable uniform bill of lading form prescribed in the current Motor Freight Classification, if carrier is a common carrier, provided that, if this is intrastate shipment by common carrier in a state where bills of lading have been legally prescribed, this shipment shall be governed by the terms of applicable bill of lading.

SPECIAL TRUCK MARKINGS, LABELS OR PLACARDS OFFERED/APPLIED AS REQUIRED BY DEPARTMENT OF TRANSPORTATION

CARRIER CERTIFIES THAT THE CARGO TANK SUPPLIED FOR THIS SHIPMENT IS A PROPER CONTAINER FOR THE TRANSPORTATION OF THIS COMMODITY

Customer						
MIAMI1		PORT EVERGLADES	11-27-96	14:05:33	BOCO	00103463

Dest Code Meth Del CO FOB Order

PO

Carrier COASTAL REF & MKTG INC

Card Reference Numbers

Customer	Exchange	Carrier	DR/VI
023312		03547	0130

Charge To:

Deliver To:
MIAMI DADE WATER AND SEWR
PRESTON PLANT
1100 W 2 AVE
PO#S08135B
HIALEAH FL 33010

Prod	Description	Unit	Gross	Temp	API	Net
	DIESEL FUEL, 3, NA1993 PGIII					
DSLS	DIESEL 0.05%S MAX	GALS	07501.00	078.6	34.9	07436.30
	THIS DIESEL FUEL DOES NOT CONTAIN VISIBLE EVIDENCE OF DYE.					

19'-20 1/4

SEE ADDRESS CORRESPONDENCE TO
COASTAL REFINING AND MARKETING, INC. E.P.A. REGISTRATION #4116
9 GREENWAY PLAZA HOUSTON, TX 77046

COASTAL REFINING & MARKETING

CUSTOMER NO.	INVOICE DATE	INVOICE NO.
MIAMID	12/02/96	D40579

METHOD OF DELIVERY
COMPANY TRUCK

SHIP TO:
MIAMI DADE WATER AND SEWR
PRESTON PLANT
1100 W 2 AVE PO J014282
HIALEAH FL 33010

SOLD TO:
MIAMI DADE WATER SEWER
ATTN: ACCOUNTS PAYABLE
PO BOX 330316
MIAMI FL 33233-0316

REFERENCE NO. 0361-MIAMID-D40579 MIAMI1

TERMS: NET 30 DAYS DOI

BILLING INQUIRIES: CALL CUST SERVICE AT 1-800-(FL) 432-3691, (NAT'L) 327-2495

SALES/P.O. NUMBER: 808135B

TICKET NUMBER	TICKET DATE	LOC CODE	DESCRIPTION	DS ST	QUANTITY	UM	UNIT PRICE	AMOUNT
00103463	112796	PORT	DIESEL - 0.05 S MAX DSLS	FL	7436.30	GAL	~~.791500~~ .7865	~~5885.83~~ 5848.64
			SUBTOTAL		7436.30			~~5885.83~~
			COUNTY ROAD TAX - DIESEL	FL	7436.30	GAL	.117000	870.05
			DIESEL FUEL TAX - UNDYED	FL	7436.30	GAL	.125000	929.54
			COASTAL PROTECTION TAX	FL	7436.30	GAL	.000476	3.54
			WATER QUALITY TAX	FL	7436.30	GAL	.001190	8.85
			INLAND PROTECTION TAX	FL	7436.30	GAL	.019047	141.64

CAR # RECEIVED	DATE	✓
00103463	11/27/96	✓

CHARGE TO ACCOUNT | FKSTED
649 487 520 | a
APPROVED BY: [signature] 12/12 1996

DATE 12/5/96
PLEASE CODE AND ACKNOWLEDGE RECEIPT OF GOODS / SERVICES
UG A/P

FEIN: 84-0429897

CASH DISCOUNT	IF PAID BY	PAY THIS AMOUNT	INVOICE TOTAL
		7,839.48	7802.26 ~~7,839.48~~

IF PAYMENT IS MADE VIA WIRE TRANSFER, PLEASE WIRE FUNDS TO
CITIBANK NA, NY,NY ACCT #4056-8303 ABA #021000089

The buyer agrees to a late payment charge of 1.00 % per month, 12.00 % per annum or the maximum permitted by law from the invoice due date and agrees to pay any collection or attorney fees if incurred in the collection of this invoice.

COMP	CUSTOMER	INVOICE NO	AMOUNT PAID
0361	MIAMID	D40579	

PLEASE DETACH AND RETURN THIS PORTION WITH PAYMENT

REMIT TO:
COASTAL REFINING & MARKETING
P.O. BOX 65776, CHARLOTTE, N.C. 28265

0361 MIAMID D40579 000000 000000783945 000000783945

02/28/97 13:03

Non-Negotiable Bill of Lading

MARATHON OIL COMPANY "Transferor" – 539 S. MAIN ST., FINDLAY, OH – EPA – RFG REG #5045

MATERIAL SAFETY DATA SHEET AVAILABLE FROM THE TERMINAL FOR THESE PRODUCTS ON REQUEST

CUSTOMER NOTICE – THE PRODUCT TRANSFER DOCUMENTS FOR THIS TRANSACTION INCLUDE OTHER DOCUMENTS WHICH MAY CONTAIN ADDITIONAL AND/OR CORRECTING REFORMULATED GASOLINE INFORMATION. IF IN CONFLICT, THE INFORMATION IN THE OTHER DOCUMENTS WILL CONTROL.

Form 50605-A REV. 9/95

SEE REVERSE SIDE FOR HAZARD WARNING INFORMATION & NOTES

DRIVER SIGNATURE:	
TRUCK SEAL NUMBERS:	SHIPMENT RECEIVED BY:

ALL ITEMS SUBJECT TO CONDITIONS ON REVERSE SIDE HEREOF.

For Product Emergency
Spill, Leak, Fire, Exposure or Accident, CALL
CHEMTREC - Day or Night 800-424-9300

COPY 6

MARATHON OIL COMPANY 'TRANSFEROR' - 539 S. MAIN ST., FINDLAY, OH - EPA-RFG REG #5045
*** CONVENTIONAL GASOLINES - THESE PRODUCTS DO NOT MEET THE REQUIREMENTS FOR REFORMULATED GASOLINES (RFG) AND MAY NOT BE USED IN ANY RFG COVERED AREA. *** SHIPPED FROM: 1901 S.E. 20TH STREET, FT. LAUDERDALE, FL 33316

MARATHON OIL COMPANY
MARATHON OIL COMPANY 'TRANSFEROR' - 539 S. MAIN ST., FINDLAY, OH - EPA-RFG REG #5045

DATE 02/25/97
NUMBER 540748-036
TIME IN 0601
TIME OUT 0612

SOLD TO (CONSIGNEE)	SHIPPED FROM	LOC CODE
SPECTRA REFINING & MARKETING EX FIELD OIL COMPANY OAK FL	FT. LAUDERDALE	0000000499

DATE SHIPPED	SHIPPED VIA
02/25/97	BILL FREIGHT UNKNOWN 3917 PENN TANK LINES

DESTINATION	CUSTOMER NUMBER	ITEM NUMBER
UNKNOWN FL	9130319000000G	

DRIVER	TRAILER	COMPANY	CUSTOMER P.O. AND RELEASE NUMBER	TRANSMITTED CUSTOMER AND RELEASE NUMBER
3139	1115H	0556		
S BROWN(AT)PENN TL				

CARGO TANK COMPARTMENT PRODUCT DESCRIPTIONS	GROSS GAL.	NET GAL.	TEMP./API GR.	COMMENTS
*** CONVENTIONAL GASOLINES - THESE PRODUCTS DO NOT MEET THE REQUIREMENTS FOR REFORMULATED ... USED IN ANY RFG COVERED AREA. *** SHIPPED FROM: 1901 S.E. 20TH STREET, FT. LAUDERDALE, FL 3...				
FUEL OIL, 3, NA1993, PG III NO. 2 LOW SULFUR FUEL OIL, UNDYED *.05% MAXIMUM SULFUR, 40 CETANE MINIMUM*	5201	5165	075.0/036.2	
FUEL OIL, 3, NA1993, PG III NO. 2 LOW SULFUR FUEL OIL, UNDYED *.05% MAXIMUM SULFUR, 40 CETANE MINIMUM*	2300	2284	074.5/036.2	

... EPA DETERGENT ADDITIVE REQUIREMENTS

Procedures for Startup
Standby Generators - All Models
Central District Wastewater Treatment Plant
Miami-Dade Water and Sewer Department

There are two types of startup procedures that can be followed depending on the scenario requiring power standby power production. These procedures are: normal baseload /peaking startup and deadline startup. These procedures are discussed briefly in the following paragraphs.

At the time of submittal of this application, the standby generators at the Central District WWTP are started by battery (electric) power. The facility is in the process of converting the generators to compressed air startup capability. With electric startup, sufficient battery capacity is available to startup a single generator, so startup of the generators is staggered in 15 second intervals. With compressed air startup, each generator will have a dedicated compressed air tank and all generators will be able to startup simultaneously.

Normal Baseload/Peaking Startup

The normal baseload/peaking startup procedure is followed under circumstances where the facility is given advance notice that power will be curtailed, or in the event that the facility proactively decides to startup the generators to protect against emergency power loss. This procedure is initiated manually. Upon startup, each engine is allowed to run 10 minutes at idle setting to warm-up, followed by 15 seconds of acceleration, 10 to 20 seconds of synchronization, and 10 to 30 seconds to accept load. When each unit synchronizes to bus, the load breaker closes and the unit provides electricity to the plant. The total procedure takes approximately 11 minutes to come on-line.

