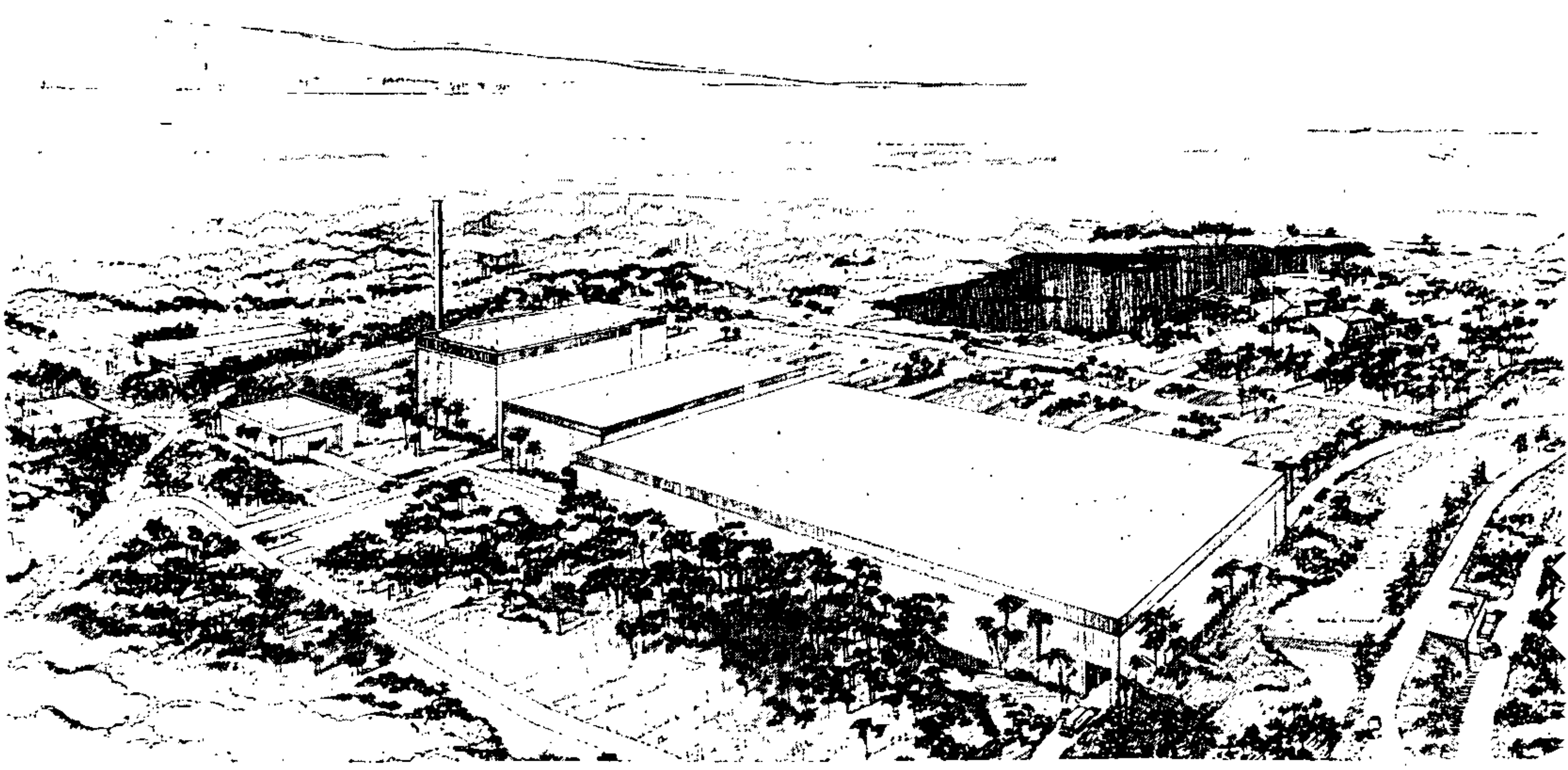
PALM BEACH COUNTY, FLORIDA

SOLID WASTE RESOURCE RECOVERY FACILITY
UPDATE TO THE APPLICATION FOR
POWER PLANT SITE CERTIFICATION

SUBMITTED BY

SOLID WASTE AUTHORITY Palm Beach County

DECEMBER, 1985



Key: [box] SECTIONS KEPT FOR AIR PERMIT FILES

PALM BEACH COUNTY SOLID WASTE AUTHORITY

December 30, 1985

State of Florida
Department of
Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Attn: Mr. Hamilton S. Oven, Jr., P.E.
Administrator
Siting Coordination Section

Re: Update to the Application
Application for Power Plant Siting Certification
Resource Recovery Facility
PA 84-20, DOAH CASE NO. 85-2032
Solid Waste Authority
Palm Beach County, Florida

Dear Mr. Oven:

Accompanying this letter are 45 copies of the Update to the Application dated December 2, 1985. The Application and Appendices were updated due to a modification to the Resource Recovery Facility Master Site Plan. The modification is based on several meetings with regulatory agencies concerning the protection of the roost/rookery area.

UPDATE FORMAT

The format described below was used to organize material included in this Update.

First, copies of those sections of the original Application which have been updated are included. Typewritten pages which present updated material follow the appropriate page(s) of the original Application. The typewritten pages are numbered for easy reference. For example, Page 4-7 of the original Application is followed by Updated page 4-7A or pages 4-7A, 4-7B, 4-7C, etc.

Additionally, each copied page of the original Application which has been updated includes notations indicating the type of change. The notations appear in the left margin of the page adjacent to the appropriate paragraph(s) or section(s). Following is an explanation of each notation:

1. REVISED SECTION X.X.X: the indicated section (i.e., Section 1.1.1, 1.2.1, etc.) has been updated in its entirety; the revised material appears under an identical notation on the following page(s).

5114 Okeechobee Blvd. / Suite 2C / West Palm Beach, Florida 33409 / Telephone (305) 471-5770

2. REVISED 1, REVISED 2, REVISED 3, et.: the indicated paragraph or paragraphs have been revised; the revised material appears under an identical notation on the following page(s).

3. INSERT SECTION X.X.X: a new section (i.e., Section 1.1.1, 1.2.1, etc.) has been inserted at the point indicated in the text; the new material appears under an identical notation on the following page(s).

4. INSERT 1, INSERT 2, INSERT 3, etc.: a new paragraph or paragraphs have been inserted at the point(s) indicated in the text; the new material appears under an identical notation on the following page(s).

5. REVISED TABLE: the indicated table has been revised; the new table appears on the following page(s).

6. UNCHANGED: the indicated paragraph is unchanged.

7. DELETE: the indicated paragraph has been deleted in its entirety.

UPDATED APPENDICES

The Appendices which have been updated are listed below. Those appendices which are noted as "full" require the application holder to remove the appendix in its entirety and replace it with the updated appendix. Those appendices which are noted as "partial" require the application holder to supplement and/or replace sections or pages of the original appendices with the appropriate revised material included in the Update.

VOLUME II - APPENDICES

Appendix No. and Name		Update
10.1.4	Section 10 or 404 Applications/Permits	Partial
10.4	Class I & III Sanitary Landfill Construction and Operation Data	Partial
10.5	Surface Water Management Plan	Full

VOLUME III - APPENDICES

Appendix No. and Name		Update
10.10	Correspondence Related to Governmental Jurisdiction	Partial
10.12	Ecology	Partial
10.15	Environmental Noise Study	Full

VOLUME IV - AIR QUALITY

Appendix No. and Name		Update
10.1.5	Prevention of Significant Deterioration DER Form 17-1.202(1)	Full Partial

UPDATED FIGURES

The following figures have been updated and replace those contained in the original application. Figure 4.2-1, which was originally omitted in the Application, has been updated and included in this update to the Application. For easy reference, the preceding page of each updated figure in the Application is listed below.

Figure No. and Name		Follows Page
2.1-2	Resource Recovery Facility and Adjacent Properties	2-1
2.2-2	Special Category Areas within 1 Mile of Plant	2-3
2.2-3	Interaction of Resource Recovery Facility with Comprehensive Plan	2-5
2.3-31	Traffic Assignment	2-49
2.3-32	Solid Waste Management Facilities Locations	2-50
3.2-1	Resource Recovery Facility Site Plan	3-5A
3.2-3	Master Site Plan	3-6A
4.2-1	Interceptor and Monitor Well Locations and Approximate Cones of Depression	4-8
5.6-1	PSD Increment	5-16A
5.6-2	Contributions to AQSTD	5-17A
6.1-1	Transmission Line Corridor	6-1A

Should there be any further questions concerning the application please contact our office.

Very truly yours,

Timothy F. Hunt, Jr.
Executive Director

TFH/pc
enclosures

of the refuse is an additional benefit. Its sale to FP&L will help offset the overall cost of operating the facility. An affirmative determination of need from the Florida Public Service Commission has been applied for as part of this document. Other materials may be recovered as market conditions warrant.

The Authority will contract with a full-service vendor to design, construct, and operate the plant. The Authority will own the facility.

The proposed project is designed to help achieve the State's goal of enhancing environmental quality and preserving natural resources. To protect its groundwater and surface water resources, Palm Beach County is striving to limit sanitary landfilling of solid waste and plans to utilize resource recovery, an environmentally sound and economically advantageous method of solid waste disposal.

FACILITY DESCRIPTION

UNCHANGED

The proposed project will be a RDF Resource Recovery Facility with an initial continuous design rate processing capacity of 2,000 tons per day of municipal solid waste (MSW) and a gross electrical generating capacity of approximately 50 megawatts (MW). In anticipation of future disposal needs, Palm Beach County is seeking certification for ultimate site electrical generating capacity of approximately 75 MW (gross), using 3,000 tons per day of MSW.

REVISED 1

The landfill associated with the Resource Recovery Facility will consist of a 150 acre Class I landfill of double-liner technology with a leachate collection system and a 235 acre Class III landfill of single-liner technology with a leachate collection system. Borrow lakes consisting of approximately 243 acres will be developed over the life of the landfill to provide fill for construction and cover material for the landfill contents.

APPLICATION OVERVIEW

This application has been prepared in accordance with Chapter 17-17, FAC (Electrical Power Plant Siting) and follows the format prescribed in DER Form 17-1.211 (1), FAC (Instruction Guide for Certification Applications: Electrical Power Plant Site, Associated Facilities, and Associated Transmission Lines).

The application consists of four (4) volumes:

Volume I (Application) — contains the Applicant Information sheet, Chapters 1 through 9 as presented in the DER Instruction Guide, and the listing of references.

Volume II and III (Appendices) — contain the appendices of the application (Chapter 10). In addition to those appendices specifically required in the DER Instruction Guide, included are thirteen (13) additional appendices which are more appropriately included in Volume II or III than in the application text of Volume I.

Volume IV (Air Quality) — contains DER Form 17-1.202(1), Application to Operate/Construct Air Pollution Sources; the specific requirements of the Prevention of Significant Deterioration (PSD) review; a Best Available Control Technology (BACT) analysis and an air quality impact analysis.

FACILITY DESCRIPTION

REVISED
1

The landfill associated with the Resource Recovery Facility will consist of a 121-acre Class I landfill of double-liner technology with a leachate collection system and 192-acre Class III landfill of single-liner technology with a leachate collection system. Borrow lakes consisting of approximately 236 acres will be developed over the life of the landfill to provide fill for construction and cover material for the landfill contents.

As required by Chapter 17-17.121(3)(a) FAC, also submitted, under separate cover, are three (3) copies of materials which show the procedures taken to accomplish compliance of the site with existing land use plans and zoning ordinances. This compilation of information is referred to as the "Compliance Document".

PRINCIPAL FINDINGS

UNCHANGED The proposed facility will be designed and operated to meet all applicable Federal, State and County Standards. As intended, the facility will have a minimal impact on the surrounding environment. The analysis presented in the application supports this conclusion:

UNCHANGED

- Air Quality — As discussed in the Appendix 10.1.5 — Air Quality Impact Analysis, the combustion process for the facility will be environmentally sound. The results of the Prevention of Significant Deterioration (PSD) analysis indicate:

  — Best Available Control Technology (BACT) for the proposed source is the use of emission controls inherent to the system design with an Electrostatic Precipitator (ESP) designed to meet an outlet grain loading of 0.03 gr/dscf corrected to 12% CO_2;

  — The facility will operate in compliance with the Prevention of Significant Deterioration (PSD) increments, National Ambient Air Quality Standards (NAAQS), and Florida Ambient Air Quality Standards (FAAQS) for all criteria pollutants;

  — Fugitive dust created during construction of the facility is addressed in Section 4.5. With suggested standard mitigative measures there will be no adverse effects due to fugitive emissions.

  — Total Suspended particulates (TSP) are examined in Section 5.6.1 and Appendix 10.1.5. The proposed resource recovery plant emissions will result in an ambient impact equal to approximately 1.3 percent of the Florida Ambient Air Quality Standard for TSP;

  — As discussed in Section 3.4.1, the tipping area and RDF plant will be enclosed and under negative air pressure. Thus, odors will not be able to leave the resource recovery plant. Odors within the building will be drawn into the furnace and destroyed in the combustion process; and

  — The emissions from the facility will not have an adverse effect on surrounding soils, vegetation or visibility.

UNCHANGED

- Land Use and Zoning — (Section 2.2.2 and Compliance Document) A series of advertised formal public hearing have been conducted concerning the awarding of a Special Exception to the Agricultural Residential Zoning of the site. At those hearings public input, testimony and documents were entered into the official record as land use and zoning issues were evaluated. Even though the Palm Beach County

Planning Commission (CPC) voted against the requested Special Exception, the staff of the County Planning, Zoning and Building Department had recommended to the CPC approval of the Special Exception, indicating that the requested use conformed to the County Zoning Code and the Land Use Plan. The Board of County Commissioners (BCC) concluded that the proposed Resource Recovery Facility is compatible with the Land Use Plan and zoning patterns in the area. Accordingly, the Board of County Commissioners approved the Special Exception with a number of conditions.

UNCHANGED

- Noise — The Environmental Noise Study (Section 5.7 and Appendix 10.15) indicated that the predicted noise levels resulting from the operation of the facility will not exceed recommended noise level criteria for any location off of the Resource Recovery Facility site. There are a few areas on-site where the level of noise will exceed recommended levels; however these areas are localized or enclosed and no personnel would work within any of the areas for extended periods of time. The effects of these noise levels can be mitigated using standard equipment and procedures.

UNCHANGED

- Traffic — (Section 5.9.1 and Appendix 10.16) The potential traffic impact which the proposed Resource Recovery Facility would have on the adjacent roadway network was determined. The facility will meet the County's Traffic Performance Standards as a Category C Project. The Authority has committed itself to construct or upgrade a number of vicinity roads, insuring continued acceptable levels of service.

UNCHANGED

- Groundwater — This facility will lie over portions of the Turnpike Aquifer, a principal source of drinking water in Palm Beach County. Thorough hydro-geologic investigations were conducted to determine existing groundwater quality and to serve as a basis for future monitoring programs (Section 2.3.1). The current groundwater quality beneath the site is good. A plume of mineralized water has been identified beneath the existing Dyer Boulevard Landfill, adjacent to the site. Some of the non-potable water for the resource recovery plant use will be drawn from this plume, eliminating what could have become a serious problem. (Section 3.5)

UNCHANGED

- Surface Water — Existing hydraulic connections of on-site and adjacent waters were identified and the surface water quality on site was determined by sampling and analysis. (Section 2.3.4) The only problems identified related to color and turbidity, otherwise the surface water quality was satisfactory. The design of the resource recovery plant and landfills will insure adequate retention and natural treatment of stormwater run-off on-site. This same surface water management plan is closely tied to the site wetlands mitigation scheme. Any long-term effects on surface water associated with the operation of the Resource Recovery Facility will not be adverse. (Sections 3.8, 4.2 and 5.3.1)

UNCHANGED

- Soil And Foundation Conditions — Preliminary investigations have indicated that there appears to be a competent bearing layer starting at a depth of 50 to 70 feet over most of the site. Piles or piers placed into this stratum will be used as the foundation for major structures. However, the present position, density, composition and degree of cementation of the soils beneath the site are quite variable, particularly in reference to depth. Therefore, a careful determination will be made of the subsurface conditions in order to insure adequate foundation design for the resource recovery plant and associated facilities. (Section 2.3.1.1 and 2.3.1.2.2)

REVISED 1

- Plant and Animal Communities — (Sections 2.3.5 and 2.3.6) The presence of extensive wetlands within a 5 mile radius of the site increases the possibility that important species associated with wetlands may occur. However, this site presents no outstanding or exceptional features to attract important species. The populations that utilize the site would be present in approximately equal amounts in any similar area in the region. Although the development of the Resource Recovery Facility will have a significant effect on the ecology of the site it does not pose a threat to any plant or animal communities.

UNCHANGED

- Archaeological Sites and Historic Preservation Areas — (Section 5.10) There are no historical or prehistoric resources known to be present within the project site boundaries as confirmed by field investigations. Projected use of the project site will not impact any historic or prehistoric cultural resources.

PROJECT STATUS

The Palm Beach County solid waste energy recovery facility will be designed, constructed and operated by a full-service vendor under contract to the Authority. The selected contractor will have to guarantee compliance with the terms and all conditions of the site certification and rezoning conditions. As currently envisioned, construction of the facility will begin in 1986 with startup expected in 1989.

Principal Findings

REVISED 1

The presence of extensive wetlands within a five mile radius of the site increases the possibility that important species associated with wetlands may occur. A population of Snail Kites, listed as an endangered species by the United States Fish and Wildlife Service and the Florida Game and Fresh Water Fish Commission, has been discovered roosting on the site. The roosting area has been designated as a unique habitat, and all measures to preserve this area and maintain foraging areas for the Kites have been taken. Except for the Snail Kite, plant and animal populations which utilize the site are present in approximately equal amounts in any similar area in the region. Hence, although development of the Resource Recovery Facility will have a significant effect on the ecology of the site, it will not pose a threat to any plant or animal communities.

Access to the site is made from 45th Street by traveling north on a shell rock road located between the two shell pits bordering on 45th Street. At the northern boundary of the shell pits, this road proceeds east to the eastern site boundary. Within the site, the road meanders in a northerly direction, terminating at the active borrow lake.

2.1.3 Site Modifications

UNCHANGED

The proposed site development plan for the site is shown in Figure 2.1-2. Space has been allocated for Class I and Class III Sanitary Landfills, a north-south roadway, borrow lakes, the resource recovery plant, and perimeter buffer zones. The western portion of the site will serve as a multiple-purpose conservation area — habitat preservation, buffer, stormwater retention and wetlands mitigation will all be accomplished in this area. Throughout the rest of the text, these specific usages are discussed with no general reference to the conservation area.