Deadline Startup

The deadline startup procedure is followed under circumstances where the facility is not given advance notice that power will be curtailed (emergency power loss). This procedure is initiated automatically by the plant control systems when the plant loses power. Upon startup, the units remain at idle for up to 1 minute, accelerate for approximately 15 seconds, synchronize for approximately 15 seconds, and accept load. When each unit synchronizes to bus, the load breaker closes and the unit provides electricity to the plant. The total procedure usually takes less than 2 minutes.

Excess Emissions

Excess emissions that occur during startup will consist of elevated hydrocarbon (HC), carbon monoxide (CO), and particulate (PM) emissions as a result of cold combustion temperatures and reduced load conditions. As the units warm up and accept load, emissions of these pollutants will decrease. Emissions of nitrogen oxides (NOx) will mirror the other pollutants - increasing as the engines warm up and accept load.

Since limitations in the permit application are based on generator power output (kW-hr), emissions resulting from startup of the generators are not accounted for in monitoring, recordkeeping, and reporting. However, emissions that occur during this period are not expected to be significant (low NOx emissions due to engine warm-up and relatively short duration of emissions of other pollutants).

Description of Stack Sampling Facilities
3 Standby Generator Sets (20E4)
Central District Wastewater Treatment Plant
Miami-Dade Water and Sewer Department

Diameter:	33 inches
Orientation:	Vertical
Height Above Structure:	approximately 8 ft
Height Above Grade:	approximately 21 ft
Means of Access:	No permanent ladder is provided on the enclosure structures for access to the rooftop. Therefore, an extension ladder must be obtained from plant maintenance staff. The stack extends vertically from the top center of the enclosure.
Sampling Ports:	Not equipped with sampling ports. Probe can be inserted into end of stack.

Emissions from 20E4B Standby Generators (Each)
Central District Wastewater Treatment Plant
Miami-Dade Water and Sewer Department

Compound	Reference	Factor Units	Controlled Emissions											
			25% Load			50% Load			75% Load			100% Load		
			Factor	lb/hr	tons/yr	Factor	lb/hr	tons/yr	Factor	lb/hr	tons/yr	Factor	lb/hr	tons/yr
CO	Manufacturer's Data[1]	g/bhp-hr	1.45	2.87	16.7	0.59	2.34	6.8	0.42	2.50	4.8	0.51	4.04	5.9
NOx	Manufacturer's Data[1]	g/bhp-hr	7.58	15.0	65.8	6.54	25.9	75.3	6.27	37.3	72.1	7.34	58.2	84.4
SO_2	Mass balance[2]	lb/10^3gal	7.10	0.42	1.8	7.10	0.74	2.2	7.10	1.06	2.1	7.10	1.35	2.0
PM_{10}	AP-42, Table 3.4-2[3]	lb/mmbtu	0.05	0.43	1.9	0.05	0.75	2.2	0.05	1.10	2.1	0.0533	1.40	2.0
VOCs	AP-42, Table 3.4-1[3]	lb/mmbtu	0.08	0.64	2.8	0.08	1.15	3.3	0.08	1.65	3.2	0.0800	2.10	3.0
Benzene	AP-42, Table 3.4-3[3]	lb/mmbtu	7.76E-04	0.01	0.0	7.76E-04	0.01	0.0	7.76E-04	0.02	0.0	7.76E-04	0.02	0.0
Toluene	AP-42, Table 3.4-3[3]	lb/mmbtu	2.81E-04	0.00	0.0	2.81E-04	0.00	0.0	2.81E-04	0.01	0.0	2.81E-04	0.01	0.0
Xylenes	AP-42, Table 3.4-3[3]	lb/mmbtu	1.93E-04	0.00	0.0	1.93E-04	0.00	0.0	1.93E-04	0.00	0.0	1.93E-04	0.01	0.0
Formaldeyde	AP-42, Table 3.4-3[3]	lb/mmbtu	7.89E-05	0.00	0.0	7.89E-05	0.00	0.0	7.89E-05	0.00	0.0	7.89E-05	0.00	0.0
Acetaldehyde	AP-42, Table 3.4-3[3]	lb/mmbtu	2.52E-05	0.00	0.0	2.52E-05	0.00	0.0	2.52E-05	0.00	0.0	2.52E-05	0.00	0.0
Acrolein	AP-42, Table 3.4-3[3]	lb/mmbtu	7.88E-06	0.00	0.0	7.88E-06	0.00	0.0	7.88E-06	0.00	0.0	7.88E-06	0.00	0.0
Propylene	AP-42, Table 3.4-3[3]	lb/mmbtu	2.79E-03	0.02	0.1	2.79E-03	0.04	0.1	2.79E-03	0.06	0.1	2.79E-03	0.07	0.1
Total PAH	AP-42, Table 3.4-4[3]	lb/mmbtu	1.55E-03	0.01	0.1	1.55E-03	0.02	0.1	1.55E-03	0.03	0.1	1.55E-03	0.04	0.1

1 NOx emissions @ 15% O_2 for EMD Model 20-645E4 generator set with BACT applied (fuel injection timing retard + turbocharger/aftercooler).
NOx reduction using BACT is 28%

2 SO_2 emissions are calculated using a mass balance approach based on a fuel sulfur content of 0.05 wt% (BACT).

3 Emissions for large bore diesel engines assume a diesel fuel density of 7.1 lb/gal and a gross heating value
Of 0.138 mmbtu/gal. PM_{10} reduction using BACT is 7%.

20-645E4

Prime Mover Power Output (hp):	3,600
Generator Capacity (kW):	2,500
Allowable power output, each (hp-hr):	10,440,000
Allowable power output, each (kW-hr):	7,250,000

Operation, each (hrs/yr): 2,900

% Load	BSFC (lb/bhp-hr)	gal/hr	Fuel Penalty
100%	0.375	190	0%
75%	0.394	150	5%
50%	0.413	105	10%
25%	0.469	59	25%

MKW POWER SYSTEMS, Inc.

AUTHORIZED ELECTRO-MOTIVE DISTRIBUTOR

EMD MP45 Unit

Information

EMD Model 20-645E4 Diesel Engine

3600 BHP/2500 KW Continuous Rating

Applies to Miami-Dade W&S Authority Dept.
Diesel-Generators at:

North District WWTP (4)
Central District WWTP (3)
Preston WTP (3)
Pump Station #300

OPERATING DATA

8, 12, 16, 20-645E4 TURBOCHARGED ENGINES

Unit Model		S8E4		S12E4		S16E4		S20E4	
Engine Model		8-645E4		12-645E4		16-645E4		20-645E4	
Rated RPM		750	900	750	900	750	900	750	900
BHP - Continuous		1200	1525	1830	2305	2450	3070	3050	3600
BMEP - Nominal	psi	130	130	130	131	131	130	129	123
Torque @ Cont. BHP	lb-ft	8400	8900	12,815	13,450	17,225	17,915	21,395	21,000
Piston Speed	fpm	1250	1500	1250	1500	1250	1500	1250	1500
Nominal Fuel Rate - full load	lb/BHPhr	.385	.375	.376	.375	.379	.379	.370	.375
Estimated Lube Oil Consumption	gal/hr	0.41	0.52	0.49	0.59	0.69	0.83	0.86	0.98
LUBRICATING OIL SYSTEMS									
Lube Pressure Pump Flow	gpm	88	105	131	157	154	185	191	229
Lube Piston Cooling Pump Flow	gpm	41	48	55	66	77	92	91	109
Lube Scavenging Pump	gpm	171	205	232	279	325	390	325	390
FUEL OIL SYSTEM									
Fuel Supply Pump - capacity	gpm	1.8	2.1	3.8	4.5	3.8	4.5	3.3	4.5
Fuel Supply Pump - suction lift - max.	ft	12	12	12	12	12	12	12	12
AIR AND EXHAUST SYSTEMS									
Intake Air @ 14.7 psi - 90° F	cfm	3300	4250	5820	7100	7200	9040	9300	10,700
Exhaust Temp.	°F	700	660	770	790	765	745	725	735
Exhaust Volume @ Exh. Temp.	cfm	7140	8700	12,750	15,800	16,250	19,650	20,000	23,000
Exhaust Back Pressure Total System-max. allowable	in. H_2O	5	5	5	5	5	5	5	5
Air Intake Total System Suction - max.	in. H_2O	6	6	6	6	6	6	6	6
COOLING WATER SYSTEMS									
Engine Water Flow	gpm	415	500	550	660	710	850	920	1100
Total System Pressure Drop	psi	33	47	35	50	42	60	38	55
Piping and Cooling Equipment	psi	8	8	8	8	8	8	8	8
Raw Water Flow (with EMD Stand. Extra Heat Exch.)									
Min. Flow - 100°F	gpm	250	290	325	490	600	*600	650	1000
90°F	gpm	225	225	250	365	460	600	490	710
80°F	gpm	200	200	205	285	350	520	390	550
Max. Raw Water Flow	gpm	650	650	600	600	600	600	1000	1000
Heat Exchanger Raw Water Δ p (psi) @ Max. Flow		2.5	2.5	3.9	3.9	3.9	3.9	4.3	4.3

* Fouling factor less than .001

GENERAL INFORMATION

RATING CONDITIONS

All engine ratings contained herein apply under the following conditions:

90° F (32° C) Air Intake Temperature
28.25 in. (718 mm) Hg. Barometer (Min.)
19,350 BTU/LB (20,414,250 J/.4536 kg) Fuel (HHV) [API 28]

15 in. (381 mm) H_2O Air Intake Depression (Max.) 21 in. (553 mm) H_2O Exhaust Back Pressure (Max.)	Roots-Blown Scavenged Engines
6 in. (152 mm) H_2O Air Intake Depression (Max.) 5 in. (127 mm) H_2O Exhaust Back Pressure (Max.)	Turbocharged Engines

ALTITUDE DERATING

Roots-Blown engines - Sea level to 4000 ft. (1219 m) altitude - no derating. Above 4000 ft. (1219 m) - 4% per 1000 ft. (305 m)

Turbocharged engines - See derating charts, pages 1-9 to 1-12.