UNCHANGED

In accordance with the Water Quality Assurance Act of 1983, a landfill cannot be constructed within 3,000 feet of a Class I water body. The West Palm Beach Water Catchment Area (WCA) is classified as a Class I surface water body. (DER Docket Number 83-32R, Rule Number 17-3.161, Classified Waters.) Therefore, all landfill activities will occur within the eastern 1,900 feet of the site in order to comply with these minimum setback requirements. The existing borrow lake in the northeast portion of the site will be expanded to allow maximum utilization of the designated area for dredging fill material to be used at the Dyer Boulevard Landfill, as well as the landfill areas to be constructed on the site.

UNCHANGED

The western region of the site within the 3,000-foot setback from the WCA will be utilized to accommodate the 40-acre resource recovery plant, including a laydown area, employee parking, wastewater treatment plant and other associated facilities, roadway right-of-way, additional borrow areas, wetlands mitigation and stormwater management. Two borrow lakes will be developed on the property south of 45th Street within the boundaries of the site while allowing for the extension of the north-south roadway south of 45th Street. An access service road for the landfill will be maintained within the 200-foot setback west of the Turnpike canal.

UNCHANGED

The landfill height has been established to provide the capacity for a Class I and a Class III landfill to serve the County in excess of twenty years. Existing ground elevations on the site average + 17.5 feet NGVD (National Geodetic Vertical Datum) (± 1 foot). The base of landfill operation will begin at an elevation of + 30 feet NGVD. The proposed final elevations of the designated Class I and Class III landfill areas of the site are + 130 feet NGVD.

The proposed land use for the site is summarized as follows:

REVISED TABLE

Class I Landfill	150 acres
Class III Landfill	235 acres
Borrow Lakes	243 acres
Roadway	30 acres
Conservation Area	427 acres
Resource Recovery Plant	40 acres
Buffer, Roads, Ditches, etc.	195 acres
TOTAL SITE	1,320 acres

SECTION 2.1.3 Site Modifications

REVISED TABLE

Class I Landfill	121 acres
Class III Landfill	192 acres
Borrow Lakes	248 acres
Roadway (Jog Road)	36 acres
Conservation Area	460 acres
Resource Recovery Plant	40 acres
Buffer, Roads, Ditches, etc.	223 acres
TOTAL SITE	1,320 acres

NCHANGED

After the landfill capacity has been exhausted, the landfill area is planned to be developed as a recreation facility.

2.1.4 100-Year Flood Zone

As indicated in Figure 2.1-3, none of the proposed site lies within a 100-Year Flood Zone.

2.2 SOCIO-POLITICAL ENVIRONMENT

2.2.1 Governmental Jurisdictions

Available maps and literature were examined to identify local, regional, State and Federal areas stipulated in the application guide. In addition to this review, the governmental units listed in Table 2.2-1 were contacted to provide supplemental information.

Information on the special category areas is listed in Table 2.2-2 and shown graphically in Figure 2.2-1 and Figure 2.2-2. Local parks of the Cities of Palm Beach Gardens, Riviera Beach and West Palm Beach, and the Towns of Lake Park and Mangonia Park are located within 5 miles of the site. None of these lie within 1 mile of the plant. The City of West Palm Beach Water Catchment Area is directly adjacent to the western border of the site. This area of approximately 19 square miles is the drinking water source for West Palm Beach, and is a wetland area. While it is not strictly a private holding as indicated in Table 2.2-2, the catchment area is managed for environmental protection by the City.

The existing Dyer Boulevard Landfill is scheduled for closure in 1987. This area is planned to be developed as a recreational facility, and is anticipated to be managed as a Palm Beach County Park.

Table 2.2-1
Agencies Contacted in Survey of Governmental Jurisdictions

FEDERAL	U.S. Fish and Wildlife Service
STATE	Florida Department of State -Bureau of Historical Preservation Florida Department of Natural Resources -Recreation and Parks Division Florida Agricultural and Consumer Services -Forestry Division Florida Game and Freshwater Fish Commission
COUNTY	Parks and Recreation Department Planning, Zoning and Building Department -Planning Division
LOCAL	City of Palm Beach Gardens City of Riviera Beach City of West Palm Beach Town of Lake Park Town of Mangonia Park

REVISED TABLE 2.3-12

TABLE 2.3-12
SIGNIFICANT EMISSION RATES AND TOTAL FACILITY
POTENTIAL TO EMIT (THREE UNITS AT 600 TPD EACH)

VALUES FOR PSD REGULATED POLLUTANTS

Pollutant	Significant Emission* Rates (Tons/Year)	Potential to# Emit (Tons/Year)
Particulate Matter (TSP)	25	214
Carbon Monoxide (CO)	100	3,942
Nitrogen Oxides (NO_x)	40	1,314
Sulfur Dioxide (SO_2)	40	2,957
Ozone (VOC)	40	65.6
Lead (Pb)	0.6	0.46
Asbestos	7.0 E-2	—
Beryllium (Be)	4.0 E-3	3.0 E-3
Mercury (Hg)	0.1	0.98
Vinyl Chloride	1.0	—
Fluorides	3.0	13.2
Sulfuric Acid Mist	7.0	0.131
Total Reduced Sulfur (including H_2S)	10	—
Reduced Sulfur (including H_2S)	10	—
Hydrogen Sulfide (H_2S)	10	—
Hydrogen Chloride	—	1,150
2,3,7,8-TCDD	—	1.8 E-5

* 17.2 (V) Table 500.2
# 1,800 TPD RDF fired (based on 3 units at 600 TPD each)

REVISED TABLE 2.3-13

TABLE 2.3-13
COMPARISON OF IMPACT OF PALM BEACH COUNTY RDF FIRED
SPREADER STOKER FURNACES TO DE-MINIMUS LEVELS (ISC MODEL)

SIGNIFICANT MONITORING CONCENTRATIONS

Pollutant	Averaging Time	De-Minimus Guidelines ug/m³	Highest 2nd Highest# Concentration ug/m³ *	Distance (km) From Source to De-Minimus Level: High	H₂ndH
TSP	24 Hour	10	2.0	##	##
SO_2	24 Hour	13	27.9	9.0	9.0
CO	8 Hour	575	81.1	##	##
NO_x	24 Hour	14	12.3	1.5	##
Ozone (VOC)	1 Hour	*	3.0**	##	##
Mercury	24 Hour	0.25	9.3E-3	##	##
Fluorides	24 Hour	0.25	0.12	##	##
Lead	24 Hour	0.1	4.3E-3	##	##
Beryllium	24 Hour	5.0E-4	9.9E-5	##	##

* No value established. Ambient air standard: 235 ug/m³ not to be exceeded on more than an average of of one day per year over a three year period.
# Model analyses for SO_2 based on 2,100 TPD and 9% S. Concentrations for other pollutants based on on their emissions ratio to SO_2.
** Assumes all VOC becomes ozone.
Less than de-minimus values at all distances greater than 0.6 km from the source. Minimum distance tance from RDF source to site boundary: 0.73 km.

SECTION 2.3.7.2 Ambient Air Quality

REVISED TABLE 2.3-12

TABLE 2.3-12
SIGNIFICANT EMISSION RATES AND TOTAL FACILITY POTENTIAL TO EMIT (THREE UNITS AT 600 TPD EACH)
VALUES FOR PSD REGULATED POLLUTANTS

Pollutant	Significant Emission* Rates (Tons/Year)	Potential to# Emit (Tons/Year)
Particulate Matter (TSP)	25	214
Carbon Monoxide (CO)	100	3,942
Nitrogen Oxides (NO_x)	40	1,314
Sulfur Dioxide (SO_2)	40	2,957
Ozone (VOC)	40	65.6
Lead (Pb)	0.6	4.6
Asbestos	7.0 E-2	—
Beryllium (Be)	4.0 E-3	3.0 E-3
Mercury (Hg)	0.1	0.98
Vinyl Chloride	1.0	—
Fluorides	3.0	13.2
Sulfuric Acid Mist	7.0	0.131
Total Reduced Sulfur (including H_2S)	10	—
Reduced Sulfur (including H_2S)	10	—
Hydrogen Sulfide (H_2S)	10	—
Hydrogen Chloride	—	1,150
2,3,7,8-TCDD	—	1.8 E-5

* 17.2 (V) Table 500.2
# 1,800 TPD RDF fired (based on 3 units at 600 TPD each)

REVISED TABLE 2.3-13

TABLE 2.3-13
COMPARISON OF IMPACT OF PALM BEACH COUNTY RDF FIRED SPREADER STOKER FURNACES TO DE-MINIMUS LEVELS (ISC MODEL)
SIGNIFICANT MONITORING CONCENTRATIONS

Pollutant	Averaging Time	De-Minimus Guidelines ug/m³	Highest 2nd Highest# Concentration ug/m³ *	Distance (km) From Source to De-Minimus Level: High	Distance (km) From Source to De-Minimus Level: H₂ndH
TSP	24 Hour	10	2.0	##	##
SO_2	24 Hour	13	27.4	10.0	10.0
CO	8 Hour	575	78.6	##	##
NO_x	24 Hour	14	12.2	1.6	##
Ozone (VOC)	1 Hour	*	3.0**	##	##
Mercury	24 Hour	0.25	9.1E-3	##	##
Fluorides	24 Hour	0.25	0.12	##	##
Lead	24 Hour	0.1	4.3E-2	##	##
Beryllium	24 Hour	5.0E-4	2.7E-5	##	##

* No value established. Ambient air standard: 235 ug/m³ not to be exceeded on more than an average of of one day per year over a three year period.
# Model analyses for SO_2 based on 2,100 TPD and 9% lb/ton S. Concentrations for other pollutants based on their emissions ratio to SO2.
** Assumes all VOC is OZONE.
Less than de-minimus values at all distances greater than 0.6 km from the source. Minimum distance tance from RDF source to site boundary: 0.73 km.

There are thirteen active ambient air quality monitoring sites with a range of 50 km from the proposed RDF facility. These sites are listed in Table 2.3-14. The maximum and second highest maximum concentrations and their sites as measured in 1983, are shown in Table 2.3-15 along with the Federal and Florida ambient air quality standards. It has been determined by the Florida DER that the exiting monitoring facilities are sufficient to provide ambient air background in the study area. Pre-construction monitoring is not required.

REVISED TABLE 2.3-14

TABLE 2.3-14
MONITORING STATION LOCAL ADDRESSES, UTM COORDINATES AND LOCATION (DISTANCE & ANGLE) RELATIVE TO THE PROPOSED PALM BEACH COUNTY RDF FIRED WATERWALL FURNACE FACILITY

(FACILITY UTM COORDINATES 2960180N; 585820E; UTM ZONE 17)

Site No.	Address (Monitoring Capability)	UTM Coordinates Zone 17	Distance From Proposed Facility (Meters)	Direction Relative To Proposed Facility (North = 0(360) Degrees (Degrees)
1	West Palm Beach Water Treatment Plant First St. & Tamarind Ave. West Palm Beach, Florida (CO, NO_2, Meteorology)	2955030N 0593232E	9,026	125
1A	Palm Beach County Health Dept. 901 Evernia Street West Palm Beach, Florida (Suspended Particulate)	2955030N 0593232E	9,026	125
2	North Palm Beach Water Treatment Plant 603 Anchorage Drive North Palm Beach, Florida (Suspended Particulate)	2965817N 0592780E	8,956	51
3	Lake Worth Water Treatment Plant 301-303 College Street Lake Worth, Florida (Suspended Particulate)	2943537N 0592793E	18,045	157
4	Delray Beach Water Treatment Plant 202 NW First Street Delray Beach, Florida (Suspended Particulate)	2927488N 0592195E	33,308	169

SECTION 2.3.7.2 Ambient Air Quality

REVISED TABLE 2.3-14

TABLE 2.3-14
MONITORING STATION LOCAL ADDRESSES, UTM COORDINATES AND LOCATION (DISTANCE & ANGLE) RELATIVE TO THE PROPOSED PALM BEACH COUNTY RDF FIRED WATERWALL FURNACE FACILITY

(FACILITY UTM COORDINATES: 2960474N; 585820E; UMT ZONE 17)

Site No.	Address (Monitoring Capability)	UTM Coordinates Zone 17	Distance From Proposed Facility (Meters)	Direction Relative To Proposed Facility (North = 0(360) Degrees (Degrees)
1	West Palm Beach Water Treatment Plant First St. & Tamarind Ave. West Palm Beach, Florida (CO, NO_2, Meteorology)	2955030N 0593232E	9197	126
1A	Palm Beach County Health Dept. 901 Evernia Street West Palm Beach, Florida (Suspended Particulate)	2955030N 0593232E	9197	126
2	North Palm Beach Water Treatment Plant 603 Anchorage Drive North Palm Beach, Florida (Suspended Particulate)	2965817N 0592780E	8774	053
3	Lake Worth Water Treatment Plant 301-303 College Street Lake Worth, Florida (Suspended Particulate)	2943537N 0592793E	18316	153
4	Delray Beach Water Treatment Plant 202 NW First Street Delray Beach, Florida (Suspended Particulate)	2927488N 0592195E	33596	169

REVISED TABLE CONTINUED

TABLE 2.3-14 (Continued)

Site No.	Address (Monitoring Capability)	UTM Coordinates Zone 17	Distance From Proposed Facility (Meters)	Direction Relative To Proposed Facility (North = 0(360) Degrees (Degrees)
5	Boca Raton Fire Station #1 1151 North Federal Highway Boca Raton, Florida (Suspended Particulate)	2915768N 05913137E	44,750	173
6	Southwest Fire Department 1180 S. Military Trail West Palm Beach, Florida (Suspended Particulate)	2949018N 0588207E	11,414	168
7	College of Boca Raton 1151 North Federal Highway Boca Raton, Florida (Suspended Particulate)	2918354N 0587320E	41,853	178
8	South Florida Water Mgmt. Pump Station Twenty Mile Bend State Road 80 (Suspended Particulate, Ozone, Meteorology)	2951402N 0562879E	24,563	249
9	Pahokee Sewage Treatment Plant 1050 McClure Road Pahokee, Florida (Suspended Particulate)	2964200N 0532300E	53,671	274
10	Royal Palm Beach R.V. Area 10999 Okeechobee Blvd. Royal Palm Beach, Florida (Ozone, Meteorology)	2954150N 0578100E	9,796	232
11	Palm Beach County Health Department Warehouse 2030 Avenue "L" Riviera Beach, Florida (Sulfur Dioxide)	2962350N 0592480E	7,005	72
12	Belle Glade Health Dept. 1024 NW Avenue "D" Belle Glade, Florida (Suspended Particulate)	2953082N 0533160E	53,136	262

REVISED
TABLE
CONTINUED

TABLE 2.3-14 (Continued)

Site No.	Address (Monitoring Capability)	UTM Coordinates Zone 17	Distance From Proposed Facility (Meters)	Direction Relative To Proposed Facility (North = 0(360) Degrees (Degrees)
5	Boca Raton Fire Station #1 1151 North Federal Highway Boca Raton, Florida (Suspended Particulate)	2915768N 05913137E	45042	173
6	Southwest Fire Department 1108 S. Military Trail West Palm Beach, Florida (Suspended Particulate)	2949018N 0588207E	11702	168
7	College of Boca Raton S. Military Trail Boca Raton, Florida (Suspended Particulate)	2918354N 0587320E	42147	178
8	South Florida Water Mgmt. Pump Station Twenty Mile Bend State Road 80 (Suspended Particulate, Ozone, Meteorology)	2951402N 0562879E	24669	248
9	Pahokee Sewage Treatment Plant 1050 McClure Road Pahokee, Florida (Suspended Particulate)	2964200N 0532300E	53650	274
10	Royal Palm Beach R.V. Area 10999 Okeechobee Blvd. Royal Palm Beach, Florida (Ozone, Meteorology)	2954150N 0578100E	9980	231
11	Palm Beach County Health Department Warehouse 2030 Avenue "L" Riviera Beach, Florida (Sulfur Dioxide)	2962350N 0592480E	6919	074
12	Belle Glade Health Dept. 1024 NW Avenue "D" Belle Glade, Florida (Suspended Particulate)	2953082N 0533160E	53176	262

The Secondary shredder will be air swept and reduce the overs from the two stage rotary trommel. Optimum size will be determined but will be in a range from minus 2 by minus 2 by minus 2 to minus 4 by minus 4 by minus 4. The output of the secondary shredder and tramp materials from Section 2 of the trommel will be conveyed to a final screen from which the overs will be returned to the secondary shredder for reduction. The unders from this final screen will comprise the RDF stream for delivery to the RDF Energy Plant storage building.

The RDF stream from each line will discharge to a collection conveyor which will transfer to a combination tripper and shuttle conveyor system to build a storage pile of sufficient fuel for operation of the boilers for two days. The enclosed RDF storage building will have a fire protection system with sprinklers, hose racks, and smoke arrestors. Front end loaders will be used to maintain the storage pile and feed the boiler infeed conveyors.

The RDF will be combusted in waterwall spreader stoker furnace systems. Each independent boiler will be a natural circulation, drum type design provided with an economizer section for feedwater heating. The furnace feed system will consist of stokers of the pneumatic spreader type with continuous ash discharge, forward traveling grates and a wet trough drag conveyor residue system for handling bottom ash including siftings and flyash. The residue removal system will include 2 conveyors, each of which is designed to individually handle all the residue, siftings and flyash. Each conveyor system will consist of a drag chain and flights riding in a water trough with an inclined section to simultaneously dewater and elevate the residual solids for discharge from the ash pit. The ash will discharge into 40 CY open top ash trucks and be delivered to the Class I landfill for disposal.

The steam turbine-electric generating plant will be operated in conjunction with the boiler plant. The closed loop cooling system will utilize a cooling tower for dissipation of heat.

The 138 KV transmission line will link the switchyard at the resource recovery plant with Florida Power & Light's existing transmission lines. See Chapter 6 for details.

The ferrous fraction that has been recovered and stockpiled will be processed in the ferrous processing line. The process includes shredding, magnetic separation, air scrubbing, and baling of the cleaned ferrous to produce a #2 bundle.

The aluminum cans which will be hand picked will also be shredded in a separate process. They may also be baled for compaction or shipped shredded depending upon the market requirements.

3.1.2.2 The Landfills

UNCHANGED

The acreage requirements for support facilities associated with development of the proposed Resource Recovery Facility at the site such as the Class I landfill, Class III landfill, borrow lakes drainage and stormwater management systems, etc., have been estimated based on a number of assumptions, including the landfill operating periods, resource recovery plant startup and expansion dates, and South County Class III Landfill start-up date.