OVERLOAD RATINGS

For generator units and for continuous duty power take-off unit ratings, the following applies:

Standard DEMA rating of 10% overload for 2 continuous hours out of every 24 hours continuous operation.

MINIMUM LOAD RESTRICTION - TURBOCHARGED ENGINES

Minimum load for all Model 645E4 turbocharged engines running at 750 or 900 rpm should not be less than 20% of the full load rating. There is no minimum load restriction for operation at lower engine speeds.

TEMPERATURE DERATING

See Temperature Derating Chart, pages 1-7 and 1-8

ANTI-FREEZE DERATING

The power rating of turbocharged engines must be reduced when anti-freeze is used in the cooling system. Specific deratings will be furnished on request.

ENGINE MODEL 20-645E4/7 PM&I DATA

LAB REPORT REFERENCE NO. C34000 DATE: 16-NOV-79

FUEL SULFUR CONTENT 0.27%

Percent Load	RPM	BHP	AIR TEMP F	NOx g/bhp-hr	CO g/bhp-hr	CH2 g/bhp-hr	SO2 g/bhp-hr	O2 %	NOx g/hr	CO g/hr	CH2 g/hr	SO2 g/hr
110	900	3958	83.6	10.12	0.70	na	0.90	12.7	40052	2771	na	3579
100	900	3603	85.0	10.19	0.51	na	0.90	13.1	36716	1838	na	3254
75	900	2705	81.9	8.71	0.42	na	0.93	15.2	23569	1136	na	2504
50	900	1801	94.2	9.09	0.59	na	1.01	16.8	16366	1063	na	1814
25	900	891	88.0	10.53	1.45	na	1.32	18.2	9381	1292	na	1180

NOx measurement method - (NDIR/NDUV) DATA CORRECTED TO CHEMILUMINESCENT METHOD.
CO measurement method - NDIR
CH2 (unburned hydrocarbons) measurement method - flame ionization detector
O2 measurement method - paramagnetic analyzer or calculated
SO2 was calculated based upon the assumption of 100% oxidation of the sulfur in the fuel to sulfur dioxide (SO2).

MKW POWER SYSTEMS, Inc.

ELECTRO-MOTIVE

EMD TECHNICAL PAPER
40020885 Four Pass Aftercooler

The four pass aftercooler is an increased capacity aftercooler developed in response to the demands placed on the two pass aftercooler by greater combustion air flows required by the 710 engine series. In early testing of 710 engines equipped with the two pass aftercooler, it was found that the temperatures in the engine airbox (intake manifold) were higher than that of the 645 engine. The four pass aftercooler has improved heat transfer properties reducing the power assembly charging temperature (air box temperature at full load). It can be applied to 710G engines, 16 and 20 cylinder 645E and 645F engine series.

FEATURES

The four pass aftercooler attained greater thermal capacity due to the following improvements:

- **A water flow path which passes the water through the tube bundle 4 times**
- **A 50% increase in fin heat transfer area**, yielding improved heat transfer
- **A change in the fin material from aluminium to copper** further improving heat conductivity. Copper as utilized in the four pass aftercooler has 83% greater thermal conductivity (k)* than aluminum
- **An improvement in the aftercooler's side baffle** which assures that air is not permitted to leak around the core and escape cooling
- **Identical exterior dimensions** which allow the four pass to be installed in any application where either the P/N 9541961 or P/N 8365645 had been applied. The four pass aftercooler is field retrofittable to the 645 engine. (It can not be installed in place of the smaller p/n 8288974 unit.)

* ref. Keith, Frank, Principles of Heat Transfer, 2nd Ed., International Textbook Co., Scranton PA., 1965, p. 593

BENEFITS

With the above five improvements, the four pass aftercooler retains several advantages over it's two pass version including:

- **A reduction in airbox temperatures.** A 30-35 degree reduction in airbox temperature at the engine's rated horsepower has been measured; in the 710 engine, temperatures were restored to the levels attained in the 645 engine
- **Reduced Oxides of Nitrogen (NOx) emissions.** Previous test results have demonstrated a reduction in NOx emissions up to 15% at full horsepower
- **Fuel economy savings.** At full load, substituting the four pass aftercooler for the two pass has produced fuel savings measured from .75% to 1.5% for 710 engines and approximately .5% for 645 engines
- **Identical System Design, as a result of identical water capacity,** (approximately 85 gpm in the 16-710 engine) permits installation of the four pass aftercooler without alteration of the engine's cooling water pumps or piping circuit. This also assures that water flow to the engine's power assemblies is not altered by diversion of a greater quantity of water to the aftercoolers

ENGINE EMISSIONS

The four pass aftercooler lowers the airbox charge temperature, engine peak combustion temperatures and exhaust temperatures and therefore reduces NOx emissions from our engines. The NOx formation reactions are highly thermal sensitive, so an enhanced charge cooling is an effective way to reduce NOx emissions.

ENGINE FUEL ECONOMY

The application of aftercooling to a turbocharged Diesel engine is known to have advantages in the areas of fuel economy and in the emissions of oxides of nitrogen (NOx). The fuel economy advantages of the four pass aftercooler in the 710 engine series has shown to produce fuel economy improvements in the range of .75% to 1.5% at the engine's rated speed and load. When these improvements are applied to the annual fuel consumption of a locomotive, they will show an attractive return on the investment represented by the price premium of the four pass aftercooler over its two pass predecessor. The investment payback periods of the four pass aftercooler used in 645 and 710 engines have ranged from one to two years, depending on annual fuel consumption.

PERFORMANCE ADVANTAGE CONDITIONS

The four pass aftercooler provides superior performance over the two pass at the following conditions:

- High engine air flow rates, such as in the 710 engine series (particularly the 16 and 20 cylinder versions of the 710)
- Operating conditions which produce high air flows. For example:
  - At throttle settings six through eight. These are the conditions at which the turbocharger is operating "off the geartrain" and air flow rates and air compression ratios are highest
  - High ambient temperatures and/or high altitudes result in particularly high turbocharger discharge temperatures. Under these especially demanding conditions, the benefits of the four pass are even greater than that of the two pass

PRODUCT RELIABILITY

The superior construction of the four pass aftercooler makes it a reliable, high performance heat transfer product built to last. The four pass and two pass aftercoolers have identical major features of construction, such as retention of the reliable rolled mechanical bond between the aftercooler's red brass tubes and the tube bundle's header plates. This method of construction has proved reliable in the two pass aftercooler design and in the premium mechanically-bonded radiators.

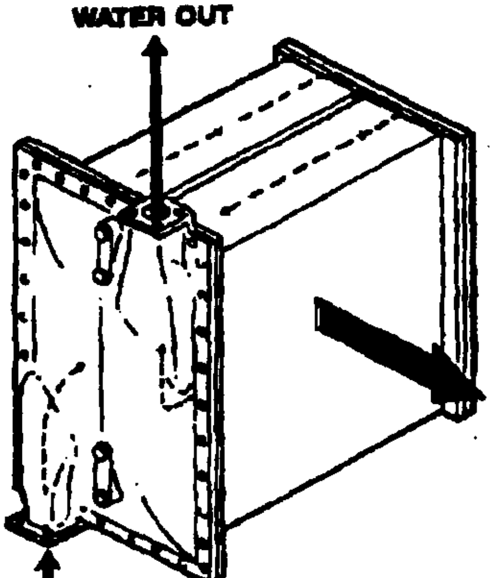
CONCLUSION

The value of the four pass aftercooler is evident in the areas of improved air box temperatures, engine emission reductions and improved fuel economy. Electro-Motive, in partnership with Young Radiator, has demonstrated their commitment to accepting and meeting the performance challenges of the rail industry. It is this partnership that continues to provide the best heat transfer products to the industry. The four pass aftercooler is the latest product of this commitment.

Note: A performance comparison of the four pass and two pass aftercooler depends on which particular engine it is installed in and on the power at which they are compared. EMD welcomes the opportunity to provide technical expertise to discuss individual railroad needs.