UNCHANGED

It appears that at the present rate of use the Dyer Boulevard Landfill will close in 1987. Therefore, all Class I and Class III waste managed by the Authority will be disposed in the new landfills possibly starting prior to closure of the Dyer facility. Under the assumption that the Resource Recovery Facility landfills will both become operational in 1987, the new Class I and Class III landfills will be operated over the planned lifetime of the facility.

UNCHANGED

Once the resource recovery plant is operational, the Class I landfill will receive three types of wastes: ash, process rejects, and by-pass (unprocessed due to facility capacity or shutdown). The resource recovery plant will initially have capacity exceeding the incoming Class I waste quantity at plant startup in 1989, and again at expansion in 1999. In these instances some selected Class III material will be processed and combusted. Otherwise, Class III material will be landfilled.

REVISED 1

The size of the landfills developed on the site will directly affect the acreage occupied by borrow lakes throughout the site development and at closure. The existing borrow lake will be expanded and several borrow lakes will be created on the site to support site preparation and landfill operation. It is estimated that approximately 12,860,000 cubic yards of sand/soil will be required to construct and operate the landfills on the site. Uses of the borrow material include: construction fill for landfill base, internal leachate containment berm construction, perimeter access roads construction, daily and/or intermediate cover for landfill lifts, and final cover landfill. The Dyer Boulevard Landfill will also continue to utilize borrow material from the existing lake on the site until landfill closure at the Dyer site is complete. This demand is estimated to equal approximately 1,630,000 cubic yards from July 1984 through closure (scheduled for late 1987).

REVISED 2

In meeting the total demand for borrow material (14,490,000 cubic yards), approximately 243 acres will be occupied by borrow lakes (to be excavated to a depth of 50 feet) after the closure of the landfills on the site.

3.2 SITE LAYOUT

3.2.1 Layout of the Resource Recovery Plant

REVISED 1

The general site development plan is shown in Figure 3.2-1, and depicts the conceptual building layout with the location of the stack where gaseous wastes leave the plant. All structures will be set back a minimum of 150 feet from all property lines, with the resource recovery plant and wastewater treatment plant set back a minimum of 450 feet. The total site area is approximately 40 acres.

UNCHANGED

The Authority, located in the Administration building, will operate the landfills, wastewater treatment plant, maintenance facilities, the water supply wells and the injection well for disposal of effluents. A full service contractor under contract to the Authority will operate the resource recovery plant. The facility design and layout coordinates for efficient operation (entrances, roadways, fences, retention basins, buffers, signs, etc.) of the separately operated units.

UNCHANGED

Figure 3.2-2 shows the profile of the resource recovery plant, which will be composed of three separate structures. The 250 foot high stack where gaseous waste leaves the plant is shown in relation to the surrounding structures.

UNCHANGED

Liquid wastes do not leave the site but will be disposed of by deep well injection. Refer to Section 3.5.1.5 and Appendix 10.8 for a detailed description.

SECTION 3.1.2.2 The Landfills

REVISED 1

The size of the landfills developed on the site will directly affect the acreage occupied by borrow lakes during site development and at closure. The existing borrow lake will be expanded and several borrow lakes will be created on the site to support site preparation and landfill operations. It is estimated that approximately 11,543,200 cubic yards of sand/soil will be required to construct and operate the landfills on the site. The borrow material will be used as construction fill for the landfill bases, internal leachate containment berms, and perimeter access roads; as daily and/or intermediate cover for landfill lifts; and as final cover for the landfills. The Dyer Boulevard Landfill will also continue to utilize borrow material from the existing lake on the site until landfill closure at the Dyer site is complete. This demand is estimated to equal approximately 1,630,000 cubic yards from July 1984 through closure (scheduled for late 1987). The resource recovery plant will require an estimated 402,400 cubic yards of construction fill.

REVISED 2

In meeting the total demand for borrow material (13,579,900 cubic yards), approximately 248 acres will be occupied by borrow lakes excavated to a depth of 50 feet after closure of the landfills on the site.

SECTION 3.2.1 Layout of the Resource Recovery Plant

REVISED 1

The general site-development plan is shown in Figure 3.2-1 and depicts the conceptual building layout with the location of the stack where gaseous wastes leave the plant. The total site area is approximately 40 acres.

3.2.2 Layout of the Landfills

UNCHANGED The proposed preliminary site development plan for the site is shown in Figure 3.2-3. Space has been allocated for Class I and Class III landfills, the north-south roadway, borrow lakes, the resource recovery plant, a conservation area and perimeter buffer zones.

UNCHANGED In accordance with the Water Quality Assurance Act of 1983, a landfill cannot be constructed within 3,000 feet of a Class I water body. Because the West Palm Beach Water Catchment Area (WCA) is classified as a Class I surface water body, all landfill activities must occur within the eastern 1,900 feet of the site in order to comply with these minimum setback requirements. The existing borrow lake in the northeast portion of the site will be expanded to allow maximum utilization of the designated area for dredging fill material to be used at the Dyer Boulevard Landfill as well as the landfill areas on the site.

UNCHANGED The area of the site within the 3,000 foot setback from the WCA will be utilized to accommodate the resource recovery plant, the north-south roadway, additional borrow lakes, and a conservation area which includes wetlands mitigation and stormwater management. Two borrow lakes will be developed on the property south of 45th Street within the boundaries of the site, while allowing for the extension of the roadway south of 45th Street.

UNCHANGED Within the limited area for landfill base available within the eastern region of the site which is suitable for waste disposal, the landfill height must be established to provide the volume required for 22 years of Class I landfill operation and 22 years of Class III landfill operation. Existing ground elevations on the site average + 17.5 feet NGVD (± 1 foot). The proposed peak final elevation of the designated Class I and Class III landfill areas is 130.0 feet NGVD.

UNCHANGED The landfilling operation will be set back a minimum of 200 feet from all borrow lake/ water body edges. Within this 200-foot-wide area the property will be graded, landscaped, and planted to buffer landfill and resource recovery plant operations from public view.

UNCHANGED Site buffering will also be provided along the northern boundary of the site in keeping with one of the conditions that has been placed on the zoning special exception by the Palm Beach County Board of County Commissioners.

UNCHANGED Natural site drainage is to the east. Site construction will alter this drainage pattern. However, any outfall from the site will ultimately flow to the eastern boundary of the site for release.

REVISED 1 Maximum side slopes at time of closure on the landfill will be four horizontal to one vertical (4:1). With every 20-foot change of elevation incurred in landfill operation, a 30-foot drainage terrace will be accommodated. Drainage swales on the terraces will intercept stormwater runoff flowing down the side slopes and direct this flow to drainage spillways which will traverse the side slope and terminate at the base of the landfill, discharging intercepted runoff into a landfill perimeter canal. The landfill side slope will be vegetated to minimize erosion and filtration. The drainage terrace will be planted and landscaped to improve the appearance of the landfill. Stormwater runoff from the closed cells of the landfill, roadways, resource recovery plant and parking areas will be directed to sedimentation basins then released into wetland areas. Leachate generated from the landfills will be collected separately by the leachate collection system. (Section 3.5.6) A more complete description of the on-site stormwater management system is provided in Section 3.8.

UNCHANGED Forty-Fifth Street will be used by waste collection/transfer vehicles to access the Resource Recovery Facility. The 45th Street right-of-way will be 120 feet wide. A turn lane

SECTION 3.2.2 Layout of the Landfills

REVISED
1

Stormwater runoff from the vegetated surfaces of the closed cells of the landfill will be relatively clean and free from turbidity. Stormwater runoff from the unvegetated active areas will be directed to temporary sedimentation basins located on land reserved for future landfill development. The velocity of the runoff through these basins will be low enough for particle settlement. The clean water will be routed to the perimeter ditches and ultimately conveyed/released into the wetland areas. Temporary turbidity control measures, such as the use of hay bales, will also be employed on an as-needed basis, or until sufficient vegetation is sustained in closed areas. Leachate generated from the landfills will be collected separately by the leachate collection system (see Section 3.5.6). A more complete description of the on-site stormwater management system is provided in Section 3.8.

will be provided at the site entrance. A north-south roadway will be constructed from 45th Street to the Beeline Highway. A 120-foot right-of-way for the roadway will be accommodated in the site layout.

UNCHANGED Landfill access roads will be provided at the base of the landfill. The roadways will be 12 feet wide, with an 8-foot shoulder on each side and will have a design speed of 30 miles per hour. Roadways extending from the landfill base to the working face of the fill operation will have a maximum slope of seven percent (7%), a width of 40 feet, and a design speed of 20 MPH.

UNCHANGED At least six acres of the site will be reserved to be conveyed to Fire Service at the time of closing. This parcel will probably be located near the intersection of the north-south roadway and the Beeline Highway. Approximately nine acres will be reserved in the vicinity of 45th Street for a Turnpike interchange.

UNCHANGED The site will contain the following structures in addition to the Class I and Class III Landfills:

- Resource Recovery Plant
- Maintenance Building
- Administrative Building
- Wastewater Treatment Plant
- Scale House
- Potable Water Storage Tank
- Hazardous Waste Storage and Transfer Bulding
- Electrical Substation

UNCHANGED It is planned that there be three entrances from the north-south roadway: to the administration building; to the maintenance building (controlled gate); and to the scale house, resource recovery plant, citizen's convenience area, and landfills.

UNCHANGED This separation allows public and employee access to the Administration complex without mixing with refuse delivery vehicles. Also, the service vehicles with business in the maintenance area would have separate access through a controlled gate. A parking area will be provided in the vicinity of resource recovery plant. The number of parking spaces provided will accommodate resource recovery plant personnel and landfill personnel. Shift overlap will be considered. A parking area will be provided near the administration building to accomodate administrative personnel and visitors.

UNCHANGED The structures have been located to preserve wetlands, woodlands, and ponds to present an attractive appearance. The site will be graded, landscaped, and bermed to provide screening where needed.

3.3 FUEL

Diesel fuel will be stored on-site in the designated maintenance area to be utilized by the vehicles operating at the resource recovery plant and the landfills. Areas in which fuels are stored and dispensed will be equipped with emergency sumps from which any spilled fuels can be collected and then properly disposed.

The generating plant will use refuse derived fuels (RDF) for combustion which will be manufactured from MSW as discussed in Section 3.1.2.1. No provision is made for auxiliary fuel, except for natural gas which is expected to be used for a start-up fuel. With the

UNCHANGED

Routine inspections of the site will occur as a result of various other monitoring programs. It is anticipated that evaluation of the general ecological conditions of the site will be made coincidentally to these other monitoring programs. Efforts will be made to ensure that individuals making these inspections report any disturbance such as disease or pest outbreaks to appropriate persons in the Solid Waste Authority for corrective measures.

INSERT 1-2

4.5 AIR IMPACT

4.5.1 Landfill Construction

This has been discussed thoroughly in Section 3.4.2.

4.5.2 Resource Recovery Plant Construction

4.5.2.1 Emission Rates

Construction activities have the potential for causing localized, short-term adverse air quality impacts. Possible impacts include: fugitive dust emissions from land clearing and site preparation activities, and mobile source emissions from construction at the construction site.

Although emissions will continue throughout all phases of construction, the greatest impact from fugitive dust emissions will occur during the site preparation phase when the largest number of acres of the site will be exposed. The greatest impact from the mobile sources will occur during the facility construction phase when the amount of equipment on site is the greatest.

The emissions from present construction across the Turnpike at the Dyer Boulevard Landfill site for expansion and closure would approximate what might be expected at the new site, and therefore not further degrade air quality in the general area.

4.5.2.2 Mitigating Measures for Particulate Emissions

The construction site is located in an attainment area. The emissions are expected to have a short term impact that are typical of those found with other construction activities.

Construction requirements for fill and concrete will result in truck traffic along the site access road. This makes the unpaved roads a source of particulate matter. Several mitigating measures are available to reduce these emissions. Routine watering of the roadway will provide a reduction of roadway emissions of about 50 percent. A watering truck is usually on site for various other activities. Partial dedication of this truck or the addition of a second truck will be accomplished. Surface treatment with penetrating chemicals would provide a 50 percent reduction depending on the frequency of application. The application of penetrating chemicals is more costly than a routine watering but fewer applications are required. The purchase of chemicals, time to mix the chemicals, and the partial use of a watering truck or some other vehicle would contribute to the cost. Soil stabilization alone

SECTION 4.4.2 Measuring and Monitoring Programs

INSERT 1

In addition to the general monitoring program discussed in Section 2.3.6.3, the Authority will conduct a monitoring program specifically concerned with the impact of the construction and operation of the proposed facilities on the roost/rookery. This program will be developed in cooperation with the USFWS and FGFWFC and will incorporate their comments and suggestions where feasible. It is anticipated that routine surveys will be conducted to assess species composition, population levels and activity in the roost/rookery.

INSERT 2

Results of the monitoring program will be provided to the USFWS and FGFWFC. In the event of unexplained or unexpected negative responses concerning the bird populations, the Authority will coordinate its responses and activities with the appropriate agencies.

It will be the responsibility of the facility operator to determine if the ash residue is classified as hazardous according to EPA or DER regulations. Experience at other similar facilities has shown that the bottom and fly ash can pass the EP toxicity test; i.e., considered a non-hazardous waste material. This waste material would be suitable for disposal in a permitted Class I sanitary landfill.

A chemical analysis of the combustion residue will be conducted after commencement of operation to ensure compatibility for disposal in a sanitary landfill.

5.5 SANITARY AND OTHER WASTE DISCHARGES

Solid waste generated by plant operations (employee refuse, packaging materials, etc.) will be collected in receptacles located throughout the plant and fed into the main solid waste stream. All sanitary wastewater will be treated and disposed of as described in Section 3.5.2.

5.6 AIR QUALITY IMPACTS

5.6.1 Impact Assessment

REVISED 1

Air quality modeling analysis was conducted in three phases: screening, refined-RDF facility only, and refined-RDF facility plus other sources. Screening analyses were used to determine operational worst-case load conditions for the RDF facility, to identify those pollutants which had significant impacts, to locate the area(s) of maximum probable impact, and to define the screening area. The screening was performed using hypothetical meteorological data. EPA Models PTPLU and PTDIS were used for screening purposes. Based on the significant levels as defined in Table 5.6-1, there were no significant impacts at distances greater than 25 kilometers from the source.

REVISED TABLE 5.6-1

TABLE 5.6-1
SIGNIFICANCE LEVELS FOR AIR QUALITY IMPACTS

Pollutant	Averaging Time	Sign. Level Conc. (ug/m^3)	Distance (km) from source To Significance Level: Highest	High Second High
Sulfur Dioxide	3 Hour	25	24.5	9.0
	24 Hour	5	25.0	20.0
	Annual	1	15.0	NA
Total Suspended Particulate	24 Hour	5	#	#
	Annual	1	#	NA
Nitrogen Dioxide	Annual	1	5.0	NA
Carbon Monoxide	8 Hour	2,000	#	#
	Annual	500	#	NA

NA Not Applicable.
\# Less than significant levels at all distances. Minimum boundary line distance from RDF Source: 0.73 km. km.

SECTION 5.6.1 Impact Assessment

REVISED 1

An air-quality modeling analysis was conducted in three phases: screening, refined-RDF facility only, and refined-RDF facility plus other sources. Screening analyses were used to determine operational worst-case load conditions for the RDF facility, identify those pollutants which had significant impacts, locate the area(s) of maximum probable impact, and define the screening area. The screening was performed using hypothetical meteorological data. EPA Models PTPLU and PTDIS were used for screening purposes. Based on the significant levels of pollutants as defined in Table 5.6-1, there were no significant impacts at distances equal to or greater than 25 kilometers as determined from all modeling efforts.

REVISED TABLE 5.6-1

TABLE 5.6-1
SIGNIFICANT LEVELS FOR AIR QUALITY IMPACTS

Pollutant	Averaging Time	Sign. Level Conc. (ug/m^3)	Distance (km) from Source To Significance Level: Highest	High Second High
Sulfur Dioxide	3 Hour	25	25.0	15.0
	24 Hour	5	25.0	20.0
	Annual	1	15.0	NA
Total Suspended Particulate	24 Hour	5	#	#
	Annual	1	#	NA
Nitrogen Dioxide	Annual	1	5.0	NA
Carbon Monoxide	8 Hour	2,000	#	#
	Annual	500	#	NA

NA Not Applicable
\# Less than significant levels at all distances. Minimum boundary line distance from RDF Source: 0.73 km.

REVISED 2

A minimum distance of 730 meters has been designated from the source itself to the source property boundary line. The distance of the source to its property boundary line is a variable based on direction. The maximum distance is approximately 3,000 meters to the north of the source.

UNCHANGED

Subsequent refined modeling was accomplished including three additional major emission sources with an area of 25 kilometers relative to the proposed facility. These sources and their emissions characteristics were provided by the Florida DER. Two analyses were accomplished with these sources:

- Effect of proposed source on existing sources.
- Effect of existing sources downwind of the proposed site.

UNCHANGED

An additional screening area was, however, defined for additional sources to be considered for inclusion in subsequent refined modeling analyses. This area extended to at least 50 kilometers (31 miles) from the applicant's source.

UNCHANGED

Refined modeling was accomplished using EPA's Industrial Source Complex Model (ISC) in both its short and long term form. The refined modeling used five years of meteorological data for the years 1970-1974. Surface weather data were from the climatological record of the Palm Beach International Airport and the appropriate upper air data were from the climatological records of the Miami International Airport. These data were supplied in pre-processed format by the Florida DER.

UNCHANGED

The initial refined modeling was restricted to impact determination from the RDF facility. A detailed discussion of the procedures and results are contained in Appendix 10.1.5.

UNCHANGED

All impacts were determined for the pollutant sulfur dioxide (SO_2). Impact concentrations for all other pollutants were determined by adjustment of SO_2 impacts by the emission rate of the pollutants to the emission rate of SO_2.

UNCHANGED

The air quality standards as noted in Table 2.3-14 are not violated until a receptor exceeds the relevant standard twice in a given year. Therefore, the highest value is not the value compared to the air quality standards. The next highest value, or "highest second highest value," is the one for which impact is evaluated. Hence, the highest second highest impact concentrations have been chosen for presentation, although the highest values were determined and have been presented in Appendix 10.1.5.

UNCHANGED

Sulfur dioxide (SO_2) is the only pollutant whose impact exceeds significant levels (Sec. 2.3.7.2). PSD (Prevention of Significant Deterioration) regulations have established limits for increases in concentrations of two pollutants, total suspended particulate and sulfur dioxide. The maximum limits are shown in Table 5.6-2. These values may be decreased by any major sources constructed since January 6, 1975 and to the extent that these increments will cause or accelerate violations of applicable ambient air quality standards. In a given area, the starting point for tracking of PSD increment consumption is the date after January 6, 1975 on which the first PSD source permit application was submitted for regulatory review. This date defines the base line for the given area. No major source has triggered a base line date in Palm Beach County. On this basis, the full increment is available provided the ambient air quality standards are not jeopardized.