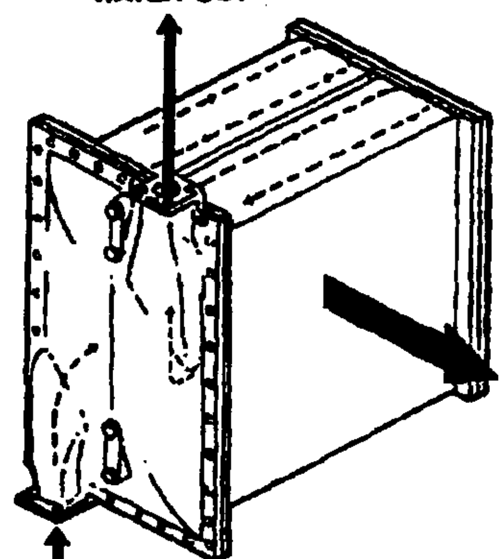
ELECTRO-MOTIVE

2-PASS AFTERCOOLER



4-PASS AFTERCOOLER

(Baffles not shown for clarity)



ELECTRO-MOTIVE

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[illegible] Motors Corporation
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[illegible] General Motors Corporation. All rights reserved. [illegible]

4-PASS-992

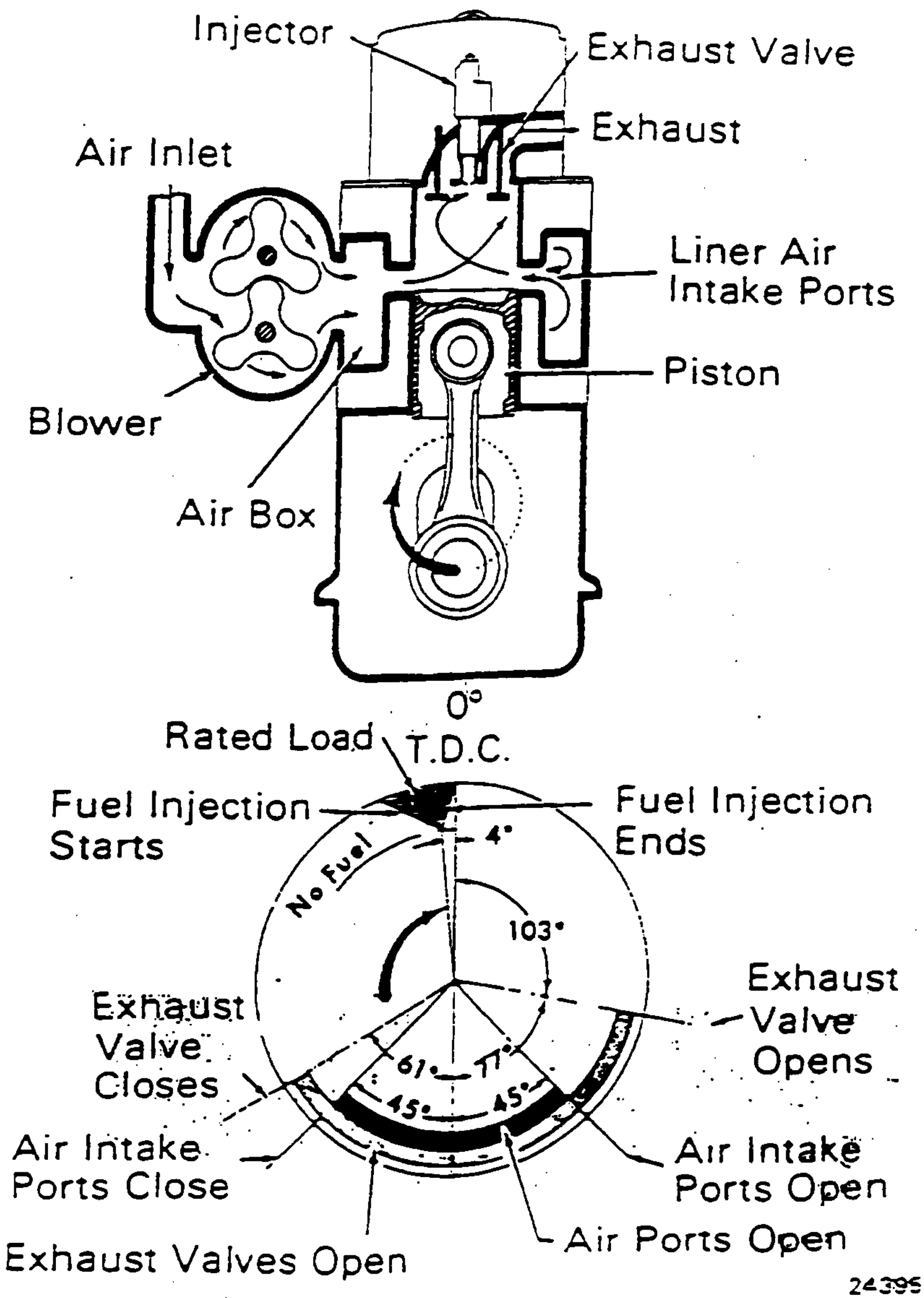

Fig.0-1 – Schematic Illustration Of

CH2MHILL

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February 21, 1997

139633.AP

Mr. Martin Costello
Florida Department of Environmental Protection
Division of Air Resources Management
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Costello:

Subject: Modeling Protocol
Proposed Standby Power Generators
Miami-Dade Water and Sewer Department
Alexander Orr Water Treatment Plant

The Miami-Dade Water and Sewer Department (WASD) will apply for a permit to operate standby generators at three of its facilities: the Central District Wastewater Treatment Plant, located on Virginia Key in Miami; the Alexander Orr Water Treatment Plant, located at 6800 SW 87th Avenue in Miami; and the John E. Preston Water Treatment Plant, located at 1100 W 2nd Avenue in Hialeah. The Central District and Alexander Orr facilities are major sources of criteria pollutant emissions with respect to prevention of significant deterioration (PSD), and estimated emissions from the standby generators at the desired level of operation will constitute a significant net emissions increase. The Preston facility is a minor source of criteria pollutant emissions, but the estimated emissions increase from the standby generators at the desired level of operation will constitute a major source by itself. As such, permitting of these sources will be subject to PSD review. Separate permit applications will be submitted for each source.

CH2M HILL has prepared this Modeling Protocol in order to obtain consensus from Florida Department of Environmental Protection (FDEP) on the approach to be taken for the air quality impact analyses that will be required as part of the PSD reviews for these projects. The contents of the proposed modeling protocol are based on recent communications with Mr. Cleve Holliday of your staff, as well as our experience in conducting previous dispersion modeling studies in Florida.

Project Background

PSD permit applications will be prepared and submitted for the following sources:

- At the Central District Wastewater Treatment Plant, three existing (previously exempt) 3,600 horsepower (hp) diesel-fueled internal combustion (IC) engines, each driving an associated 2,500 kilowatt (kW) electrical generator; and one new 3,800 hp diesel-fueled IC engine, driving a 2,700 kW electrical generator.
- At the Alexander Orr Water Treatment Plant, five 3,800 hp diesel-fueled IC engines (four existing - previously exempt - and one new), each driving an associated 2,700 kW electrical generator;
- At the John E. Preston Water Treatment Plant, three existing (previously exempt) 3,600 hp diesel-fueled IC engines, each driving an associated 2,500 kW electrical generator; and three new 3,800 hp diesel-fueled IC engines, each driving an associated 2,700 kW electrical generator.

Pollutants to be Evaluated

The proposed projects will increase emissions of NOx, sulfur dioxide (SO_2), and particulate matter (PM_{10}) by significant quantities (as defined by the PSD regulations). Emissions of these pollutants will be evaluated in the PSD applications. Emissions of other pollutants are not expected to be significant as a result of operating the proposed sources, but will be evaluated in each application.

Emissions Inventory (Proposed Emission Sources)

An emissions inventory will be prepared for proposed operation of the standby generators to facilitate a comprehensive dispersion analysis of PSD pollutants emitted. The inventory will based on the worst-case scenario of operating each plant entirely on power produced by the standby generators. Plant loads are approximately 7,000 kW (Central District - including electrical load from the future oxygen plant); 8,000 kW (Alexander Orr); and 9,000 kW (John E. Preston). Therefore, it will be necessary that the plants be capable of operating 3 standby generators sets (Central District) or 4 generator sets (Alexander Orr and John E. Preston) simultaneously in order to accommodate worst-case demand scenarios. Additional generator sets are present at each facility and will be operated; however, maximum operation will not exceed the levels stated above.

The emissions inventory will be utilized to determine the source's PSD increment consumption (NOx, SO_2, and PM_{10}) and to demonstrate compliance with the national ambient air quality standards (NAAQS) for these pollutants. The general approach will be to perform initial modeling and screening analyses using a single year of meteorological data in order to identify the area of significant air quality impacts. Subsequent detailed modeling will be conducted for pollutants having a significant impact on air quality using all five years of meteorological data. The results of the detailed 5-year modeling will be included in the permit application submittal in both hard copy and electronic format.

Best Available Control Technology Demonstration (BACT)

BACT will be utilized for all pollutants that will be emitted in significant quantities (NOx, SO_2, and PM_{10}). BACT will be determined by obtaining information from EPAs RACT/BACT/LAER Clearinghouse database and by contacting select state and agency personnel to ensure that the most recent PSD permit determinations will be considered in the determination of what constitutes BACT. In accordance with State and Federal guidance, the BACT demonstration for this project will follow the "top-down" approach.

It is currently expected that BACT for NOx emissions will consist of combustion air precooling plus fuel injection timing retard (FITR) technology. BACT for SO2 and PM10 emissions will consist of a fuel oil sulfur content restriction of 0.05 weight percent and efficient combustion practices (FITR).

Emission Inventory (Other Emission Sources)

If the predicted impact of the proposed source is greater than the PSD significant impact thresholds, it will be necessary to model other emission sources (using five years of meteorological data) along with the emissions from the proposed source for the purpose of determining PSD increment consumption and/or demonstrating compliance with the NAAQS. If this is necessary, a written request for an inventory of PSD and baseline emission sources will be submitted to FDEP. Such a request will specify the proposed location of the source and the predicted radii of significant impact of the facility (by pollutant).

Dispersion Model

The dispersion model to be used in the modeling analysis will be EPA's most recent version of the Industrial Source Complex Model (ISC3) as is available from EPAs Technology Transfer Network (TTN) Bulletin Board. The ISC3 model will be used for all averaging periods (including annual) for all pollutants to be modeled. Horizontal stacks, present at the Alexander Orr Water Treatment Plant, will be modeled with a negligible exit velocity (0.1 m/s) and an effective stack diameter to conserve stack flow rate while retaining the effect of thermal buoyancy.

Meteorological Data

In accordance with FDEP guidance, the meteorological data that will be used in the modeling will consist of five years of Miami International Airport surface air data and West Palm Beach upper air data. The data have been obtained from the EPA TTN bulletin board and processed using EPAs most recent meteorological data processing program, the Meteorological Processor for Regulatory Models (MPRM). The five year period of record for the data to be used will be 1987 - 1991.