UNCHANGED

Figure 5.6-1 shows the percent of SO_2 PSD increment consumed by the proposed RDF source at the point of maximum composite impact (RDF facility plus other major sources).

SECTION 5.6.1 Impact Assessment

REVISED 2

A minimum distance of 730 meters has been designated from the source itself to the source-property boundary line. The distance of the source to its property boundary line is a variable based on direction. The maximum distance is approximately 2,700 meters to the north of the source.

TABLE 5.6-2
ALLOWABLE PSD INCREMENTS
(ug/m^3)

	Class I Area	Class II Area	Class III Area
Sulfur Dioxide			
* Annual	2	20	40
* 24-Hour	5*	91*	182*
* 3-Hour	25*	512*	700*
Total Suspended Particulate Matter			
* Annual	5	19	37
* 24-Hour	10*	37*	75*

* Not to be exceeded more than once a year.

UNCHANGED

Figure 5.6-2 shows the percent the proposed source will effect the appropriate Federal and Florida ambient air quality standards for SO_2 at the point of maximum facility and major sources impacts when combined with the highest second highest concentrations measured locally in 1983.

REVISED 3

As shown in Figure 5.6-1, the proposed RDF facility itself will consume approximately 10% of the available 3 hour PSD increment and 25% or less of the 24 hour and annual increments at the point of maximum combined impact. In relation to the Florida SO_2 ambient air quality standards, the proposed source will be an increase of only 4-8% in the background concentrations at the point of maximum combined sources impact.

UNCHANGED

Assuming that all VOC emissions are converted to ozone, the maximum 1 hour source impact in any year would be .002 ppm. Based on local 1982-83 ambient air quality data as background, this maximum impact would not exceed the ozone standard.

REVISED 4

There are no existing legal ambient air quality standards for the compound 2,3,7,8-TCDD. The New York State Department of Environmental Conservation in its Air Guide No. 1 (revised 12/15/83) has recommended an acceptable ambient air level (AAL) on an annual average basis of 9.2×10^{-6} ug/m^3. The maximum annual impact generated by the conservative assumptions of this report is 3.4×10^{-8} ug/m^3.

UNCHANGED

Based on conservative assumptions, the proposed RDF facility will not significantly increase background levels of criteria or designated pollutants beyond the boundaries of the facility complex, with the exception of SO_2, and then only to the extent as has been noted. On an annual basis, all impacts on the West Palm Beach Catchment Basin area will be less than any established de-minimus levels.

SECTION 5.6.1 Impact Assessment

REVISED 3

As shown in Figure 5.6-1, the proposed RDF facility will consume approximately 9% of the 3-hour PSD increment, and 10% and 19% of the 24-hour and annual PSD increments at the point of maximum combined impact. In relation to the Florida SO_2 ambient air-quality standards, the proposed source will be an increase of only 3-7% in the background concentrations at the point of maximum combined-sources impact.

REVISED 4

There are no existing legal ambient air-quality standards for the compound 2,3,7,8-TCDD. The New York State Department of Environmental Conservation in its Air Guide No. 1 (revised 12/15/83) has recommended an acceptable ambient air level (AAL) on an annual average basis of 9.2×10^{-8} ug/m^3. The maximum annual impact generated by the conservative assumptions of this report is 3.6×10^{-8} ug/m^3.

INSERT SECTIONS 5.6.1.1–5.6.1.1.3 →

5.6.2 Monitoring Programs

UNCHANGED

The Monitoring Stations listed in Table 2.3-14 will continue to monitor ambient air quality after the resource recovery plant begins operations. No significant change in the program for collecting data will be expected or needed.

UNCHANGED

Stack monitoring equipment shall be provided to continuously monitor carbon monoxide, oxygen, SO_2, NO_x, and opacity. This equipment is described in Section 3.4.1.4.4.5 (Control Loops, 4. Combustion Quality Control). The equipment shall be installed, calibrated and maintained in accordance with FAC 17-2.710 and 40 CFR 51, Appendix P. Compliance Testing shall be in accordance with FAC 17-2.700 and 40 CFR 60.

REVISED TABLE 5.6-3

TABLE 5.6-3
SUMMARY OF MAXIMUM AIR QUALITY IMPACTS OF THE PROPOSED PALM BEACH COUNTY WASTE TO ENERGY FACILITY

Pollutant	FL Ambient Air Quality Standard (ug/m^3)	Prevention of Significant Deterioration (PSD) Increment (ug/m^3)	Background Concentration (ug/m^3)(2)	Palm Beach County Waste to Energy Facility Impact (ug/m^3)(3)	Total Point Source Impact (ug/m^3)(5)
SULFUR DIOXIDE					
Max 3-Hour Concentration	1,300 (1)	512	63	72	277
Max 24-Hour Concentration	260 (1)	91	29	28	68
Annual Arithmetic Mean	60	20	7	4	15
PARTICULATE MATTER					
Max 24-Hour Concentration	150 (1)	37	107	2	NC
Annual Geometric Mean	60	19	43	0.3	NC
NITROGEN DIOXIDE					
Annual Arithmetic Mean	100	No Standard	20	2	22 (6)
OZONE					
Daily Max 1-Hour Concentration	235 (1)	No Standard	172	NE	NA
LEAD					
Quarterly Arithmetic Mean	1.5	No Standard	NM	4.3E-03 (4)	1.1E-02 (4)
CARBON MONOXIDE					
Max 1-Hour Concentration	40,000 (1)	No Standard	9,943	182	NC
Max 8-Hour Concentration	10,000 (1)	No Standard	4,500	81	NC

NA = Not Applicable; NC = Not Calculated Since Proposed Facility's Impact is Below Significance Level;
NE = Not Emitted; NM = Not Monitored.

1. Concentration limits not to be exceeded more than once per year.
2. Background information is based upon data compiled by the Palm Beach County Annual Report Dated 1983.
3. Detailed modeling results for the proposed source covering 5 years of hourly meteorological data.
4. Quarterly mean not generated. Value cited is 24-hour maximum 2nd-high.
5. Total impacts are inclusive of the proposed source.
6. Total impacts were assumed to be equal to background levels since NO_2 emission levels of other sources were not readily available and the proposed source's impact was virtually at the significance level (1.6 ug/m^3 vs. 1.0 ug/m^3).

SECTION 5.6.1.1 Class I Impact Analyses

INSERT SECTION 5.6.1.1

Computer analyses have been executed using the EPA ISCST Model for the meteorological years 1970-1974. The proposed RDF source has been located at the UMT coordinates 2960474N, 0585820E, Zone 17. The nearest Class I area, Everglades National Park is located, at its closest point, at UMT coordinates 2848635N, 0533619E, Zone 17. This site was included in the modeling as a discrete receptor. The modeling was based on hourly meteorological data obtained from Palm Beach International Airport, West Palm Beach, Florida. It was assumed that these meteorological conditions changed between the RDF source and the Everglades National Park receptor point. The receptor is on a bearing of 205° and at a distance of approximately 123 km (76 miles) from the proposed facility. This distance is substantially greater than the 50 km range that is normally considered as the range of validity for most models. For additional conservatism, no decay of pollutants was considered.

SECTION 5.6.1.1.1 Sulfur Dioxide Impaction

INSERT SECTION 5.6.1.1.1

The SO_2 maximum impaction values [highest second highest (HSH) for 3-hour and 24-hour averaging periods and highest annual] are tabulated in Table 5.6.1.1.1-1 for the proposed RDF facility and for the RDF facility combined with existing local sources.

Based on the modeling and its assumptions, Table 5.6.1.1.1-1 indicates that the combined-source impactions exceeded significant 3-hour impact levels in 1970, 1971 and 1973. The significant impact for the 24-hour averaging period with the combined sources was exceeded in 1970. The combined sources did not exceed the annual average. In instances where the impact level was exceeded, the proposed RDF source was not a contributing factor. The impact of the RDF is at less than significant levels for all averaging periods in pollutant parameters.

The proposed RDF facility will not cause existing sources to exceed levels of significant impact and PSD increments to the Everglades National Park Class I, nor will the proposed RDF facility significantly exacerbate those instances where the impact would be exceeded as projected from existing sources.

TABLE 5.6.1.1.1-1

RDF AND COMBINED SOURCES
MAXIMUM PROJECTED HIGHEST SECOND HIGHEST (HSH)
SO_2 IMPACT CONCENTRATIONS (ugm^{-3})
ON EVERGLADES NATIONAL PARK
(BEARING 205° FROM RDF AT 123 KM)

YEAR		FDER AAQS	SIGNIF IMPACT (2)	MAX PSD (2)	PROPOSED RDF	PERCENT SIGNIF.	COMBINED SOURCES	PERCENT RDF CONTRIBUTION (3)
1970	HSH 3 HR	1300(1)	25	25	4.16	16.6	44.7	9.3
	HSH 24 HR	260(1)	5	5	0.57	11.4	6.3	9.0
	ANNUAL	60	1	2	0.014	1.4	2.3E-1	6.0
1971	HSH 3 HR	1300(1)	25	25	1.53	6.1	35.6	4.3
	HSH 24 HR	260(1)	5	5	0.19	3.8	4.4	4.3
	ANNUAL	60	1	2	0.005	0.5	1.7E-1	3.0
1972	HSH 3 HR	1300(1)	25	25	3.87	15.5	19.9	19.4
	HSH 24 HR	260(1)	5	5	0.60	12.0	3.7	16.4
	ANNUAL	60	1	2	0.016	1.6	1.8E-1	8.7
1973	HSH 3 HR	1300(1)	25	25	2.71	10.8	75.9	3.6
	HSH 24 HR	260(1)	5	5	0.34	6.8	3.0	11.3
	ANNUAL	60	1	2	0.009	0.9	1.7E-1	5.4
1974	HSH 3 HR	1300(1)	25	25	2.57	10.3	19.8	13.0
	HSH 24 HR	260(1)	5	5	0.32	6.4	2.5	13.0
	ANNUAL	60	1	2	0.008	0.8	1.4E-1	5.8

NOTE 1: Not to be exceeded more than once per year

NOTE 2: Class I

NOTE 3: The percentages are based on the highest second high values (HSH) as tabulated. The maximum HSH impact values for the RDF and the combined sources were not generated on the same meteorological day. It is assumed, therefore, that the RDF impact concentration contribution to the maximum HSH impact of the combined sources will always be less than the maximum HSH impact concentration shown for the RDF source itself.

SECTION 5.6.1.1.2 Other Pollutants

INSERT SECTION 5.6.1.1.2

The emission ratios of the pollutants nitrogen dioxide and total volatile organics relative to sulfur dioxide can be used to generate the maximum RDF facility impact of these pollutants at its closest receptor point in the Everglades National Park. These results are summarized below:

Average Interval	Pollutant Concentrations (ugm^{-3})	
	Nitrogen Dioxide	Total Volatile Organics
3 hour*	1.8	9.2E-2
24 hour*	0.3	1.3E-2
Annual	7.0E-3	3.5E-4

* Highest second highest value.

A significant impact level exists only for the nitrogen dioxide annual average. This value is 1.0 ugm^{-3}. The projected impact from the proposed RDF source is only 0.7% of this value and is negligible relative to the FDER AAQS of 100 ugm^{-3}.

The projected impacts shown above are negligible with respect to ozone formation in the Park.

SECTION 5.6.1.1.3 Visibility Screening

INSERT SECTION 5.6.1.1.3

A visibility screening analysis has been performed based on the instructions for Level-1 Screening Analysis as available in Latimer and Ireson, Workbook for Estimating Visibility Impairment, Draft, July, 1980.

Emission factors for this analysis have been derived from Section 2.3.7.2, Table 2.3-12.

The absolute values of the contrast parameters obtained were significantly less than the critical level of 0.1 at a distance of 120 km from the proposed facility (see Table 5.6.1.1.3-1).

TABLE 5.6.1.1.3-1

SCREENING ANALYSIS
VISIBILITY LEVEL ONE

DIST. TO LVL. I AREA		BKGND VISUAL RANGE		SIGMA Z AT STABL:	F
120.	KM	40.	KM	100.	M

MASS EMISSIONS:	MTPD	OPTICAL THICKNESS:		CONTRAST PARAMETER:	
0.531	QPAR	0.00885	PART	-0.000883	CSKY
3.265	QNOX	0.00925	NO2	-0.000008	CTER
7.348	QSO2	0.00431	ASOL	0.001581	CS/T

SECTION 5.6.2 MONITORING PROGRAM

REVISED TABLE 5.6-3

TABLE 5.6-3
SUMMARY OF MAXIMUM AIR QUALITY IMPACTS OF THE PROPOSED PALM BEACH COUNTY WASTE-TO-ENERGY FACILITY

	FL Ambient Air Quality Standard (ug/m³)	Prevention of Significant Deterioration (PSD) Increment (ug/m³)	Background Concentration (ug/m³)(2)	Palm Beach County Waste to Energy Facility Impact (ug/m³)(3)	MAXIMUM Total Point Source Impact (ug/m³)(5) (3)	
					TOTAL	RCF INCR.
SULFUR DIOXIDE						
Max 3-Hour Concentration	1,300 (1)	512	63	76.7	495	45
Max 24-Hour Concentration	260 (1)	91	29	27.4	85.6	8.7
Annual Arithmetic Mean	60	20	7	3.8	12.7	3.8
PARTICULATE MATTER						
Max 24-Hour Concentration	150 (1)	37	107	2	NC	
Annual Geometric Mean	60	19	43	0.28	NC	
NITROGEN DIOXIDE						
Annual Arithmetic Mean	100	No Standard	20	1.7	5.6 (6)	
OZONE						
Daily Max 1-Hour Concentration	235 (1)	No Standard	172	NE	NA	
LEAD						
Quarterly Arithmetic Mean	1.5	No Standard	NM	4.3E-02 (4)	0.11 (6)	
CARBON MONOXIDE						
Max 1-Hour Concentration	40,000 (1)	No Standard	9,943	182	NC	
Max 8-Hour Concentration	10,000 (1)	No Standard	4,500	78.6	NC	

NA = Not Applicable; NC = Not Calculated Since Proposed Facility's Impact is Below Significance Level; NE = Not Emitted; NM - Not Monitored.

1. Concentration limits not to be exceeded more than once per year.
2. Background information is based upon data compiled by the Palm Beach County Annual Report Dated 1983.
3. Detailed modeling results for the proposed source covering 5 years of hourly meteorological data.
4. Quarterly mean not generated. Value cited is 24-hour maximum 2nd-high.
5. Total impacts are inclusive of the proposed source.
6. Total impacts assume same emission factor for all sources applied to annual averages.

REVISED TABLE 5.6-4

TABLE 5.6-4
MAXIMUM PROJECTED IMPACTS ON
PALM BEACH COUNTY AIR QUALITY MONITORING SITES

Site No.	Saroad No.	(ug/m^3) Parameter	Aver. Period	Summary of Ambient Air Data 1982 H	1982 HSH	1983 H	1983 HSH	RDF Source Max. Impact H	RDF Source Max. Impact HSH
11	3840-003-G	SO_2	3 Hr	140	112	65	63	24.0	21.0
			24 Hr	112	53	40	29	6.0	5.9
			Annual	10	NA	7	NA	0.32	NA
1A	4760-003-G	TSP	24 Hr	72	60	124	103	0.55	0.45
			Annual	33	NA	33	NA	0.03	NA
2	3060-001-G	TSP	24 Hr	59	59	117	101	0.37	0.32
			Annual	26	NA	26	NA	0.02	NA
3	2220-001-G	TSP	24 Hr	121	95	130	98	0.31	0.26
			Annual	35	NA	35	NA	0.02	NA
4	1000-002-G	TSP	24 Hr	76	74	126	107	0.15	0.13
			Annual	33	NA	34	NA	0.01	NA
5	0280-001-G	TSP	24 Hr	70	69	134	90	0.21	0.15
			Annual	33	NA	33	NA	0.01	NA
6	0280-002-G	TSP	24 Hr	62	56	116	82	0.44	0.32
			Annual	25	NA	27	NA	0.02	NA
7	3340-001-G	TSP	24 Hr	85	79	100	86	0.15	0.13
			Annual	39	NA	38	NA	0.00	NA
8	3420-006-G	TSP	24 Hr	72	70	122	104	0.30	0.25
			Annual	36	NA	40	NA	0.03	NA
9	3420-006-G	TSP	24 Hr	128	50	73	69	0.29	0.17
			Annual	24	NA	25	NA	0.02	NA
12	0240-003-G	TSP	24 Hr	87	81	102	84	0.17	0.17
			Annual	45	NA	43	NA	0.01	NA
1	4760-001-G	NO_2	Annual	-	NA	20	NA	0.20	NA
1	4760-001-G	CO	1 Hr	24E3	20E3	10E3	10E3	0.07	0.06
			8 Hr	9E3	8E3	8E3	8E3	0.02	0.02

Site No.	Saroad No.	(ug/m^3) Parameter	Aver. Period	Summary of Ambient Air Data 1982 H	1982 HSH	1982 HTH	1983 H	1983 HSH	1983 HTH	RDF Source* Max. Impact H	RDF Source* Max. Impact HSH
8	3420-006-G	Ozone	1 Hr	.08	.08	.08	.09	.08	.07	3.4E-4	2.7E-4
10	3420-007-G	Ozone	1 Hr	.12	.09	.09	.09	.09	.08	5.6E-4	3.4E-4

H Highest
HSH Highest Second Highest
HTH Highest Third Highest
NA Not Applicable
* Assumes total conversion of volatile organics to ozone.

5.7 NOISE

5.7.1 Noise from On-Site Sources

UNCHANGED

The on-site ambient noise level for the Resource Recovery Facility is not expected to exceed 76 dBA, according to the Environmental Noise Study (Appendix 10.15). Taking into consideration the nature of sound propagation from the facility site, areas at distances of greater than some 300 feet from the facility are expected to experience insignificant changes in their ambient noise levels. Noise levels from the facility would then be reduced to levels in the range of 50 dBA or less. These sound levels would be comparable to or less than presently existing traffic noise levels in areas in the vicinity of the site.

SECTION 5.6.2 Monitoring Programs

REVISED TABLE 5.6-4

TABLE 5.6-4
MAXIMUM PROJECTED IMPACTS ON PALM BEACH COUNTY AIR QUALITY MONITORING SITES

Site No.	Saroad No.	(ug/m³) Parameter	Aver. Period	Summary of Ambient Air Data 1982 H	1982 HSH	1983 H	1983 HSH	RDF Source Max. Impact H	RDF Source Max. Impact HSH
11	3840-003-G	SO_2	3 Hr	140	112	65	63	26.0	21.6
			24 Hr	112	53	40	29	6.2	5.2
			Annual	10	NA	7	NA	0.28	NA
1A	4760-003-G	TSP	24 Hr	72	60	124	103	0.58	0.48
			Annual	33	NA	33	NA	0.03	NA
2	3060-001-G	TSP	24 Hr	59	59	117	101	0.42	0.33
			Annual	26	NA	26	NA	0.02	NA
3	2220-001-G	TSP	24 Hr	121	95	130	98	0.30	0.23
			Annual	35	NA	35	NA	0.01	NA
4	1000-002-G	TSP	24 Hr	76	74	126	107	0.14	0.13
			Annual	33	NA	34	NA	0.01	NA
5	0280-001-G	TSP	24 Hr	70	69	134	90	0.21	0.15
			Annual	33	NA	33	NA	0.01	NA
6	0280-002-G	TSP	24 Hr	62	56	118	82	0.43	0.31
			Annual	25	NA	27	NA	0.02	NA
7	3340-001-G	TSP	24 Hr	85	79	100	86	0.15	0.13
			Annual	39	NA	38	NA	0.00	NA
8	3420-006-G	TSP	24 Hr	72	70	122	104	0.25	0.24
			Annual	36	NA	40	NA	0.02	NA
9	3420-006-G	TSP	24 Hr	128	50	73	69	0.30	0.17
			Annual	24	NA	25	NA	0.01	NA
12	0240-003-G	TSP	24 Hr	87	81	102	84	0.17	0.17
			Annual	45	NA	43	NA	0.01	NA
1	4760-001-G	NO_2	Annual	•	NA	20	NA	0.20	NA
1	4760-001-G	CO	1 Hr	24E3	20E3	10E3	10E3	66.7	58.1
			8 Hr	9E3	8E3	8E3	8E3	20.1	16.7

Site No.	Saroad No.	(PPM) Parameter	Aver. Period	Summary of Ambient Air Data 1982 H	1982 HSH	1982 HTH	1983 H	1983 HSH	1983 HTH	RDF Source* Max. Impact H	RDF Source* Max. Impact HSH
8	3420-006-G	Ozone	1 Hr	.08	.08	.06	.09	.08	.07	4.3E-4	3.1E-4
10	3420-007-G	Ozone	1 Hr	.12	.09	.09	.09	.09	.08	4.7E-4	3.9E-4

H Highest
HSH Highest Second Highest
HTH Highest Third Highest
NA Not Applicable
* Assumes total conversion of volatile organics to ozone.

APPENDIX 10.1.5

PREVENTION OF SIGNIFICANT DETERIORATION

UPDATE TO THE APPLICATION
DECEMBER 2, 1985

PALM BEACH COUNTY SOLID WASTE AUTHORITY

SOLID WASTE-TO-ENERGY FACILITY

REPORT ON AIR QUALITY IMPACTS ANALYSIS

November, 1984

Revised: March, 1985

Revised: December, 1985

PALM BEACH COUNTY SOLID WASTE AUTHORITY
SOLID WASTE-TO-ENERGY FACILITY

REPORT ON AIR QUALITY IMPACTS ANALYSIS

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

LIST OF TABLES

LIST OF TABLES

LIST OF EXHIBIT TABLES

LIST OF FIGURES

PALM BEACH COUNTY SOLID WASTE AUTHORITY
SOLID WASTE-TO-ENERGY FACILITY

REPORT ON AIR QUALITY IMPACTS ANALYSIS

1.0 INTRODUCTION

The Palm Beach County Solid Waste Authority (PBCSWA) intends to construct a Resource Recovery Facility designed to convert 2000 tons per day (tpd) of municipal solid waste (MSW) into electricity for sale to the Florida Power and Light utility grid. This report describes the technical analyses that have been performed to determine the air quality impact of the proposed facility. Such analyses are required as a condition for obtaining a permit to construct and operate facilities that may emit air pollutants. The analyses reported upon herein have been performed in accordance with the requirements and specifications of the Florida Department of Environmental Regulation (FDER) and the United States Environmental Protection Agency (EPA).

This section of the report contains a brief description of the proposed facility, its location, the study area for air quality impacts produced by the proposed facility, and the current attainment status of the air quality standards in the study area. Section 2.0 provides a discussion of how state and federal laws and regulations regarding prevention of significant Deterioration (PSD) in air quality apply to the proposed facility. Section 3.0 is the analysis of the Best Available Control Tech (BACT). In Section 4.0, the pollutants that will be emitted by the proposed facility are identified and the pollutant emission rates are quantified. Section 5.0 presents a discussion of the dispersion modeling analyses that have been performed to determine the air quality impacts of the proposed facility and provides a detailed review of modeling results. Section 6.0 is a summary and conclusions of this report regarding the air quality impact of the proposed Palm Beach County Solid Waste-to-Energy Facility. Section 7.0 provides references utilized for this report.

1.1 Source Description

The initial Resource Recovery Facility construction involves the installation of 2000 TPD of MSW processing capacity. Within 5 years of initial construction an additional 1000 tpd of MSW processing capacity is planned. Accordingly, the PBCSWA and its consultants considered it prudent to file for permits for the ultimate plant capacity of 3000 tpd of MSW.

The MSW will be processed from 4500 Btu/lb heterogeneous MSW into a more homogenous 6200 Btu/lb Refuse Derived Fuel (RDF) in an RDF Manufacturing Facility located on a common site with the combustion facility. Table 1-1 provides a breakdown of MSW components and heating values. Table 1-2 provides a breakdown of RDF components and heating values. 1800 tpd[7] of RDF will be produced by the RDF Manufacturing Plant from the 3000 tpd[6] of MSW.

1.2 Source Location

The proposed waste-to-energy facility for Palm Beach County will be located on a 1320 acre parcel of land bounded on the north by the Beeline

Highway; on the south by 45th Street; on the east by the Florida Turnpike; and on the west by the West Palm Beach Water Catchment Area. The ground elevation at the proposed site is 17 feet above mean sea level as are the surrounding areas of the county.

1.3 Study Area

The land surface of Palm Beach County slopes gently to the south. Highest general elevations (approximately 25 feet above mean sea level) occur near the north county line. The southern Everglades have the lowest base level elevations at approximately 11 feet above mean sea level.

The proposed combustion facilities stack is located approximately 2600 ft to the west of the Florida Turnpike and 3300 ft to the north of 45th Street. Since the proposed waste-to-energy facility is subject to PSD regulations (see Section 2.0) the area considered as the study area for the air quality analyses included all PSD Class I areas located within a radius of 100 kilometers (62 miles). For PSD Class II, all areas within a radius of 50 kilometers (31 miles) comprise the study area, until a lessor radius of significant impact from the proposed source is determined. No PSD Class I area is located within the study area. Everglades National Park is the closest PSD Class I area and is located about 120 km to the southwest. Therefore the study area has been limited to 50 km radius and visibility analysis is not required pursuant to PSD regulations.

1.4 Air Quality Standard Attainment Status in the Study Area

The study area includes Palm Beach and Martin Counties. Air quality monitoring in Palm Beach County is performed by the Palm Beach County Health Department.

Based on the most recent information available (Palm Beach County Health Department's Annual Report Dated 1983), Palm Beach County is in attainment with all NAAQS standards except for the pollutant ozone.

Palm Beach County has recently been designated as non-attainment with reference to the pollutant ozone.

Martin County is assumed to be in compliance pending FDER information to the contrary.

TABLE 1-1

PALM BEACH COUNTY SOLID WASTE COMPOSITION STUDY

ANALYSIS AND COMPOSITION OF MUNICIPAL SOLID WASTE (MSW)
PERCENT BY WEIGHT

COMPONENT	MOISTURE	INORGANIC	CARBON	HYDROGEN	OXYGEN	NITROGEN	CHLORINE	SULFUR	TOTAL	HHV BTU/LB
CORRUGATED BOARD	1.42	0.11	1.86	0.26	1.79	0.01	0.01	0.01	5.46	315.
NEWSPAPER	4.91	0.25	5.98	0.76	5.19	0.02	0.02	0.03	17.16	1017.
MAGAZINES	0.75	0.42	1.06	0.15	1.05	0.00	0.00	0.01	3.44	178.
OTHER PAPER	5.57	1.64	5.85	0.81	5.40	0.06	0.11	0.03	19.46	989.
PLASTICS	1.09	0.62	4.09	0.56	0.58	0.06	0.22	0.02	7.24	839.
RUBBER, LEATHER	0.19	0.44	0.84	0.10	0.22	0.03	0.10	0.02	1.94	164.
WOOD	0.13	0.02	0.34	0.04	0.29	0.00	0.00	0.00	0.83	58.
TEXTILES	0.40	0.07	1.33	0.18	0.97	0.11	0.01	0.01	3.07	235.
YARD WASTE	0.56	0.10	0.24	0.03	0.18	0.01	0.00	0.00	1.11	40.
FOOD WASTE	1.10	0.33	1.17	0.17	0.84	0.07	0.02	0.00	3.71	213.
MIXED COMBUSTIBLES	8.81	1.31	3.74	0.52	2.96	0.09	0.06	0.03	17.52	653.
FERROUS	0.11	5.13	0.08	0.01	0.08	0.00	0.00	0.00	5.43	14.
ALUMINUM	0.04	1.71	0.03	0.00	0.03	0.00	0.00	0.00	1.80	5.
OTHER NON-FERROUS	0.01	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.32	1.
GLASS	0.23	11.17	0.06	0.01	0.04	0.00	0.00	0.00	11.51	9.
TOTALS	25.30	23.64	26.65	3.61	19.61	0.46	0.55	0.17	100.00	4728.

HEAT VALUE AS RECEIVED (25.3% H2O) = 4728; HEAT VALUE OF DRY SOLIDS = 6329; HEAT VALUE OF COMBUSTIBLES = 9261.

TABLE 1-2

PALM BEACH COUNTY SOLID WASTE COMPOSITION STUDY

TYPICAL ANALYSIS AND COMPOSITION OF REFUSE DERIVED FUEL (RDF) PERCENT BY WEIGHT

COMPONENT	RECOVERY RATE (%)	MOISTURE	INORGANIC	CARBON	HYDROGEN	OXYGEN	NITROGEN	CHLORINE	SULFUR	TOTAL	MMV BTU/LB
CORRUGATED BOARD	99.0	1.48	0.17	2.72	0.38	2.62	0.01	0.01	0.02	7.39	461.
NEWSPAPER	99.0	5.10	0.37	8.76	1.11	7.60	0.03	0.03	0.04	23.03	1488.
MAGAZINES	99.0	0.78	0.62	1.55	0.22	1.54	0.01	0.01	0.01	4.72	260.
OTHER PAPER	99.0	5.78	2.39	8.56	1.19	7.90	0.08	0.16	0.05	26.12	1443.
PLASTICS	98.0	1.12	0.90	5.92	0.82	0.84	0.09	0.31	0.03	10.03	1215.
RUBBER, LEATHER	99.0	0.20	0.64	1.22	0.15	0.33	0.04	0.14	0.03	2.76	239.
WOOD	99.0	0.14	0.03	0.50	0.06	0.42	0.00	0.00	0.00	1.16	84.
TEXTILES	98.0	0.41	0.10	1.92	0.26	1.40	0.16	0.01	0.01	4.28	340.
YARD WASTE	85.0	0.50	0.13	0.30	0.04	0.22	0.01	0.00	0.00	1.19	51.
FOOD WASTE	60.0	0.69	0.29	1.04	0.15	0.74	0.07	0.02	0.00	3.01	199.
MIXED COMBUSTIBLES	40.0	3.70	0.77	2.21	0.31	1.75	0.05	0.04	0.02	8.85	386.
FERROUS	7.0	0.01	0.53	0.01	0.00	0.01	0.00	0.00	0.00	0.56	1.
ALUMINUM	35.0	0.01	0.88	0.01	0.00	0.01	0.00	0.00	0.00	0.93	2.
OTHER NON-FERROUS	10.0	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.
GLASS	35.0	0.08	5.78	0.03	0.00	0.02	0.00	0.00	0.00	5.92	5.
TOTALS		20.00	13.66	34.75	4.69	25.40	0.54	0.73	0.22	100.00	6171.

HEAT VALUE AS PRODUCED (20.0% H2O) = 6171.
HEAT VALUE OF DRY SOLIDS = 7714.
HEAT VALUE OF COMBUSTIBLES = 9302.

ASH AS PRODUCED (20.0% H2O) = 13.7%
DENSITY = 2.5 TO 3.5 POUNDS/CUBIC FOOT
SIZE = MINUS 2" X MINUS 2" X MINUS 2"

2.0 REGULATION APPLICABILITY

An air quality impact analysis begins with the determination of which regulations are applicable to the proposed source. The first step in the regulatory analysis is the determination of the applicability of PSD regulations. The issue of applicability involves determining whether the proposed source and its emissions are subject to PSD review and, if so, what analyses must be performed.

PSD regulations are only applicable in areas where National Ambient Air Quality Standards (NAAQS) for a given pollutant are met (or where monitoring is insufficient to determine compliance with NAAQS). In such areas, PSD regulations apply to the construction or modification of major air pollution sources. Although the general concept of an air pollution source is a stack, vent or other emission point, for PSD purposes a source is essentially defined as the aggregate of all such emission points that have the potential to emit a regulated pollutant at a given facility. A source's potential to emit is defined as its design capacity emission rate, after the application of any emission controls or other legally enforceable emission limitations. A proposed new source is considered major if it either falls within one of 28 specific source categories and has the potential to emit 100 tons per year of any regulated pollutant or if it falls in an unspecified source category and has the potential to emit 250 tons per year of any regulated pollutant.

The proposed Palm Beach County waste-to-energy facility falls within one of the 28 categories of sources subject to PSD review. As a municipal incinerator, it will be subject to review because it has the capability of charging more than 250 tons of RDF per day. Because the proposed Palm Beach County waste-to-energy facility will emit more than 100 tons per year of several regulated pollutants (see Section 4.0) it is subject to PSD review and related analyses for those pollutants. For each pollutant emitted at a rate in excess of 100 tons/year, three sets of analyses may be required: one for BACT; one for air quality impacts and one for additional types of impacts.

In some instances, ambient air quality monitoring may be required in support of the air quality impact analyses, but the Florida DER has determined that existing monitoring provides sufficient ambient air quality data for the study area. Air quality impact analyses and additional impacts analyses performed for the Palm Beach County waste-to-energy facility are discussed in subsequent sections of this report.

As noted above, PSD regulations are applicable only in areas where the NAAQS are met or indeterminate with relation to compliance. When an area is designated as non-attainment, a non-attainment review is required for each pollutant not in attainment when the net increase in emissions of that pollutant is more than 100 TPY. Such pollutants are exempt from PSD review. The source, however, must meet the requirements of New Source Review (NSR). The review requirements include:

- o Meet the Lowest Achievable Emission Rate (LAER) for the affected pollutant.
- o Demonstrate that the facility is in compliance with applicable emission limitations.

- o Obtain offsets, as necessary.

- o Demonstrate a net air quality improvement.

Palm Beach County has been declared non-attainment for ozone. The indicator for the non-attainment pollutant, ozone, is volatile organic hydrocarbons (VOC). As shown in Section 4.0, Table 4-1, projected emissions for hydrocarbons (VOC) are 65.6 tons per year. A non-attainment review is not required.

It will be shown, however, that the facility's increase in VOC emissions cannot make a significant contribution to the formation of oxidants (ozone) in and around Palm Beach County.

3.0 BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

The BACT analysis, required by PSD review, addresses energy, economic and environmental impacts for alternative emission control strategies. BACT is defined in the 40 CFR 52.21 as "An emission limitation based on the maximum degree of reduction of each pollutant emitted which the Department, taking into account, energy, environmental and economic impacts and other costs, determines on a case by case basis, is achievable through application of production processes and available methods, systems, and techniques, for control of each pollutant".

Technical feasibility is the important first step in this analysis. A technically feasible control technology is one that has been demonstrated to function on identical or similar processes in the U.S.

Once technically feasible control alternatives have been established, they are ranked by their environmental, economic and energy consumption impacts. The starting point for this process is a "base case" control level which is specified by the standard and regulations that would apply in the absence of PSD. They typically include New Source Performance Standards (NSPS).

Table 3-1 lists the air emissions for which an evaluation for BACT was conducted and control alternatives which are considered for the control of each of the pollutants. The air pollutants and the emission levels for which BACT must be determined are shown in Table 3-2.

TABLE 3-1

BACT POLLUTANTS AND CONTROL ALTERNATIVES

Air Emission Parameter	Control Alternatives
Particulate, Lead, Beryllium & Particulate Mercury	Electrostatic Precipitator (ESP) Fabric Filter Dry Scrubber
Sulfur Dioxide, Hydrogen Fluoride, Hydrogen Chloride & Gaseous Mercury	Dry Scrubber
Nitrogen Oxide	Amonia Injection Catalytic Reduction Design and Operating Procedures
Carbon Monoxide	Design and Operating Procedures

This BACT evaluation of the above described control alternatives considered their technical feasibility, energy usage and certain environmental factors. The proposed units are projected to be on-line approximately 80-85% of the time. Air pollution control equipment must be reliable to minimize contribution to unit downtime. Installation of air pollution control equipment increases the facility cost, but results in benefits to the surrounding area and pollution. At some point, the cost of air pollution control equipment is not outweighed by the resulting benefits. To this end, the capital, operational and energy costs, were compared to the benefits.

TABLE 3-2
BACT POLLUTANTS AND ANNUAL EMISSIONS

Air Emission Parameter	Tons/Year
Particulate	214
Sulfur Dioxide	2957.
Nitrogen Oxide	1314.
Carbon Monoxide	3942.
Lead	0.46
Beryllium	0.003
Mercury (particulate & gaseous)	0.98
Hydrogen Fluoride	13.2
Hydrogen Chloride	1150.

3.1 BACT for Particulate, Lead, Beryllium and Particulate Mercury

3.1.1 Alternatives Not Considered

A number of technologies have been used to control particulate emissions from incinerators in addition to those listed in Table 3-1. These include venturi scrubbers, cyclone collectors and wet spray chambers. Of these only venturi scrubbers have been remotely capable of controlling particulate emissions to the EPA NSPS mandated level of 0.08 gr/dscf corrected to 12% CO_2. The venturi scrubbers were not considered as a viable control alternative for two reasons:

1. Their performance has been sketchy at best and they have had overall difficulty in satisfying the NSPS control level; and

2. Wet scrubbers produce an aesthetically undesirable water vapor plume. Accordingly, wet scrubbing is considered unacceptable and has been eliminated as a control option.