Receptor Data

Maximum concentrations will be identified with a resolution of at least 100 meters in the receptor grid. The general approach will be to perform initial modeling with a coarse spacing not greater than 500 meters, followed by refined modeling with a closer receptor spacing of 100 meters. The initial modeling will allow the determination of the radius of significant impact of the facility by pollutant, averaging period, and year of meteorological data. Areas within the radii of significant impact where high concentrations are predicted will be subjected to increased scrutiny in the refined modeling.

Model Options

The regulatory default, simple terrain, and rural dispersion options will be selected for all model runs. Building heights for structures within 5L of the sources, where L is the minimum of the building height or the maximum projected building width, will be identified for modeling purposes to facilitate calculation of downwash and building wake effects by the model.

PSD Class I Areas

All three facilities are located within 100 kilometers (km) of the Everglades National Park, which has been designated a Federal Class I area. Since the Everglades National Park is a Federal Class I area, it will be necessary to evaluate the impacts of the proposed source on air quality related values. The Federal Land Manager will be contacted to determine the appropriate level of analysis.

Nonattainment Areas

There are no nonattainment areas for any pollutants located within 200 km of the proposed source. Therefore it is assumed that there will be no need to evaluate the impacts of the proposed source on any nonattainment area.

Background Air Quality Data

Preconstruction air quality monitoring data must be obtained and included in the air quality impact analysis for all PSD pollutants. It is our understanding that air quality monitoring data is available in the Miami area. If initial modeling of emission from the proposed source indicates that the pollutants will be present in excess of PSD significant impact levels, we will request that FDEP provide us with background ambient air quality levels for this area. The data will be used to demonstrate that the NAAQS will not be threatened or exceeded as a result of the operation of the proposed source.

Determination of PSD Increment Consumption

If the predicted impacts of the proposed source exceed the PSD significant impact levels for any criteria pollutants, then a modeling analysis will be conducted to predict the PSD increment consumption for those pollutants in the area surrounding the source. This will be accomplished by modeling, in conjunction with the proposed source emissions, all other

PSD increment consuming sources identified and provided to the applicant by FDEP. The modeling will be conducted within the area of significant impact (for each pollutant) as determined by modeling only the proposed source emissions (see previous), using five years of meteorological data.

Demonstration of Compliance with NAAQS

If the predicted impacts of the proposed source exceed the PSD significant impact levels, a demonstration of compliance with the NAAQS will be conducted for all pollutants that have a significant impact. This will be conducted by modeling, in conjunction with the proposed source emissions, all other PSD and baseline emission sources identified and provided to the applicant by FDEP. The modeled impacts of all other PSD and baseline sources will be added to the ambient air quality background data that will be supplied by FDEP (see previous). The modeling will be conducted within the area of significant impact (for each pollutant) as determined by modeling only the proposed source emissions (see previous), using five years of meteorological data.

Modeling Results

The results of the modeling analysis will be summarized in a chapter of a PSD Permit Application Report that will be submitted to FDEP.

****

We request that FDEP provide us with written concurrence on the above described approach. If you should have any questions, comments, or suggestions regarding the above, please do not hesitate to call me at (619) 687-0110. My FAX number is (619) 687-0111.

Sincerely,

CH2M HILL

David Lindberg

David Lindberg, P.E.
Project Engineer

cc: Bertha Goldenberg/Miami-Dade WASD
George Howroyd/CH2M HILL
John Castleberry/CH2M HILL

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NO ECHO
CO STARTING
  TITLEONE Standby Generator Sets - Significant Impacts - 1987
  TITLETWO Miami-Dade Water and Sewer Department Central District WWTP
  MODELOPT DFAULT CONC RURAL
  TERRHGTS FLAT
  AVERTIME 1 PERIOD
  POLLUTID ALL
  RUNORNOT RUN
CO FINISHED

SO STARTING
** LOCATION SRC-ID TYPE UTM X (m) UTM Y (m) Z (m)
  LOCATION CDGENS POINT 584959.1 2847789.6 0.00
** SRCPARAM SRC-ID EMIS Hgt temp,X,sy vel,y,sz dia,ang
  SRCPARAM CDGENS 1.0000 6.40 663.0 16.50 0.91
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RE DISCCART 541300.0 2814000.0
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RE DISCCART  546200.0  2835700.0
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RE DISCCART  550300.0  2839000.0
RE DISCCART  445000.0  2839000.0
RE DISCCART  440000.0  2839000.0
RE DISCCART  550500.0  2844000.0
RE DISCCART  545000.0  2844000.0
RE DISCCART  540000.0  2844000.0
RE DISCCART  550300.0  2848600.0
RE DISCCART  545000.0  2848600.0
RE DISCCART  540000.0  2848600.0
RE DISCCART  535600.0  2848600.0
RE DISCCART  530600.0  2848600.0
RE DISCCART  525600.0  2848600.0
RE DISCCART  520600.0  2848600.0
RE DISCCART  515600.0  2848600.0
RE FINISHED