3.1.2 Fabric Filters (Baghouses)

Baghouses remove particulate by filtering the flue gas stream through a fabric. Actually, most of the effectiveness is attributed to filtering through a mat of particulate which has built-up on the surface of the fabric. Characteristics of baghouses are as follows:

- ° Particulate removal efficiencies as high as 99.8% have been demonstrated on coal fired units.
- ° Variations in flue gas flow rate and particulate composition do not generally effect performance.
- ° Pressure drop through unit is significant resulting in relatively high energy usage by fans.
- • Available filter materials limit operating temperatures to less than 500°F.
- ° Sparks in flue gas can cause pinhole leaks and even fires within the filter.
- ° Consideration must be given to prevention of corrosion caused by acid gas condensation.
- ° Blinding of filter media.
- ° Experience on resource recovery facilities is very limited.

Although the TSP emission rate would be guaranteed less than 0.01 gr/dscf corrected to 12% CO_2, a baghouse used above is not considered appropriate primarily due to the incidence of fires caused by sparks and the filter media blinding.

3.1.3 Dry Scrubbers

Dry scrubbers are devices which are designed to remove SO2 and acid gases from the flue gas stream, in addition to particulates. Aqueous solutions of lime are sprayed into the gas stream, which react with the SO_2 and acid gases. Heat from the reaction, and from the flue gas, dry the resultant products, which are then collected in a baghouse. Characteristics of dry scrubbers are the same as those for baghouses, except as follows:

- ° SO2, acid gases and other flue gas constituents, that may condense with lower exist gas temperatures are controlled.
- ° Sparks in the flue gas are eliminated.
- ° Acid gas corrosion may be less a problem.
- ° Approximately twice as much residue is produced.
- ° Experience on resource recovery facilities is very limited.

Table 3-3 shows estimated costs for a dry scrubber and baghouse system, guaranteed for a TSP emission limit of 0.01 gr/dscf, corrected to 12% CO_2, and guaranteed to remove 70% of the SO_2 and 90% of the HCL in the flue gas stream.

3.1.4 Electrostatic Precipitator

Electrostatic precipitation functions by imparting a negative charge to particulates in the flue gas stream. The particulates are then attracted to positively charged plates, where they are collected. Characteristics of electrostatic precipitators include the following:

- Generally capable of particulate removal efficiencies greater than 98% with efficiencies as high as 99.8%.
- Can handle high temperature gases of over 600°F in special applications.
- Low pressure drop through units resulting in lower energy usage by fans.
- Performance is sensitive to actual vs. design flue gas flow rates (actual gas flow must be less than design) and particle resistivity.
- Consideration must be given to prevent corrosion caused by acid condensation. Acid mist condensaton begins about 250°F.
- Recognized as the most reliable and efficient technology on resource recovery systems.

Table 3-4 shows estimated costs for electrostatic precipitators investigated for this project.

TABLE 3-3

DRY SCRUBBER COSTS

1. Capital Cost

Capital Cost = Construction Cost x Bonding Factor

= $5,000,000 x 1.6

= $8,000,000

Bond Amortized over 20 years @ 11% interest (CRF = 0.12256)

Annual Capital Cost = $8,000,000 x 0.12256

= $980,000

2. Operations and Maintenance

a.	Electricity (3.5 million KwH @ 5 cents)	$175,000
b.	Water (50 gpm @ 0.70/1000 gal)	18,000
c.	Labor (8 men; two per shift @30000)	240,000
d.	O&M (incl. bag replacement) @ 2% of construction cost	100,000
e.	Lime 2000 tpy @ $150/ton	300,000
f.	Waste Handling & Disposal (5915 TPY TSP; + 2000 TPY Chemicals; + 863 TPY SO_2 & HCl; @ $10/ton)	88,000
g.	Reheat Steam (5 MMBTUH @ $6/MMBTUH)	263,000
	Subtotal	$1,184,000
	Total Annual Cost (1. + 2.)	$2,164,000

TABLE 3-4

ELECTROSTATIC PRECIPITATOR COSTS

1. Capital Cost

Capital Cost = $2,300,000 x 1.6

= $3,680,000

Annual Capital Cost = $3,680,000 x 0.12256
(i = 11; n - 20) = $462,000

2. Operations & Maintenance

a.	Electricity (920,000 KWH @ 5¢/KwH)	$46,000
b.	O&M (@ 2% of construction cost)	46,000
c.	Labor (1/2 man for 4 shifts @ 30,000)	60,000
d.	Water	- 0 -
e.	Chemicals	- 0 -
f.	Waste Disposal (8366 TPY @ $10/ton)	84,000
	Subtotal	$236,000
	Total Annual Cost (1. + 2.).	$698,000

3.1.5 Particulate Lead, Beryllium and Particulate Mercury BACT Selected

An electrostatic precipitator (ESP) with an outlet particulate loading of 0.03 gr/dscf corrected to 12% CO_2 is selected based on analysis of all the control alternatives reviewed.

This selection is based upon the criteria of technical feasibility and the minimization of environmental, economic and energy impacts. Based on the information developed herein the ESP emerges as the alternative which best meets the BACT selection criteria.

3.2 BACT for Sulfur Dioxide (SO_2), Hydrochloric Acid (HCl) and Hydroflouric Acid (HF)

Because of the low sulfur content of municipal solid waste (approximately 0.2 percent sulfur by weight), there have been no federal standards or regulations (NSPS) promulgated for control of SO_2 emissions from municipal incinerators. Similarly, the State of Florida has not promulgated regulations for control of SO_2 emissions from municipal incinerators.

In regard to control alternatives, control techniques for large sources of SO_2 emissions have been developed for fossil fuel-fired combustion units. These include methods for neutralizing acidic sulfur oxides either in gas-liquid (wet scrubbing) or gas-solid (dry scrubbing) devices. Both techniques produce solid waste by-products: sludge from wet scrubbing and dry ash from dry scrubbing. These technologies, however, have not been applied to large municipal incinerators in the U.S. because of the low sulfur content of municipal solid waste.

In addition to refuse, auxiliary fuel will also contribute to SO_2 emissions. The auxiliary fuel is used during start-up and shut-down. It is expected that auxiliary fuel usage for start-up and shut-down will constitute about 1.25% of heat input to each furnace and that either No. 2 oil (0.25% S) or natural gas (negligible S) will be used as the auxiliary fuel.

3.2.1 Use of Low Sulfur Fuel

SO_2 emissions are a function of the sulfur content in the fuel being burned. Low sulfur fuel is generally considered to have a sulfur content of 2% or less. Historically, fossil fuel burning plants have switched from the firing of high sulfur fuel (3.5 - 7%) to a low sulfur fuel as a means of complying with acid gas source emissions regulations. Since the refuse fuel (and auxiliary fuel) will have a sulfur content of about 0.2%, it is inherently within any current definition for low sulfur fuel. As such, both the federal and state of Florida regulatory authorities have not promulgated air emissions standards for the control of SO_2 from municipal incinerators.

3.2.2 Wet Scrubber Systems

Another technically viable but aesthetically preclusive alternative for SO_2 control is a wet scrubber system for SO_2 and acid gas control. As was mentioned for the particulate BACT analysis, wet scrubbing has been eliminated from consideration due to the dense water vapor plume which is generated (see Section 3.1 A 2. above).

3.2.3 Dry Scrubbers

A control alternative which was previously evaluated for particulate control is the use of a dry scrubber system to control SO2 and acid gas emissions.

Dry scrubbers operate by injecting droplets of alkali reagent into the flue gas. The resulting reactions remove the sulfur dioxide as sulfites and sulfates in particulate form. The heat generated during the reaction plus flue gas heat evaporates the water carrying the alkali reagent. A bag filter is located downstream to remove the sulfate and sulfite particulates.

Table 3-5 provides comparative costs of controlling particulate and acid gases utilizing an ESP versus a dry scrubber.

3.2.4 SO_2 and Acid Gas BACT Selection

The use of low sulfur auxiliary fuel in conjunction with the inherent low sulfur content of the waste fuel is selected as BACT based on analysis of the viable alternatives.

This choice of alternatives best meets the selection criteria as required by EPA and the State of Florida DER and is consistent with the most recent BACT determinations for resource recovery facilities in other areas of the country.

3.3 BACT for Nitrogen Dioxide

No add-on type controls have been demonstrated for nitrogen oxides (NOx) emissions from municipal incinerators in the U.S. Good combustion design and practices are the only demonstrated control alternative in the U.S.

The furnace units planned for Palm Beach County will employ advanced combustion systems in which the primary combustion air is added through multiple compartments located underneath the stokers. Uniform mixing of air and burning RDF eliminates high oxygen concentration gradients that favor the formation of NOx. Secondary combustion air is introduced at high velocity through specially designed nozzles, into the gas stream along the front and rear walls of the combustion chamber. The temperature at the end of combustion chamber can thus be maintained at about 1800-2000°F. Significant NOx emissions typically occur at temperatures greater than 2000°F.

The environmental impact due to NOx emissions from the incinerator will not result in a violation of NAAQS.

Good combustion design and practice is proposed as BACT for NOx.

3.4 BACT for Carbon Monoxide and Volatile Organic Compounds

No add-on type controls have been demonstrated for CO emissions from municipal incinerators. Good boiler design and proper operating conditions are the only effective emission control methodology.

TABLE 3-5

COST COMPARISON OF ELECTROSTATIC PRECIPITATORS VS DRY SCRUBBERS
750 TPD UNIT

	ELECTROSTATIC PRECIPITATOR	DRY SCRUBBER
Emission Limit gr/dscf @ 12% CO_2	0.03	.01
Removal Efficiency, Percent	99.0	99.9
Capital Cost	$3,680,000	$8,000,000
Annual Cost:		
Net Debt Service	$462,000	$980,000
Operating and Maintenance Costs	$236,000	$1,184,000
Total	$698,000	$2,164,000
Unit Cost:		
Per Ton MSW (260,000 TPY)	$2.69	$8.32
Per Ton RDF (182,000 TPY)	$3.84	$11.89
Per Ton Particulate plus Acid	$119.00	$319.00
Incremental:		
Additional Tons Removed	base	917
Additional Annual Cost	base	$1,508,000
Per Ton Removed		$1,644
Per Ton MSW (260,000 TPY)		$5.63
Per Ton RDF (182 000 TPY)		$8.05

Notes:

1 - Particulate Removed annually by each precipitator = 21400 Total Uncontrolled TPY x 0.83 Availability x 1 Unit/3 units x .99 efficiency = 5861 TPY removed.

2 - Particulate removed by dry scrubber = 21400 x 0.83 x 1/3 x .999 = 5915 TPY removed.

Table 3-5 (continued)

Notes:

3 - Sulfur Dioxide Generated Annually per unit =
2957 Total - Uncontrolled TPY x 0.83 x 1/3 = 818 TPY
@ 70% control by dry scrubber SO_2 emission = 818 x 0.3 =
245 TPY Controlled and 573 TPY removed.

4 - HCl and HF Generated Annually per Unit =
(1150 + 13.2) x 0.83 x 1/3 = 322 TPY uncontrolled
@ 90% control by dry scrubber = 322 x 0.1 = 32.2 TPY controlled
and 290 TPY removed.

The state-of-the-art design of the combustion chamber and the advance temperature control capability inherent in waterwall units will minimize formation of CO and volatile organic compounds (VOC). A continuous CO monitor will assist the plant operators maintain optimum combustion conditions, thereby further reducing CO and VOC formation.

Facility impacts will not cause a violation of NAAQS. Good equipment design and practice plus continuous CO monitors are therefore proposed as BACT for CO and VOC.

4.0 EMISSIONS DATA

The Florida DER requested emission estimates for sixteen pollutants. Six of these are criteria pollutants: 1) particulate; 2) sulfur dioxide (SO_2); 3) carbon monoxide (CO); 4) volatile organic compounds (VOC); 5) nitrogen oxides (NOx); and 6) lead (Pb). The remaining 10 pollutants included: 7) chlorides (HCl); 8) ozone (O_3); 9) total reduced sulfur (including H_2S); 10) reduced sulfur compounds (including H2S); 11) sulfuric acid mist; (12) fluorides (HF); 13) vinyl chloride; 14) mercury (Hg); 15) asbestos; and 16) beryllium (Be).

Most of the pollutants are emitted to a certain degree by the proposed Palm Beach County waste-to-energy facility. Ambient concentrations of the criteria pollutants are regulated through the implementation of NAAQS. The NAAQS have been incorporated in their entirety as part of the Florida State Implementation Plan (SIP).

Although no mention was made by the Florida DER of emissions of trace organic compounds, public attention has recently focused on dioxin emissions (2,3,7,8-TCDD) from waste to energy facilities. Therefore the County has voluntarily submitted available data on dioxin emissions.

Emission estimates of the aforementioned pollutants in conjunction with stack and facility operating parameters were then used as input data to an air quality dispersion models to predict facility impacts. These data are described in greater detail in Section 4.1.

Carbon monoxide (CO), as a pollutant, was considered only in terms of emissions potential from the facility itself. Mobile sources associated with the facility activity are negliable since there will be no significant increase in traffic beyond that which already exists in the area.

In order to adequately demonstrate compliance with the NAAQS and PSD increments, it is required that the applicant include in its modeling analysis the pollutant contributions from all existing and PSD sources having a significant impact within the modeling area of the applicant's source. Stack and emissions data for these other sources were developed in conjunction with FDER.

4.1 Emissions Data for the Palm Beach County Waste-to-Energy Facility

Table 4-1 lists the pollutants that will be emitted from the proposed facility. The table shows pollutant emission factors, design capacity emission rates on an annual basis, actual emission rates on an annual basis and design capacity emission rates on an hourly basis.

Emission factors are based on a higher heating value (HHV) of 6,200 Btu/lb for the RDF. Design capacity emission rates are derived from a waste throughput of 2100 tons/day or 766500 tons/year. Actual annual emission rates assume an availability factor of 0.8 and a resulting waste throughput of 613,200 tons/year. These values are totals for three units each rated at 700 tons/day.

Table 4-2 lists stack parameter data, including location coordinates adjacent building dimensions, height, diameter and volumetric flow rate and temperature for the proposed waste-to-energy facility. For modeling purposes, the three flues in the one proposed stack were treated as a single stack with an inside diameter equal to that of one of the flues. The modeled emission rate for each pollutant was set equal to the sum from the three flues, and the modeled volume flow rates and temperatures were those of an individual flue. These actions ensured that the modeled plume rise was calculated correctly for the proposed stack.

The emission factors contained in Table 4-1 were derived from a detailed investigation of the literature. The criteria used for the emission factor selection included: similarity of the facility design, similarity of the chemical composition of the refuse, reliability of stack tests and availability of data from facilities incorporating state-of-the-art design and air pollution control technology. In the sections which follow, the rationale behind the selection of emission factors for each pollutant listed in Table 4-1 is provided.

4.1.1 Total Suspended Particulate (PM)

The emission factor is based upon the ability of the electrostatic precipitator manufacturer to not exceed a guaranteed grain loading of 0.03 grains/dscf at 12% CO_2. This emission level represents BACT for TSP.

4.1.2 Sulfur Dioxide (SO_2)

The SO_2 emission factor is based upon RDF fuel sulfur content which is assuumed to be completely converted to SO_2.

4.1.3 Carbon Monoxide (CO)

Several data bases were investigated to develop an emission factor for CO. The value used was a median value between values cited by California Air Resources Board Report entitled "Air Pollution Control at Resource Recovery Facilities" and vendor information which indicated lower values. The principal reason for the difference is due to excess air design. Most of the spreader stoker furnaces cited by CARB were designed to fire RDF at about 40% excess air. Our investigations have indicated that a prudent operating point for RDF combustion to be at 50% excess air with a design point of 60% to accomodate variations in fuel moisture and heating value.

4.1.4 Volatile Organic Compounds (VOC)

The emission factor for VOC represents the non-methane portion of the total hydrocarbon emissions. Reference literature indicated a wide range of VOC emissions. This wide range is believed to be caused by the low excess air design cited for CO, inability to maintain sufficient temperature (especially those systems which fired pulped RDF which typically had a moisture content of 50% or above) and inadequate combustion controls. The proposed facility will utilize state-of-the-art combustion controls coupled with conservative furnace design in terms of excess air, gas temperature and dwell time to minimize VOC emissions. Accordingly, the VOC emission factor used was selected from mid-range data to provide sufficient conservatism and avoid understating possible facility emissions.

TABLE 4-1

CONTROLLED EMISSION FACTORS DEVELOPMENT FOR RDF FIRED SPREADER STOKER FURNACES

(ANNUAL AVERAGE BASED ON 1800 TPD RDF FIRED)

POLLUTANT	LBS/TON RDF	LBS/HR (1800TPD)	TONS/YEAR (1800TPD)	GM/SEC @ 1800 TPD	GM/SEC @ 2100 TPD
CARBON MONOXIDE	12.0	900.	3942.	113.	132
NITROGEN DIOXIDE	4.0	300.	1314.	37.8	44.1
SULFUR DIOXIDE	9.0	675.	2957.	85.1	99.3
CHLORIDES	3.5	263.	1150.	33.1	38.6
VOLATILE ORGANIC COMPOUNDS	.20	15.0	65.6	1.89	2.21
PARTICULATE MATTER	.65	48.8	214.	6.14	7.16
SULFURIC ACID MIST	.0004	.030	.131	.0038	.0044
FLUORIDES	.04	3.00	13.2	.38	.44
LEAD	.014	1.05	4.6	.132	.154
MERCURY	.003	.225	.98	.0284	.0331
BERYLLIUM	9.0 E-06	6.8 E-04	3.0 E-03	8.5 E-05	9.9E-5
2,3,7,8-TCDD	8.5 E-08	6.4 E-06	2.8 E-05	8.0 E-07	9.3E-7

TABLE 4-2

STACK PARAMETERS FOR EACH OF THREE SPREADER STOKER FURNACES
(TWO INITIALLY INSTALLED PLUS ONE FUTURE)

	ENGLISH	METRIC
LOCATION		UTM ZONE 17
X-COORDINATE		0585820 METERS EAST
Y-COORDINATE		2960474 METERS NORTH
BASE ELEVATION FOR MODEL INPUT	0.00 FEET	0.00 METERS
STACK DIAMETER	6.69 FEET	2.04 METERS
STACK HEIGHT	250 FEET	76.20 METERS
VOLUMETRIC FLOW		
100% CAPACITY	172377 ACFM	81.4 M3/SEC
75% CAPACITY	124311 ACFM	58.7 M3/SEC
50% CAPACITY	80033 ACFM	37.8 M3/SEC
EXIT VELOCITY		
100% CAPACITY	81.69 FEET/SECOND	24.90 METERS/SECOND
75% CAPACITY	58.91 FEET/SECOND	17.96 METERS/SECOND
50% CAPACITY	37.93 FEET/SECOND	11.56 METERS/SECOND
EXIT TEMPERATURE		
100% CAPACITY	450 FAHRENHEIT	505 KELVIN
75% CAPACITY	415 FAHRENHEIT	486 KELVIN
50% CAPACITY	385 FAHRENHEIT	469 KELVIN

4.1.5 Nitrogen Oxides (NO_x)

The NO_x emission factor was selected from the CARB report and is representative of the upper bound of the median values of the data bases used.

4.1.6 Lead (Pb)

The Pb emission factor was selected based upon detailed analyses conducted during facility permit work by Hayden-Wegman for North Santa Clara County, CA. Data bases provided only sparse information with median values which were either too low or too high to be considered representative of the proposed Palm Beach County project.

4.1.7 Beryllium (Be)

The Be emission fator is based on a weighted average of the values cited by CARB report and Hayden-Wegman for North Santa Clara.

4.1.8 Mercury (Hg)

Hg emission factor is based on the North Santa Clara Report which is higher than other data bases reviewed.

4.1.9 Chlorides (as HCl)

The HCl emission factor is based on North Santa Clara and data reported by Rinaldi, et al.

4.1.10 Fluorides (as HF)

The HF emission factor is based on the median value from the CARB Report.

4.1.11 Sulfuric Acid Mist (H_2SO_4)

H_2SO_4 emission factor is based on data from North Santa Clara, CA. Data bases are very sketchy. The controlled emission is based on 99% removal by the ESP.

4.1.12 Ozone (O3), Total Reduced Sulfur, Reduced Sulfur Compounds, Vinyl Chloride and Asbestos

No emissions of ozone, total reduced sulfur, reduced sulfur compounds, vinyl chloride and asbestos are expected.

4.1.13 Dioxin (2,3,7,8 Tetra Chloro Dibenzo Dioxin)

The emission factor for 2,3,7,8-TCDD is derived from stack test data taken from Chicago, N.W. facility by the EPA and reported by Cleverly. The reason for using these data are as follows: (a) they represent a direct measurement of flue gas emission, (b) the data have been shown to be comparable to similar measurements made by the Swiss Environmental Agency and to measurements derived from independent analyses from fly ash collected from

U.S. and European waste-to-energy facilities; and (c) the data are conservative in that they show the highest emission rate (of the seven large scale waste to energy facilities for which data are available) for the tetra homologue which contains the isomer of greatest toxicity and concern. The emission factor was calculated from a conservative emission rate of 0.085E-6 pounds/ton for the 3000 tons/day Brooklyn Navy Yard facility. It is expected that this emission level will not be encountered at the proposed facility due to excellent combustion controls and auxiliary fuel systems that are designed to maintain exit gas temperatures at a level above the critical threshold where dioxin could be formed.

5.0 AIR QUALITY MODELING ANALYSES

5.1 Model Requirements

5.1.1 Determination of Worst-Case Load Conditions

A pollutant source does not generally operate or emit pollutants at a constant rate. Most facilities, particularly waste-to-energy facilities, operate at variable rates depending on supply and demand, weekday versus weekend or day versus night work schedules or other factors. Changes in source operating rates produce different pollutant emission rates and exhaust gas flow rates and temperatures. When flow rates and temperatures vary, so does pollutant dispersion (plume rise) such that different points of maximum pollutant impact are produced. As a result, screening modeling was performed to determine the source operating load that produces the worst-case impacts. Such screening modeling was performed for 100, 75 and 50 percent load. Model results indicated that 100% load produced worst case conditions.

5.1.2 Determination of the Modeling Area

The next required modeling analysis determined the territorial extent of significant impact of the proposed source. Significant impact levels have been defined for various averaging periods for specific pollutants as shown in Table 5-1. Significant monitored concentrations (De Minimus Values) have also been defined for other pollutants as shown in Table 5-2.

As screening analysis was performed first, using a screening-type model and a limited set of hypothetical meteorological data to define appropriate receptor locations (i.e., points where impacts are calculated). Once receptors were selected, other refined models and historical meteorological data could then be used to calculate source impacts for all averaging periods of concern.

TABLE 5-1

SIGNIFICANCE LEVELS FOR AIR QUALITY IMPACTS

POLLUTANT	AVERAGING TIME	SIGN. LEVEL CONC. (ug/m^3)	DISTANCE (KM) FROM SOURCE ## TO SIGNIFICANCE LEVEL HIGHEST	HIGH SECOND HIGH
Sulfur Dioxide	3 Hour	25	25.0	15.0
	24 Hour	5	25.0	20.0
	Annual	1	15.0	NA
Total Suspended Particulate	24 Hour	5	#	#
	Annual	1	#	NA
Nitrogen Dioxide	Annual	1	5.0	NA
Carbon Monoxide	8 Hour	2000	#	#
	Annual	500	#	NA

NA Not applicable

\# Less than significant levels at all distances. Minimum boundary line distance from RDF Source: 0.73 km.

\## Facility UMT Coordinates; 2960474N; 0585820E; UMT Zone 17

TABLE 5-2

COMPARISON OF IMPACT OF PALM BEACH COUNTY RDF FIRED SPREADER STOKER FURNACES TO DE-MINIMUS LEVELS (ISC MODEL)

(FACILITY UMT COORDINATES: 2960474N; 0585820E; UMT ZONE 17)
SIGNIFICANT MONITORING CONCENTRATIONS

POLLUTANT	AVERAGING TIME	DE-MINIMUS GUIDELINES ug/m3	HIGHEST 2ND HIGHEST# CONCENTRATION ug/m3	DISTANCE (KM) FROM SOURCE TO DE-MINIMUS LEVEL HIGH	H2NDH
TSP	24 Hour	10	2.0	##	##
SO_2	24 Hour	13	27.4	10.0	10.0
CO	8 Hour	575	78.6	##	##
NO_x	24 Hour	14	12.2	##	##
Ozone (VOC)	1 Hour	*	3.0**	##	##
Mercury	24 Hour	0.25	9.1E-3	##	##
Fluorides	24 Hour	0.25	0.17	##	##
Lead	24 Hour	0.1	4.3E- 2	##	##
Beryllium	24 Hour	5.0E-4	2.7E-5	##	##

* No value established. Ambient air standard: 235 ug/m^3 not to be exceeded on more than an average of one day per year over a three year period.

\# Model analyses for SO_2 based on 2100 TPD and 9% lb/ton. Concentrations for other pollutants based on their emissions ratio to SO2.

** Assumes VOC is equivalent to Ozone

\## Less than de-minimus values at all distances equal to or greater than 0.73 Km. from the Source. 0.73 Km. is the minimum distance of the source from its boundry line.

The circle enclosing the furthest radial distance to which significant impacts are found defines the "modeling area" for the applicant's source. Subsequent modeling analyses included all sources located within this area that have significant emissions of the criteria pollutants emitted (in significant amounts) by the applicant's source. Model results indicated that only SO_2 produced significant impacts in both short-term and long-term averaging periods.

5.1.3 Determination of the Screening Area

An additional "screening area" was defined for additional sources to be considered for inclusion in subsequent modeling analyses. This screening area was contained in the annular ring that extends 50 kilometers (31 miles) beyond the applicant's source's modeling area. Sources located in the screening area were included in subsequent modeling along with the applicant's source, if their impact within the applicant's source modeling area was as much as 1 ug/m3 on an annual basis and 5 ug/m^3 on a 24-hour basis.

5.1.4 PSD Increment Consumption and NAAQS Analysis

The PSD regulations have established limits for increases in concentrations of two pollutants, PM on a 24-hour and annual basis, and SO2 on a 3-hour, 24-hour and annual basis. These limits of concentration increases have been defined as increments which are shown in Table 5-3. The starting point for PSD increment consumption is January 6, 1975. In a given area, the starting point for tracking PSD increment consumption is the date therafter on which the first PSD source permit application is submitted for regulatory review. The first PSD permit application date is defined as the baseline date for the given area. No major PSD increment consuming source has triggered the baseline date in the study area.

TABLE 5-3

ALLOWABLE PSD INCREMENTS
(ug/m3)

	Class I Area	Class II Area	Class III Area
Sulfur Dioxide			
• Annual	2	20	40
• 24-hour	5*	91*	182*
• 3-hour	25*	512*	700*
Total Suspended Particulate Matter			
• Annual	5	19	37
• 24-hour	10*	37*	75*

* Not to be exceeded more than once a year.

No multisource modeling for PSD increment consumption is required since no major source has been constructed since January 6, 1975 within the modeling area.

The sum of the impacts of the proposed PSD source emissions and all existing source emissions must also not produce concentrations that violate NAAQS. The NAAQS concentrations are shown in Table 5-4. Modeling for compliance with NAAQS must include: 1) all source emissions from the proposed PSD source, 2) actual emissions from all operating sources and all allowable emissions from permitted (but not operating) sources within the modeling area, and 3) actual emissions from all operating sources and all allowable emissions from permitted (but not operating) sources within the screening area, if such sources have significant impacts (>1 ug/m3, annual and >5 ug/m3, 24-hour) within the modeling area. Modeling impacts must be added to appropriate background levels to determine compliance with NAAQS.

5.1.5 Soils and Vegetation Impacts

The emission of pollutants listed in Table 5-1 are not expected to cause any harm to the vegetation or soils within the study area. For these pollutants, either all applicable NAAQS and state standards will be met, emissions will be less than de minimus values, or ambient impacts will be insignificant.

The potential impact to soil and vegetation resulting from emission from the proposed facility are discussed for the following specific compounds and materials: total suspended particulates (TSP); carbon monoxide (CO; sulfuric acid (H_2SO_4); sulfur dioxide (SO_2); nitrogen dioxide (NO_2).

Total Suspended Particulates. Particulate matter can interfere with plant metabolism when large enough quantities coat leaf surfaces causing the blockage of gas and light exchange mechanisms. The specific sensitivity of plants to particulate matter produced by resource recovery facilities is not known, nor have levels which produce plant injuries from other sources been documented.

The proposed facility will contribute a maximum annual average of 0.28 ug/m^3 of TSP. The maximum observed level in 1983 was 134 ug/m^3, to which the facilities emissions will add an insignificant amount of 0.2 ug/m^3.

Carbon Monoxide. Plants appear to be resistant to high levels of CO. In most species tested, exposure to 115 mg/m^3 for up to three weeks did not produce visible injury (Zimmerman, et al., 1983). More recently, exposure to less than 27 ug/m^3 (Chakrabarti, 1976) also produce no visible injury.

The proposed facility will contribute a maximum annual concentration of 5.1 ug/m^3. Total concentrations, as a result of the operation of the proposed facility, will thus be considerably below concentrations causing visible injury to vegetation.

Sulfuric Acid. H_2SO_4 is formed when gaseous SO_3 produced by the facility reacts with water droplets. the acidified water vapor can result in acidic precipitation. It is difficult to predict the extent that $H2SO_4$ produced by the facility will impact vegetation because (1) H_2SO_4 aerosols are neutralized by the presence of ammonia in the atmosphere (Huntzicher, et al., 1980); (2) when effects of acid precipitation on plants are observed they may be positive due to fertilization impacts of sulfur or negative due to the leaching of leaf surfaces; and (3) the impact of emissions of H_2SO_4 from a single facility on vegetation may be difficult to differentiate from the overall impacts of acid rain on vegetation.

Although evaluation of data relative to acidic precipitation impacts on vegetation is complex, the majority of crop species studied to date indicates the exposure to simulated acid rain has little or no adverse impact on vegetative growth and yield.

The proposed facility will add an annual average of 1.7E-4 ug/m^3 of H_2SO_4. It is not anticipated that this concentration will contribute significantly to acidic precipitation when compared to existing concentrations and other major producers, such as fossil fuel power plants.

Sulfur Dioxide. Sensitivity of plant species to SO_2 appears to vary not only with climate of an area, but with the duration of exposure. Garsed and Rutter (1982) reported that various species of conifer (*Pinus* sp.) had markedly differing sensitivities to levels of SO_2 ranging from 200 ug/m^3 for 11 months to 8000 ug/m^3 for 6 hours. A 14% reduction in relative growth rate was seen in one pine species at the 200 ug/m^3 dosage level. A number of oak and pine species (black and red oak, white pine) have been reported to develop visible injury when exposed to concentrations of SO_2 between 786 and 1,572 ug/m^3 for three hours (Jones, et al. 1979), have reported a threshold value for foliar injury to certain species (blackberry winged sumac, other herbaceous species) at 340 ug/m^3 for 3 hours under environmental conditions which maximized plant sensitivity.

A maximum annual ground level concentration for SO_2 of 3.8 ug/m^3 is predicted for the authority facility. This value, when added to a background level of 10 ug/m^3 is considerably below the concentration causing a reduction in relative growth rate of a pine species. The maximum background level of SO_2 over a three hour averaging period, is 140 ug/m^3 to which the facility will add a maximum of 75 ug/m^3. This maximum level does not exceed threshold value for certain sensitive species under worst-case conditions.

Nitrogen Dioxide. Nitrogen dioxide can be beneficial to vegetation in specific amounts. Uptake of NO_2 varies with a number of factors such as nutrient supply in the soil, fertilization, and rainfall. NO_2 can also be converted to nitric acid and contribute to acid precipitation. Natural biological cycling of nitrogen compounds produces greater acidity than does atmospheric decomposition (Frink, et al., 1976).

Short-term injury threshold for NO_2-tolerant species, such as corn an sorghum, has been found to be 24,400 ug/m^3 NO_2 for a one-hour exposure when grown in a controlled environment (Heck and Tiggey, 1970). Continuous exposure throughout the growth period to 470 ug/m^3 reduced size and productivity and increased senescence in tomatoes and navel oranges (Taylor, et al., 1975; Spierings, 1971). The concentration of NO_2 has been found to be a greater influence on the extent of injury than the length of exposure.

The additive effect of NO_2 and SO_2 in combination on crops has been shown to vary between crop species and varieties. In a recent study of yield reduction in soybeans, no adverse effect was observed at atmospheric concentrations of 481 ug/m^3 SO_2 in combination with 155 ug/m^3 of NO_2 (Admunson, 1983). The results of these investigations indicate that the presence of elevated levels of NO_2 in the atmosphere in combination with SO_2 above a threshold level can lead to adverse crop response. NO_2 concentrations below 120 ug/m^3 have not been reported to produce injury in the absence of other pollutants (Thompson, et al., 1974).

The proposed facility will produce a maximum annual NO_2 concentration of 1.70 ug/m^3. The maximum annual ambient NO_2 concentration recorded on the county was 20 ug/m^3. Total concentration will thus be well below the estimated threshold level (120 ug/m^3) of injury to certain plants.

Hydrodgen Chloride. Gaseous HCl will be emitted from the proposed facility as a result of the combustion of certain materials contained in the refuse, especially plastics. HCI fallout onto soil does not pose a serious risk to vegetation. HCI disassociates in soil, and the Cl which occurs in a dissolved form is generally leached from the soil with precipitation. Since HCl is therefore unavailable for uptake through plant roots, indirect injury to vegetation through the soil is unlikely.

Studies of the plant growth in an environment containing gaseous HCl show that exposure of 10,000 ug/m^3 for 1 to 2 hours will produce plant injury. Intermittant exposure to concentrations of approximately 50 ug/m^3 posed minimal risk to sensitive vegetation. Concentrations ranging from approximately 6,000 ug/m^3 for 120 hours or below provide adequate protection from HCl injury.

The proposed facililty will increase HCl concentrations by a 1-hour maximum of 53 ug/m^3 and an annual average of 1.5 ug/m^3. Peak- and long-term concentrations are well below levels specifically documented to cause injury and those proposed as adequate for vegetation protection. Therefore, HCI emissions are not expected to adversely impact local vegetation.

5.2 Model Selection Criteria

5.2.1. Number of Emission Points

A number of models are available for the screening modeling analyses needed for selecting receptor locations and determining worst-case load impacts. Models PTMAX and PTPLU are applicable to individual sources, and PMPTP and Valley are applicable to individual-multiple sources. A number of models are also available for the more comprehensive modeling analysis needed to define the modeling area, compute PSD increment consumption, and assess compliance with NAAQS. The CRSTER model is only applicable to single or collocated sources. The MTPER, RAM, ISCST, ISCLT, Complex 1, SHORTZ, LONGZ, and CDMQC models are applicable to multiple sources.

Since it was anticipated that the modeling and screening areas would contain sources which emit the same pollutants (in significant amounts*) as will be emitted by the proposed facility (in significant amounts*) Hayden-Wegman planned, at the outset of this study, to use multiple source models for the refined modeling analyses. Upon consideration of the topography and demography of the study area and the type and number of sources to be modeled, the following dispersion models are utilized: PTPLU, PTDIS, ISCST and ISCLT.

These models are used with downwash option and in rural mode pursuant to FDER instructions.

---

* As defined in Table 5-1

TABLE 5-4

AMBIENT AIR QUALITY STANDARDS

POLLUTANT	FEDERAL PRIMARY	FEDERAL SECONDARY	STATE	MAXIMUM CONCENTRATION MEASURED IN 1983 (SITE #)	MAXIMUM 2ND MAX CONCENTRATION (3) MEASURED IN 1983 (SITE #)
SULFUR DIOXIDE					
MAX 3-HOUR CONCENTRATION (2)	NO STANDARD	1300 UG/M3 (0.5 PPM)	1300 UG/M3 (0.5 PPM)	65 UG/M3 (11) (0.025 PPM)	63 UG/M3 (11) (0.024 PPM)
MAX 24-HOUR CONCENTRATION	365 UG/M3 (0.14 PPM)	NO STANDARD	260 UG/M3 (0.1 PPM)	39 UG/M3 (11) (0.015 PPM)	29 UG/M3 (11) (0.011 PPM)
ANNUAL ARITHMETIC MEAN	80 UG/M3 (0.03 PPM)	NO STANDARD	60 UG/M3 (0.02 PPM)	7 UG/M3 (11) (0.0027 PPM)	
PARTICULATE MATTER					
MAX 24-HOUR CONCENTRATION (2)	260 UG/M3	150 UG/M3	150 UG/M3	134 UG/M3 (5)	107 UG/M3 (4)
ANNUAL GEOMETRIC MEAN	75 UG/M3	60 UG/M3	60 UG/M3	43 UG/M3 (12)	
NITROGEN DIOXIDE					
ANNUAL ARITHMETIC MEAN	100 UG/M3 (.05 PPM)	100 UG/M3 (.05 PPM)	100 UG/M3 (.05 PPM)	20 UG/M3 (1) (0.01 PPM)	
OZONE					
DAILY MAX 1-HOUR CONCENTRATION (1)	235 UG/M3 (0.12 PPM)	235 UG/M3 (0.12 PPM)	235 UG/M3 (0.12 PPM)	180 UG/M3 (10) (0.092 PPM)	172 UG/M3 (10) (0.088 PPM)
LEAD					
QUARTERLY ARITHMETIC MEAN	NO STANDARD	NO STANDARD	1.5 UG/M3	NOT MONITORED	
CARBON MONOXIDE					
MAX 1-HOUR CONCENTRATION	40000 UG/M3 (35 PPM)	40000 UG/M3 (35 PPM)	40000 UG/M3 (35 PPM)	10171 UG/M3 (1) (8.9 PPM)	9943 UG/M3 (1) (8.7 PPM)
MAX 8-HOUR CONCENTRATION (2)	10000 UG/M3 (10 PPM)	10000 UG/M3 (10 PPM)	10000 UG/M3 (10 PPM)	6600 UG/M3 (1) (6.6 PPM)	4500 UG/M3 (1) (4.5 PPM)

1. THE STANDARD IS ATTAINED WHEN THE EXPECTED NUMBER OF DAYS PER CALENDAR YEAR WITH MAXIMUM HOURLY AVERAGE AVERAGE CONCENTRATIONS ABOVE 0.12 PPM IS EQUAL TO OR LESS THAN 1.