ME STARTING
  INPUTFIL 1283987.met
  ANEMHGHT  10  METERS
  SURFDATA  12839  1987
  UAIRDATA  12844  1987
ME FINISHED

OU STARTING
  RECTABLE ALLAVE FIRST
  MAXTABLE ALLAVE  50
  PLOTFILE  1  ALL FIRST CDROI87h.PLT  36
  PLOTFILE PERIOD ALL CDROI87a.PLT  38
OU FINISHED
```

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - Significant Impacts - 1987***
*** Miami-Dade Water and Sewer Department Central District WWTP***

1-MAY-97
17:05:55

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	1.07416 AT	(585207.00, 2847417.75, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	1.03892 AT	(585157.00, 2847417.75, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	0.98365 AT	(585209.13, 2847356.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	0.98252 AT	(585257.00, 2847417.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	0.92813 AT	(585280.50, 2847406.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	0.87506 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	109.91544	ON 87022811: AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA

1-MAY-97
17:07:45

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - Significant Impacts - 1988***
*** Miami-Dade Water and Sewer Department Central District WWTP***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8784 HRS) RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	1.48325 AT	(584857.00, 2847899.50, 0.00, 0.00) DC	NA
	2ND HIGHEST VALUE IS	1.38611 AT	(585157.00, 2847417.75, 0.00, 0.00) DC	NA
	3RD HIGHEST VALUE IS	1.34774 AT	(585207.00, 2847417.75, 0.00, 0.00) DC	NA
	4TH HIGHEST VALUE IS	1.29073 AT	(585209.13, 2847356.50, 0.00, 0.00) DC	NA
	5TH HIGHEST VALUE IS	1.08692 AT	(585107.00, 2847417.75, 0.00, 0.00) DC	NA
	6TH HIGHEST VALUE IS	1.08340 AT	(585257.00, 2847417.75, 0.00, 0.00) DC	NA

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	122.89244	ON 88073116: AT	(584857.00, 2847899.50, 0.00, 0.00) DC	NA

1-MAY-97
17:09:30

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - Significant Impacts - 1989 ***
*** Miami-Dade Water and Sewer Department Central District WWTP***

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	1.68214	AT (584857.00, 2847899.50, 0.00, 0.00) DC	NA
	2ND HIGHEST VALUE IS	1.30577	AT (584857.00, 2847949.50, 0.00, 0.00) DC	NA
	3RD HIGHEST VALUE IS	1.15481	AT (585207.00, 2847417.75, 0.00, 0.00) DC	NA
	4TH HIGHEST VALUE IS	1.13300	AT (585157.00, 2847417.75, 0.00, 0.00) DC	NA
	5TH HIGHEST VALUE IS	1.08759	AT (585209.13, 2847356.50, 0.00, 0.00) DC	NA
	6TH HIGHEST VALUE IS	0.99264	AT (584798.38, 2847981.00, 0.00, 0.00) DC	NA

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE	NETWORK GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	111.84219	ON 89061515:	AT (584857.00, 2847899.50, 0.00, 0.00) DC	NA

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - Significant Impacts - 1990***
*** Miami-Dade Water and Sewer Department Central District WWTP***

1-MAY-97
17:13:06

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	1.48533 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	0.92921 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	0.85694 AT	(584798.38, 2847981.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	0.78920 AT	(584637.69, 2848172.50, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	0.76430 AT	(584576.13, 2848111.00, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	0.73494 AT	(584767.63, 2847950.25, 0.00, 0.00)	DC	NA

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	102.31303	ON 90022206: AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - Significant Impacts - 1991***
*** Miami-Dade Water and Sewer Department Central District WWTP***

1-MAY-97
17:15:06

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	1.20485 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	0.87037 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	0.73032 AT	(584576.13, 2848111.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	0.70217 AT	(584798.38, 2847981.00, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	0.69310 AT	(584767.63, 2847950.25, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	0.68800 AT	(584637.69, 2848172.50, 0.00, 0.00)	DC	NA

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***
** CONC OF ALL IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	101.00788	ON 91031713: AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA

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NO ECHO
CO STARTING
   TITLEONE Standby Generator Sets - NAAQS & PSD Class II Increment - NO2 - 1987
   TITLETWO Miami-Dade Water and Sewer Department Central District WWTP
   MODELOPT DFAULT CONC RURAL
   TERRHGTS FLAT
   AVERTIME PERIOD
   POLLUTID NO2
   RUNORNOT RUN
CO FINISHED
SO STARTING
** LOCATION SRC-ID TYPE X- Easting (m) Y- Northing (m) Z (m)
** PSD Increment Consuming Sources
   LOCATION CDGENS POINT 584959.1  2847789.6 0.00
   LOCATION CDCOGENS POINT 585116.0  2847661.6 0.00
   LOCATION AOGENS POINT 566590.0  2843380.0 0.00
   LOCATION HPGENS POINT 571492.0  2857105.0 0.00
   LOCATION SBROWRRF POINT 579600.0  2883300.0 0.00
   LOCATION NBROWRRF POINT 583600.0  2907600.0 0.00
   LOCATION TARMAC1 POINT 562900.0  2861700.0 0.00
   LOCATION TARMAC2 POINT 562900.0  2861700.0 0.00
   LOCATION TARMAC3 POINT 562900.0  2861700.0 0.00
   LOCATION DCRRF12 POINT 564390.0  2857390.0 0.00
   LOCATION DCRRF34 POINT 564360.0  2857390.0 0.00
   LOCATION DCRRF5 POINT 564300.0  2857400.0 0.00
   LOCATION FPLF14 POINT 580100.0  2883300.0 0.00
** Baseline Sources
   LOCATION CDBLOWRS POINT 585123.7  2847661.6 0.00
   LOCATION HPLIME POINT 571350.0  2856854.0 0.00
   LOCATION AOLIME AREA 566407.0  2843306.0 0.00
   LOCATION AOPUMPS POINT 566680.0  2843510.0 0.00
   LOCATION TARMAC3B POINT 562900.0  2861700.0 0.00
   LOCATION DCRRF12B POINT 564390.0  2857390.0 0.00
   LOCATION DCRRF34B POINT 564360.0  2857390.0 0.00
   LOCATION FPLF112 POINT 580100.0  2883300.0 0.00
   LOCATION FPLF1324 POINT 580100.0  2883300.0 0.00
   LOCATION FPLF45B POINT 580100.0  2883300.0 0.00
   LOCATION FPLC5 POINT 570400.0  2834900.0 0.00
   LOCATION FPLC6 POINT 570400.0  2834900.0 0.00
   LOCATION FPLPE12 POINT 587400.0  2875300.0 0.00
   LOCATION FPLPE34 POINT 587400.0  2875300.0 0.00
   LOCATION FPLPE112 POINT 587400.0  2875300.0 0.00
   LOCATION FPLTP12 POINT 567200.0  2831200.0 0.00
   LOCATION RINKER12 POINT 558200.0  2851300.0 0.00
   LOCATION SFCOGEN POINT 580500.0  2850900.0 0.00
** SRCPARAM SRC-ID EMIS Hgt temp,X,sy vel,y,sz dia,ang
** PSD Increment Consuming Sources
   SRCPARAM CDGENS 7.2800  6.40  663.0  16.50 0.91
   SRCPARAM CDCOGENS 7.1700  7.62  741.0  0.10 7.85
   SRCPARAM AOGENS 42.3133  3.50  608.0  0.10 11.32
   SRCPARAM AOPUMPS 16.8400  8.53  735.0  10.00 0.24
   SRCPARAM AOLIME 0.0240  4.57  228.59 0.15 0.00
   SRCPARAM HPGENS 25.5000  8.80  608.0  45.19 0.53
   SRCPARAM SBROWRRF 68.5500  59.44  381.0  17.98 3.96
   SRCPARAM NBROWRRF 64.0000  58.50  381.0  18.01 3.96
   SRCPARAM TARMAC1 21.1400  60.96  465.0  12.80 2.44
   SRCPARAM TARMAC2 12.8900  60.96  422.0  9.11 2.44
   SRCPARAM TARMAC3 68.1800  60.96  450.0  11.03 4.57
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SRCPARAM DCRRF12 35.3800 76.20 405.4 15.86 3.66
SRCPARAM DCRRF34 35.3800 76.20 405.4 15.86 3.66
SRCPARAM DCRRF5 13.2400 76.20 399.8 15.74 2.97
SRCPARAM FPLF14 135.7000 46.00 422.0 14.63 4.27
** Baseline Sources
SRCPARAM CDBLOWRS 7.6900 10.66 875.0 31.01 0.20
SRCPARAM HPLIME 0.8410 22.85 330.0 8.25 0.85
SRCPARAM TARMAC3B -60.8000 60.96 472.0 10.78 4.57
SRCPARAM DCRRF12B -22.5000 45.72 472.0 12.20 2.74
SRCPARAM DCRRF34B -22.5300 45.72 472.0 12.20 2.74
SRCPARAM FPLF112 508.0100 13.72 733.0 21.34 5.49
SRCPARAM FPLF1324 508.0100 13.29 733.0 21.34 5.49
SRCPARAM FPLF45B -70.6000 46.00 422.0 14.63 4.27
SRCPARAM FPLC5 51.1500 45.72 408.0 11.58 4.57
SRCPARAM FPLC6 86.8200 45.72 408.0 14.33 4.57
SRCPARAM FPLPE12 313.7800 104.85 416.0 18.59 4.27
SRCPARAM FPLPE34 508.2700 104.55 408.0 19.20 5.52
SRCPARAM FPLPE112 498.9500 15.54 733.0 21.34 5.49
SRCPARAM FPLTP12 475.2400 121.92 408.0 19.20 5.52
SRCPARAM RINKER12 20.1900 41.76 400.0 7.62 4.57
SRCPARAM SFCOGEN 6.2100 39.60 389.0 16.46 2.74
SO BUILDHGT CDGENS    5.49   5.49   5.49   3.65   3.65   3.65
SO BUILDHGT CDGENS    3.65   3.65   3.65   3.65   3.65   3.65
SO BUILDHGT CDGENS   12.19  12.19  12.19   8.84   8.84   5.49
SO BUILDHGT CDGENS    5.49   5.49   5.49   3.65   3.65   3.65
SO BUILDHGT CDGENS    3.65   3.65   3.65   3.65   3.65   3.65
SO BUILDHGT CDGENS    5.49   5.49   5.49   5.49   5.49   5.49
SO BUILDWID CDGENS   19.85  25.39  30.16  13.10  14.80  16.05
SO BUILDWID CDGENS   16.81  17.07  16.80  17.07  16.81  16.05
SO BUILDWID CDGENS   25.78  25.78  25.00  14.81  12.14  13.70
SO BUILDWID CDGENS   19.85  25.39  30.16  13.10  14.80  16.05
SO BUILDWID CDGENS   16.81  17.07  16.80  17.07  16.81  16.05
SO BUILDWID CDGENS   36.84  34.02  30.16  25.39  19.85  13.70
SRCGROUP GENS CDGENS
SRCGROUP MDWASDCD CDGENS CDCOGENS
SRCGROUP PSD2INCR CDGENS CDCOGENS AOGENS HPGENS SBROWRRF NBROWRRF
SRCGROUP PSD2INCR TARMAC1 TARMAC2 TARMAC3 TARMAC3B DCRRF12 DCRRF34
SRCGROUP PSD2INCR DCRRF12B DCRRF34B DCRRF5 FPLF14 FPLF45B
SRCGROUP NAAQS CDGENS CDCOGENS CDBLOWRS AOGENS AOLIME AOPUMP
SRCGROUP NAAQS HPGENS HPLIME SBROWRRF NBROWRRF TARMAC1 TARMAC2
SRCGROUP NAAQS TARMAC3 DCRRF12 DCRRF34 DCRRF5 FPLF14 FPLF112
SRCGROUP NAAQS FPLF1324 FPLC5 FPLC6 FPLPE12 FPLPE34 FPLPE112
SRCGROUP NAAQS FPLTP12 RINKER12 SFCOGEN
SO FINISHED
RE STARTING
GRIDPOLR POL1 STA
GRIDPOLR POL1 ORIG 584959.08442548 2847789.56629077
GRIDPOLR POL1 DIST 700 800 900 1000 1250
GRIDPOLR POL1 DIST 1500 1750 2000 2250 2500
GRIDPOLR POL1 DIST 3000 3500 4000 4500 5000
GRIDPOLR POL1 GDIR 36 10 10
GRIDPOLR POL1 END
** Receptors at fenceline, r = 200 m, 300 m, 400 m, 500 m, 600 m, and 700 m
RE DISCCART  584859.1  2847616.4
RE DISCCART  584830.5  2847636.4
RE DISCCART  584805.9  2847661.0
RE DISCCART  584785.9  2847689.6
RE DISCCART  584771.1  2847721.2
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RE DISCCART	584762.1	2847754.8
RE DISCCART	584759.1	2847789.6
RE DISCCART	584762.1	2847824.3
RE DISCCART	584771.1	2847858.0
RE DISCCART	584785.9	2847889.6
RE DISCCART	584805.9	2847918.1
RE DISCCART	584830.5	2847942.8
RE DISCCART	584859.1	2847962.8
RE DISCCART	584856.5	2847507.7
RE DISCCART	584809.1	2847529.8
RE DISCCART	584766.2	2847559.8
RE DISCCART	584729.3	2847596.7
RE DISCCART	584699.3	2847639.6
RE DISCCART	584677.2	2847687.0
RE DISCCART	584663.6	2847737.5
RE DISCCART	584659.1	2847789.6
RE DISCCART	584663.6	2847841.7
RE DISCCART	584677.2	2847892.2
RE DISCCART	584699.3	2847939.6
RE DISCCART	584729.3	2847982.4
RE DISCCART	584766.2	2848019.4
RE DISCCART	584809.1	2848049.4
RE DISCCART	584856.5	2848071.5
RE DISCCART	585095.9	2847413.7
RE DISCCART	585028.5	2847395.6
RE DISCCART	584959.1	2847389.6
RE DISCCART	584889.6	2847395.6
RE DISCCART	584822.3	2847413.7
RE DISCCART	584759.1	2847443.2
RE DISCCART	584702.0	2847483.1
RE DISCCART	584652.7	2847532.5
RE DISCCART	584612.7	2847589.6
RE DISCCART	584583.2	2847652.8
RE DISCCART	584565.2	2847720.1
RE DISCCART	584559.1	2847789.6
RE DISCCART	584565.2	2847859.0
RE DISCCART	584583.2	2847926.4
RE DISCCART	584612.7	2847989.6
RE DISCCART	584652.7	2848046.7
RE DISCCART	584702.0	2848096.0
RE DISCCART	584759.1	2848136.0
RE DISCCART	584822.3	2848165.4
RE DISCCART	584959.1	2848289.6
RE DISCCART	585045.9	2848282.0
RE DISCCART	585130.1	2848259.4
RE DISCCART	585209.1	2848222.6
RE DISCCART	585280.5	2847406.5
RE DISCCART	585209.1	2847356.6
RE DISCCART	585130.1	2847319.7
RE DISCCART	585045.9	2847297.2
RE DISCCART	584959.1	2847289.6
RE DISCCART	584872.3	2847297.2
RE DISCCART	584788.1	2847319.7
RE DISCCART	584709.1	2847356.6
RE DISCCART	584637.7	2847406.5
RE DISCCART	584576.1	2847468.2
RE DISCCART	584526.1	2847539.6
RE DISCCART	584489.2	2847618.6

RE DISCCART	584466.7	2847702.7
RE DISCCART	584459.1	2847789.6
RE DISCCART	584466.7	2847876.4
RE DISCCART	584489.2	2847960.6
RE DISCCART	584526.1	2848039.6
RE DISCCART	584576.1	2848111.0
RE DISCCART	584637.7	2848172.6
RE DISCCART	584709.1	2848222.6
RE DISCCART	584788.1	2848259.4
RE DISCCART	584872.3	2848282.0
RE DISCCART	584959.1	2848389.6
RE DISCCART	585063.3	2848380.5
RE DISCCART	585164.3	2848353.4
RE DISCCART	585259.1	2848309.2
RE DISCCART	585344.8	2848249.2
RE DISCCART	585522.9	2847994.8
RE DISCCART	585550.0	2847893.8
RE DISCCART	585559.1	2847789.6
RE DISCCART	585550.0	2847685.4
RE DISCCART	585418.7	2847403.9
RE DISCCART	585344.8	2847329.9
RE DISCCART	585259.1	2847270.0
RE DISCCART	585164.3	2847225.8
RE DISCCART	585063.3	2847198.7
RE DISCCART	584959.1	2847189.6
RE DISCCART	584854.9	2847198.7
RE DISCCART	584753.9	2847225.8
RE DISCCART	584659.1	2847270.0
RE DISCCART	584573.4	2847329.9
RE DISCCART	584499.5	2847403.9
RE DISCCART	584439.5	2847489.6
RE DISCCART	584395.3	2847584.4
RE DISCCART	584368.2	2847685.4
RE DISCCART	584359.1	2847789.6
RE DISCCART	584368.2	2847893.8
RE DISCCART	584395.3	2847994.8
RE DISCCART	584439.5	2848089.6
RE DISCCART	584499.5	2848175.2
RE DISCCART	584573.4	2848249.2
RE DISCCART	584659.1	2848309.2
RE DISCCART	584753.9	2848353.4
RE DISCCART	584854.9	2848380.5
RE DISCCART	584857.0	2848199.5
RE DISCCART	584857.0	2848149.5
RE DISCCART	584857.0	2848099.5
RE DISCCART	584857.0	2848049.5
RE DISCCART	584857.0	2847999.5
RE DISCCART	584857.0	2847949.5
RE DISCCART	584857.0	2847899.5
RE DISCCART	584857.0	2847849.5
RE DISCCART	584857.0	2847799.5
RE DISCCART	584857.0	2847749.5
RE DISCCART	584857.0	2847699.5
RE DISCCART	584857.0	2847649.5
RE DISCCART	584857.0	2847599.5
RE DISCCART	584857.0	2847549.5
RE DISCCART	584857.0	2847499.5
RE DISCCART	584857.0	2847449.5

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RE DISCCART  584857.0  2847417.7
RE DISCCART  584907.0  2847417.7
RE DISCCART  584957.0  2847417.7
RE DISCCART  585007.0  2847417.7
RE DISCCART  585057.0  2847417.7
RE DISCCART  585107.0  2847417.7
RE DISCCART  585157.0  2847417.7
RE DISCCART  585207.0  2847417.7
RE DISCCART  585257.0  2847417.7
RE DISCCART  585307.0  2847417.7
RE DISCCART  585357.0  2847417.7
RE DISCCART  585407.0  2847417.7
RE DISCCART  585413.2  2847417.7
RE DISCCART  585453.1  2847447.0
RE DISCCART  585493.4  2847475.6
RE DISCCART  585527.5  2847502.5
RE DISCCART  585527.5  2847552.5
RE DISCCART  585527.5  2847602.5
RE DISCCART  585527.5  2847652.5
RE DISCCART  585527.5  2847702.5
RE DISCCART  585527.5  2847752.5
RE DISCCART  585527.5  2847802.5
RE DISCCART  585527.5  2847852.5
RE DISCCART  585527.5  2847902.5
RE DISCCART  585527.5  2847952.5
RE DISCCART  585527.5  2848002.5
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RE DISCCART  585527.5  2848102.5
RE DISCCART  585527.5  2848152.5
RE DISCCART  585527.5  2848199.5
RE DISCCART  585477.5  2848199.5
RE DISCCART  585427.5  2848199.5
RE DISCCART  585377.5  2848199.5
RE DISCCART  585327.5  2848199.5
RE DISCCART  585277.5  2848199.5
RE DISCCART  585227.5  2848199.5
RE DISCCART  585177.5  2848199.5
RE DISCCART  585127.5  2848199.5
RE DISCCART  585077.5  2848199.5
RE DISCCART  585027.5  2848199.5
RE DISCCART  584977.5  2848199.5
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RE FINISHED
ME STARTING
  INPUTFIL 1283987.met
  ANEMHGHT  10  METERS
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OU STARTING
  RECTABLE ALLAVE FIRST
  MAXTABLE ALLAVE  50
  PLOTFILE PERIOD PSD2INCR CD87incr.PLT  40
  PLOTFILE PERIOD NAAQS CD87ambi.PLT  42
OU FINISHED
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*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - NAAQS & PSD Class II Increment - NO2 - 1987**
*** Miami-Dade Water and Sewer Department Central District WWTP***

27-MAY-97
18:02:34

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF NO2 IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG) OF TYPE	GRID-ID
GENS	1ST HIGHEST VALUE IS	7.81986	AT (585207.00, 2847417.75, 0.00, 0.00) DC	NA
	2ND HIGHEST VALUE IS	7.56331	AT (585157.00, 2847417.75, 0.00, 0.00) DC	NA
	3RD HIGHEST VALUE IS	7.16098	AT (585209.13, 2847356.50, 0.00, 0.00) DC	NA
	4TH HIGHEST VALUE IS	7.15272	AT (585257.00, 2847417.75, 0.00, 0.00) DC	NA
	5TH HIGHEST VALUE IS	6.75679	AT (585280.50, 2847406.50, 0.00, 0.00) DC	NA
	6TH HIGHEST VALUE IS	6.37046	AT (584857.00, 2847899.50, 0.00, 0.00) DC	NA
MDWASDCD	1ST HIGHEST VALUE IS	25.44624	AT (584805.88, 2847661.00, 0.00, 0.00) DC	NA
	2ND HIGHEST VALUE IS	24.93510	AT (584857.00, 2847649.50, 0.00, 0.00) DC	NA
	3RD HIGHEST VALUE IS	24.65436	AT (584857.00, 2847699.50, 0.00, 0.00) DC	NA
	4TH HIGHEST VALUE IS	23.81616	AT (584785.88, 2847689.50, 0.00, 0.00) DC	NA
	5TH HIGHEST VALUE IS	23.67550	AT (584830.50, 2847636.50, 0.00, 0.00) DC	NA
	6TH HIGHEST VALUE IS	23.35454	AT (584857.00, 2847599.50, 0.00, 0.00) DC	NA
PSD2INCR	1ST HIGHEST VALUE IS	26.65288	AT (584805.88, 2847661.00, 0.00, 0.00) DC	NA
	2ND HIGHEST VALUE IS	26.13951	AT (584857.00, 2847649.50, 0.00, 0.00) DC	NA
	3RD HIGHEST VALUE IS	25.85463	AT (584857.00, 2847699.50, 0.00, 0.00) DC	NA
	4TH HIGHEST VALUE IS	25.02170	AT (584785.88, 2847689.50, 0.00, 0.00) DC	NA
	5TH HIGHEST VALUE IS	24.88272	AT (584830.50, 2847636.50, 0.00, 0.00) DC	NA
	6TH HIGHEST VALUE IS	24.56329	AT (584857.00, 2847599.50, 0.00, 0.00) DC	NA
NAAQS	1ST HIGHEST VALUE IS	60.31151	AT (584857.00, 2847649.50, 0.00, 0.00) DC	NA
	2ND HIGHEST VALUE IS	59.45847	AT (584805.88, 2847661.00, 0.00, 0.00) DC	NA
	3RD HIGHEST VALUE IS	57.56551	AT (584830.50, 2847636.50, 0.00, 0.00) DC	NA
	4TH HIGHEST VALUE IS	56.90918	AT (584857.00, 2847599.50, 0.00, 0.00) DC	NA
	5TH HIGHEST VALUE IS	56.60430	AT (584857.00, 2847699.50, 0.00, 0.00) DC	NA
	6TH HIGHEST VALUE IS	55.80542	AT (584859.13, 2847616.50, 0.00, 0.00) DC	NA

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - NAAQS & PSD Class II Increment - NO2 - 1988***
*** Miami-Dade Water and Sewer Department Central District WWTP***

27-MAY-97
18:29:30

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF NO2 IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	NETWORK OF TYPE	GRID-ID
GENS	1ST HIGHEST VALUE IS	10.79804 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	10.09088 AT	(585157.00, 2847417.75, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	9.81150 AT	(585207.00, 2847417.75, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	9.39654 AT	(585209.13, 2847356.50, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	8.16261 AT	(585259.13, 2847270.00, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	7.91275 AT	(585107.00, 2847417.75, 0.00, 0.00)	DC	NA
MDWASDCD	1ST HIGHEST VALUE IS	27.62108 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	25.08234 AT	(584857.00, 2847649.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	24.76147 AT	(584857.00, 2847599.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	24.74269 AT	(584859.13, 2847616.50, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	24.35793 AT	(584857.00, 2847699.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	24.35074 AT	(585207.00, 2847417.75, 0.00, 0.00)	DC	NA
PSD2INCR	1ST HIGHEST VALUE IS	28.67117 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	26.18198 AT	(584857.00, 2847649.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	25.86926 AT	(584857.00, 2847599.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	25.84758 AT	(584859.13, 2847616.50, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	25.44863 AT	(584857.00, 2847699.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	25.43953 AT	(585207.00, 2847417.75, 0.00, 0.00)	DC	NA
NAAQS	1ST HIGHEST VALUE IS	59.62062 AT	(584857.00, 2847649.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	58.62686 AT	(584859.13, 2847616.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	58.51704 AT	(584857.00, 2847599.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	58.09530 AT	(584830.50, 2847636.50, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	57.43444 AT	(584857.00, 2847699.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	56.15969 AT	(584805.88, 2847661.00, 0.00, 0.00)	DC	NA

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - NAAQS & PSD Class II Increment - NO2 - 1989***
*** Miami-Dade Water and Sewer Department Central District WWTP***

27-MAY-97
18:55:01

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF NO2 IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
GENS	1ST HIGHEST VALUE IS	12.24599 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	9.50600 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	9.35787 AT	(584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	8.40700 AT	(585207.00, 2847417.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	8.24822 AT	(585157.00, 2847417.75, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	8.19588 AT	(584859.13, 2847962.75, 0.00, 0.00)	DC	NA
MDWASDCD	1ST HIGHEST VALUE IS	31.85135 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	27.85299 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	27.05644 AT	(584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	26.33404 AT	(584859.13, 2847962.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	24.69293 AT	(584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	23.88190 AT	(584857.00, 2847849.50, 0.00, 0.00)	DC	NA
PSD2INCR	1ST HIGHEST VALUE IS	32.71657 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	28.71760 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	27.92232 AT	(584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	27.19830 AT	(584859.13, 2847962.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	25.56031 AT	(584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	24.74792 AT	(584857.00, 2847849.50, 0.00, 0.00)	DC	NA
NAAQS	1ST HIGHEST VALUE IS	58.90326 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	53.17928 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	51.68205 AT	(584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	51.28627 AT	(584859.13, 2847962.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	50.58734 AT	(584857.00, 2847849.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	48.80777 AT	(584805.88, 2847918.00, 0.00, 0.00)	DC	NA

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - NAAQS & PSD Class II Increment - NO2 - 1990***
*** Miami-Dade Water and Sewer Department Central District WWTP***

27-MAY-97
19:22:19

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF NO2 IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	NETWORK OF TYPE	GRID-ID
GENS	1ST HIGHEST VALUE IS	10.81321 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	7.97604 AT	(584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	6.76467 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	6.53543 AT	(584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	5.78300 AT	(584859.13, 2847962.75, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	5.74735 AT	(584702.00, 2848096.00, 0.00, 0.00)	DC	NA
MDWASDCD	1ST HIGHEST VALUE IS	29.39229 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	24.64123 AT	(584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	23.78901 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	23.29879 AT	(584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	23.16507 AT	(584857.00, 2847849.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	22.33585 AT	(584859.13, 2847962.75, 0.00, 0.00)	DC	NA
PSD2INCR	1ST HIGHEST VALUE IS	30.39604 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	25.64019 AT	(584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	24.78530 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	24.30318 AT	(584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	24.17672 AT	(584857.00, 2847849.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	23.33004 AT	(584859.13, 2847962.75, 0.00, 0.00)	DC	NA
NAAQS	1ST HIGHEST VALUE IS	57.67365 AT	(584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	52.51670 AT	(584857.00, 2847849.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	50.37409 AT	(584857.00, 2847699.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	49.96112 AT	(584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	49.55463 AT	(584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	49.03671 AT	(584805.88, 2847918.00, 0.00, 0.00)	DC	NA

*** ISCST3 - VERSION 96113 ***
*** Standby Generator Sets - NAAQS & PSD Class II Increment - NO2 - 1991***
*** Miami-Dade Water and Sewer Department Central District WWTP***

27-MAY-97
19:46:23

*** MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***
** CONC OF NO2 IN MICROGRAMS/M**3**

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	NETWORK OF TYPE	GRID-ID
GENS	1ST HIGHEST VALUE IS	8.77131	AT (584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	6.44278	AT (584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	6.33628	AT (584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	6.10623	AT (584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	5.67990	AT (584859.13, 2847962.75, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	5.31672	AT (584576.13, 2848111.00, 0.00, 0.00)	DC	NA
MDWASDCD	1ST HIGHEST VALUE IS	26.86866	AT (584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	22.91040	AT (584857.00, 2847849.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	22.65114	AT (584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	22.64376	AT (584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	22.38324	AT (584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	21.21791	AT (584859.13, 2847962.75, 0.00, 0.00)	DC	NA
PSD2INCR	1ST HIGHEST VALUE IS	27.87390	AT (584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	23.92456	AT (584857.00, 2847849.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	23.65607	AT (584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	23.64333	AT (584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	23.38074	AT (584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	22.21343	AT (584859.13, 2847962.75, 0.00, 0.00)	DC	NA
NAAQS	1ST HIGHEST VALUE IS	55.65855	AT (584857.00, 2847899.50, 0.00, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	52.38244	AT (584857.00, 2847849.50, 0.00, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	48.75032	AT (584805.88, 2847918.00, 0.00, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	48.69890	AT (584830.50, 2847942.75, 0.00, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	48.49684	AT (584857.00, 2847949.50, 0.00, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	46.60391	AT (584859.13, 2847962.75, 0.00, 0.00)	DC	NA

Visual Effects Screening Analysis
Source: Central District Standby Generators
Class I Area: Shark Valley Tower

*** User-selected Screening Scenario Results ***

Input Emissions for

Particulates	0.53	g/s
NOx (as NO2)	22.01	g/s
Primary NO2	0.00	g/s
Soot	0.00	g/s
Primary SO4	0.00	g/s

**** Default Particle Characteristics Assumed

Transport Scenario Specifications:

Background Ozone:	0.05	ppm
Background Visual Range:	63.00	km
Source-Observer Distance:	62.00	km
Min. Source-Class I Distance:	33.75	km
Max. Source-Class I Distance:	131.00	km
Plume-Source-Observer Angle:	11.25	degrees
Stability:	6	
Wind Speed:	1.00	m/s

RESULTS

Asterisks (*) indicate plume impacts that exceed screening criteria

Maximum Visual Impacts INSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	40.	51.1	129.	2.00	1.290	.05	-.005
SKY	140.	40.	51.1	129.	2.00	.529	.05	-.007
TERRAIN	10.	35.	49.2	134.	2.00	.337	.05	.003
TERRAIN	140.	35.	49.2	134.	2.00	.143	.05	.003

Maximum Visual Impacts OUTSIDE Class I Area
Screening Criteria ARE NOT Exceeded

					Delta E		Contrast	
Backgrnd	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	10.	29.7	159.	2.00	.592	.05	-.005
SKY	140.	10.	29.7	159.	2.00	.238	.05	-.007
TERRAIN	10.	10.	29.7	159.	2.00	.222	.05	.003
TERRAIN	140.	10.	29.7	159.	2.00	.085	.05	.003

Department of
Environmental Protection

DIVISION OF AIR RESOURCES MANAGEMENT

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Identification of Facility Addressed in This Application

1. Facility Owner/Company Name : Miami-Dade Water & Sewer Department	
2. Site Name : Central District Wastewater Treatment Pl	
3. Facility Identification Number : 130476	[ ] Unknown
4. Facility Location : Central District WWTP Street Address or Other Locator : Virginia Key City : Miami County : Dade	Zip Code : 33146-
5. Relocatable Facility? [ ] Yes [X] No	6. Existing Permitted Facility? [X] Yes [ ] No

0250476-002-AC
PSD-FI-240

DEP Form No. 62-210.900(1) - Form
Effective : 3-21-96

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official : Name : Robert C. Ready, P.E. Title : Asst. Director of Treatment Facilit
2. Owner or Authorized Representative or Responsible Official Mailing Address : Organization/Firm : Miami-Dade Water & Sewer Department Street Address : 4200 Salzedo Street City : Coral Gables State : FL Zip Code : 33146-0316
3. Owner/Authorized Representative or Responsible Official Telephone Numbers : Telephone : (305)669-7668 Fax : (305)669-3753
4. Owner/Authorized Representative or Responsible Official Statement : *I, the undersigned, am the owner or authorized representative* of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions units.* R C Ready 6-24-97 Signature Date

* Attach letter of authorization if not currently on file.

4. Professional Engineer Statement :

*I, the undersigned, hereby certified, except as particularly noted herein**, that :*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollutant control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [✓] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

David Lindberg
Signature

20 June 1997
Date

* Attach any exception to certification statement.

David Lindberg 6/20/97