2. CONCENTRATION LIMITS NOT TO BE EXCEEDED MORE THAN ONCE PER YEAR.

3. SINCE SHORT TERM CONCENTRATION LIMITS ARE NOT TO BE EXCEEDED MORE THAN ONCE PER YEAR, THE VALUES PRESENTED IN COLUMN (5) FOR SHORT TERM CONCENTRATIONS REFLECT THE HIGHEST VALUES OF THE SECOND HIGHEST CONCENTRATION MEASURED AT THE MONITORING STATION.

5.2.2 Pollutant Averaging Periods

As discussed earlier, pollutant concentrations must be predicted on the basis of several averaging periods for PM (24-hour and annual) and SO_2 (3-hour, 24-hour and annual). Pollutant impacts must also be predicted on the basis of 1-hour and 8-hour averaging periods for CO and on a calendar quarter basis for lead.

The PTPLU, and PTDIS screening models can be used with hypothetical meteorological data to predict worst-case 1-hour impacts which can be converted to worst-case 3-hour, 8-hour and 24-hour impacts using scaling factors provided in EPA's Volume 10.

5.2.3 GEP Determination and Potential for Downwash

The relationship between a source's stack height and the dimensions of adjacent structures and terrain determine whether plume downwash will occur. EPA has developed criteria for constructing stacks with heights defined according to good engineering practice (GEP) criteria in order to minimize plume downwash. The ISC models are the only ones capable of calculating impacts caused by plume downwash. Modeling for downwash is required only if the applicant's stack is not constructed according to GEP criteria.

Hayden-Wegman performed a GEP analysis for the proposed source's stack. The analysis was performed in accordance with EPA regulations. Building dimensions are 233 ft long by 110 ft wide by 120 ft high. GEP stack height was determined to be 300 ft. Accordingly, the results of this analysis indicated that the proposed source stack was below GEP height so downwash modeling was performed.

5.3 Modeling Considerations

5.3.1 Highest, Second-Highest Concentrations

For the short term averaging periods, compliance with PSD increments and NAAQS is based on the highest, second-highest modeled (modeled plus background for NAAQS) concentrations. Such concentrations are determined by first obtaining the highest and second-highest concentrations at all the receptors within the study area. The highest, second highest concentration is defined as being the highest value from among the set of second highest concentrations for all the receptors. In this report, highest, second-highest concentrations are presented for all short-term averaging periods for the pollutants for which short-term NAAQS or PSD increments have been established.

5.3.2 Block Averaging Times

Compliance with short-term PSD increments and NAAQS is based on block averages. Block averages are those that start at midnight for all non-overlapping averaging periods until the following midnight. Thus, each day produces a single 24-hour block average, three 8-hour block averages, and eight 3-hour block averages. In this report all modeled short-term concentrations are presented as block averages.

5.3.3 Dispersion Coefficients

Dispersion coefficients are constants that are built into dispersion models for use in calculating the amount of horizontal and vertical plume spread depending on downwind atmospheric stability and distance. All of the models used contain Pasquill/Gifford coefficients. The Pasquill/Gifford coefficients are applicable to rural areas. In long term-models, the Pasquill/Gifford coefficients are applicable to rural areas. In long-term models, the Pasquill/Gifford coefficients are used to calculate pollutant dispersion in the vertical, but pollutant dispersion is calculated to be evenly distributed within a wind direction sector in the horizontal.

5.3.4 Stability Categories

There are several models available for determining stability categories. All the models discussed herein use stability classifications developed by the Pasquill/Turner method. The Pasquill/Turner method is based on measurements of cloud cover, isolation (solar heat) and wind speed. The stability classifications used for this study were developed using the CRSTER preprocessor which converts standard National Weather Service observations into the format required for model input.

5.3.5 Plume Rise

The standard algorithms for determining plume rise are those of Briggs and these algorithms are used in all the models that were used in this study. The Briggs algorithms calculate plume rise based on thermal buoyancy (exhaust gas temperature) and momentum (exhaust gas volume flow).

a. Buoyancy Induced Dispersion

If a large source has a thermally buoyant plume, dispersion will begin immediately upon its exit from the stack. This phenomenon is accounted for in algorithms for buoyance induced dispersion, which are available as an option in several of the models discussed herein. This option was employed in this study because the proposed source has a hot plume.

b. Stack Tip Downwash

Downwash of a plume can be induced by a stack if it is poorly constructed, or if the exhaust gas velocity is low. This option was employed for this study as a measure of conservatism although the proposed stack will be properly constructed and have adequate exhaust gas velocity.

c. Final Versus Transitional Plume Rise

Upon entering the atmosphere, a plume will rise as a function of its thermal buoyancy and momentum, as discussed above. The plume will rise until it loses its buoyancy and momentum. As the plume rises, it travels downwind until it reaches its equilibrium, or final height. Algorithms have been developed to account for this period of transitional plume rise and were utilized for model runs.

5.3.6 Chemical Transformation

Some pollutants undergo chemical transformations after their release into the atmosphere. Various methods can be used to account for these transformations, the most common of which makes use of an exponential decay or "half-life" term, that is dependent on travel time. Of the pollutants that will be emitted by the proposed facility, those most subject to chemical transformations in the atmosphere are sulfur oxides (SO_x), and NO_x. After entering the atmosphere, the amount of SO_2 in the SO_x emissions is slowly depleted. During the short travel times involved in the study area, this depletion is of minimal significance and was not considered. The conversion of NO_x to NO_2 is rapid so all NO_x emissions were treated as NO_2. Therefore, although several of the models selected for this study contain "half-life" equations for calculating pollutant decay, this option was not used.

5.3.7 Particle Deposition

Large particles settle out of the atmosphere while smaller particles remain suspended. Modeled concentrations will be underpredictions if particle deposition is not calculated and source emissions do include particles that settle out before reaching the receptor. In air permitting analyses, the latter situation is allowed to occur, especially if particulate size distributions are not available, to ensure that ambient air quality standards are met. For this study, all particulate emissions were considered to be non-settleable.

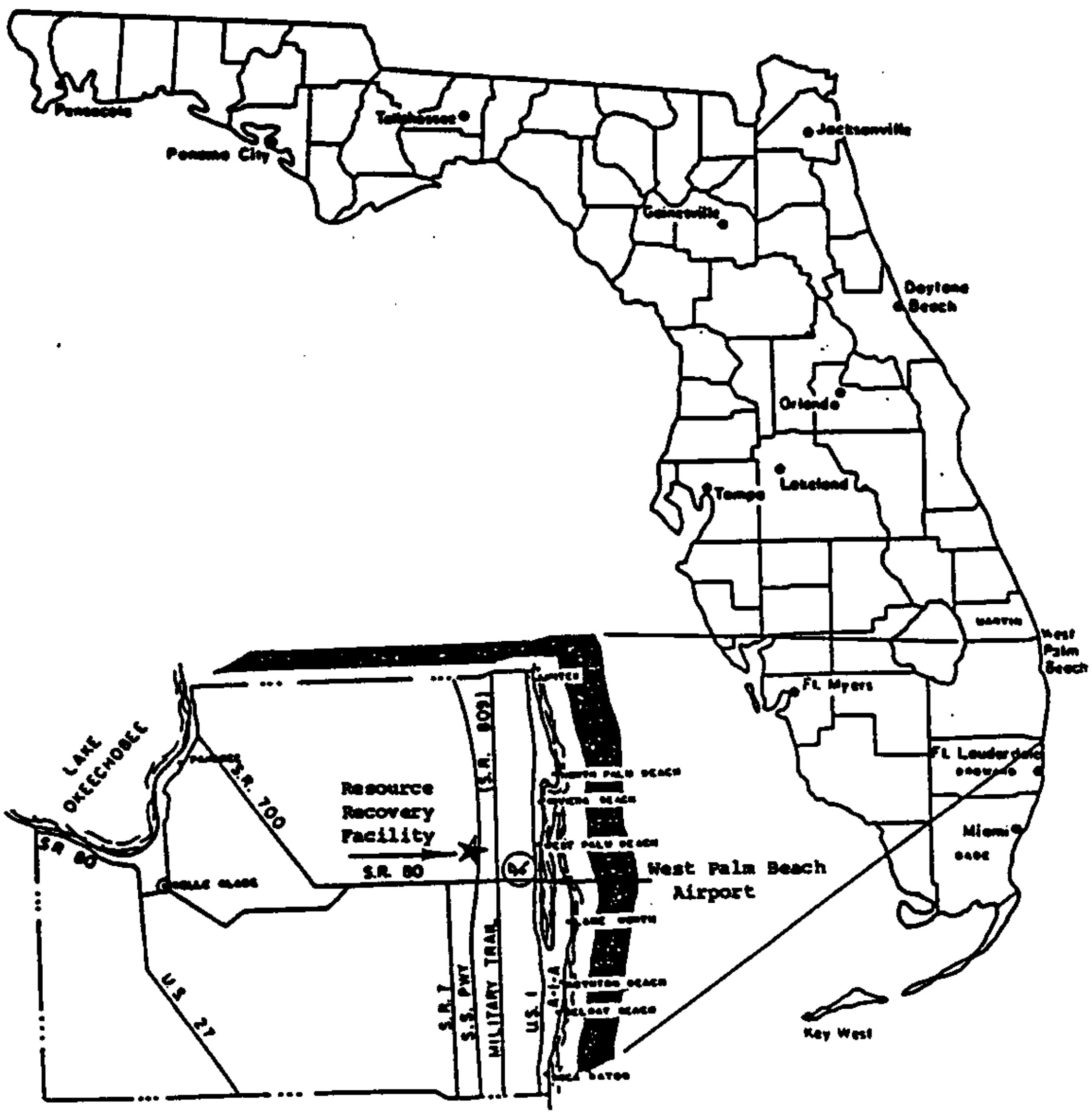
5.4 Meteorological and Climatology

5.4.1 Climatology

The proposed waste-to-energy facility is to be located in Palm Beach County in the lower east coast climatological regime of Florida (Figure 5.1). The site is approximately 10 kilometers west of the Intercoastal Waterway and 11.5 kilometers from the Atlantic Ocean shoreline. There is no significant terrain in the vicinity (Figure 5.2). Summer temperatures are warm and humid while the winter temperatures are moderated slightly by an occasional influx of cool air from the north. The region is dominated by the effect of the Gulf Stream which flows northward following the contours of the lower east coast and a dominant trade wind that blows from east to west. This water trajectory is a moderating influence that cools the region in the summer and gives warmth in the winter. Average mean winter (January) and summer (July) maximum temperatures for Florida are shown in Figure 5.3 and 5.4. The primary rainy season occurs during the six month period from May through October. Most of the precipitation is associated with thunderstorms. The maximum average rainfalls are during the months of September and October. These rains may be associated with tropical storms. The frequency of tropical storms, by year, for Florida is shown in Exhibit Table 5.1. The chances of hurricane force winds at West Palm Beach are 1 in 7. Meteorological conditions that aggravate air pollution are least likely to occur in the lower east coast region due to the prevailing easterly trade winds and the overall prevailing instability of the air. The trade winds are sufficiently pervasive so as to minimize any true sea breeze effect.

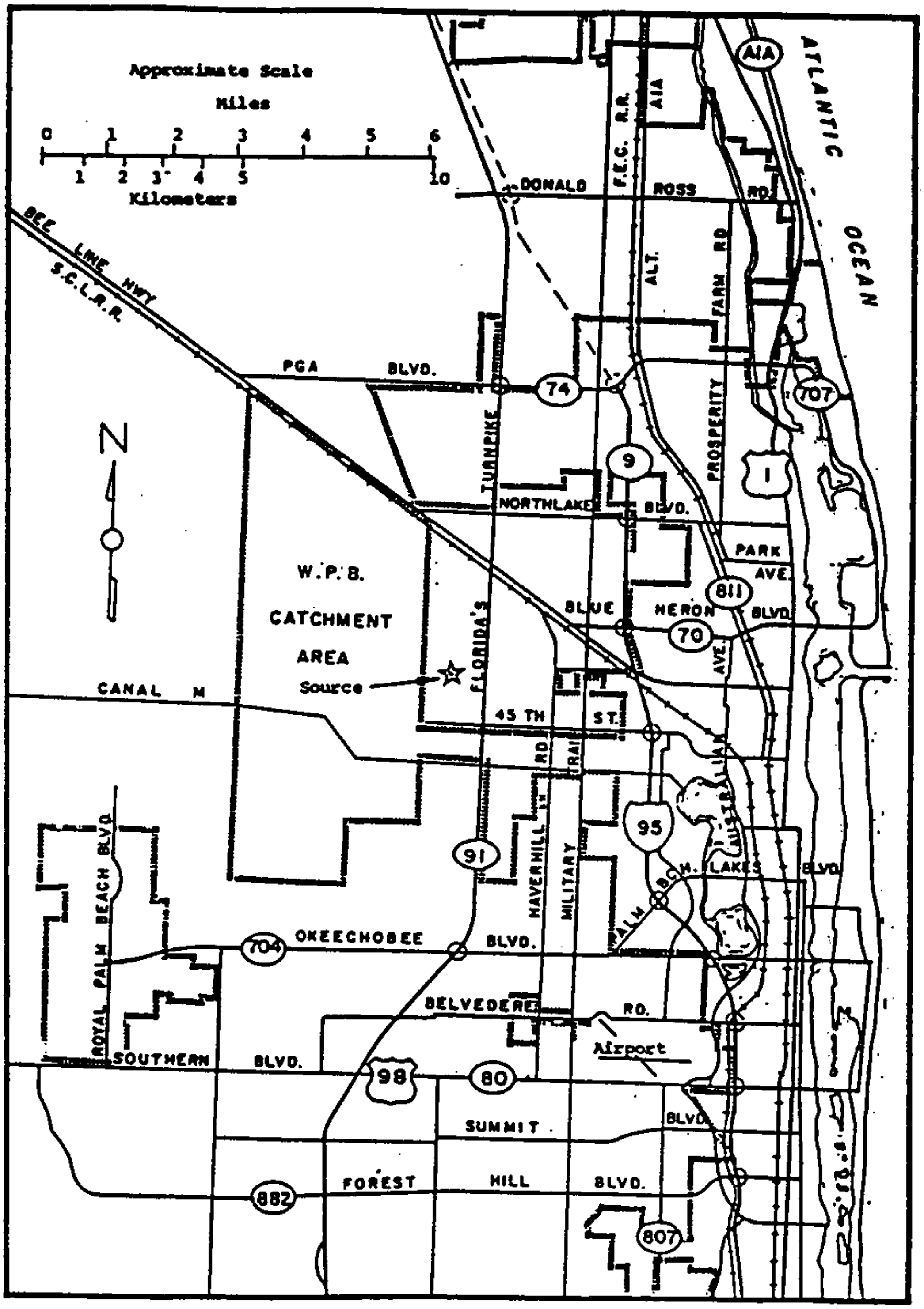
LOCATION MAP

PALM BEACH COUNTY, FLORIDA



PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

FIGURE 5.1



PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

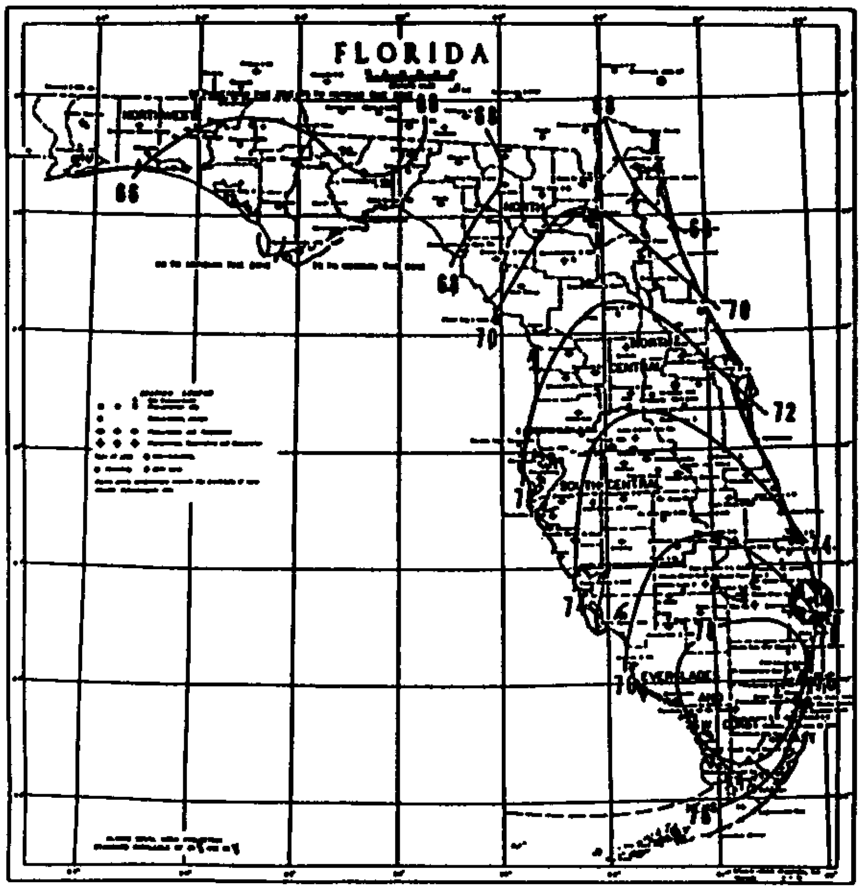
FIGURE 5.2

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

Data Source: CLIMATE OF THE STATES, Vol. 1, Water Information Center, Inc., 1974

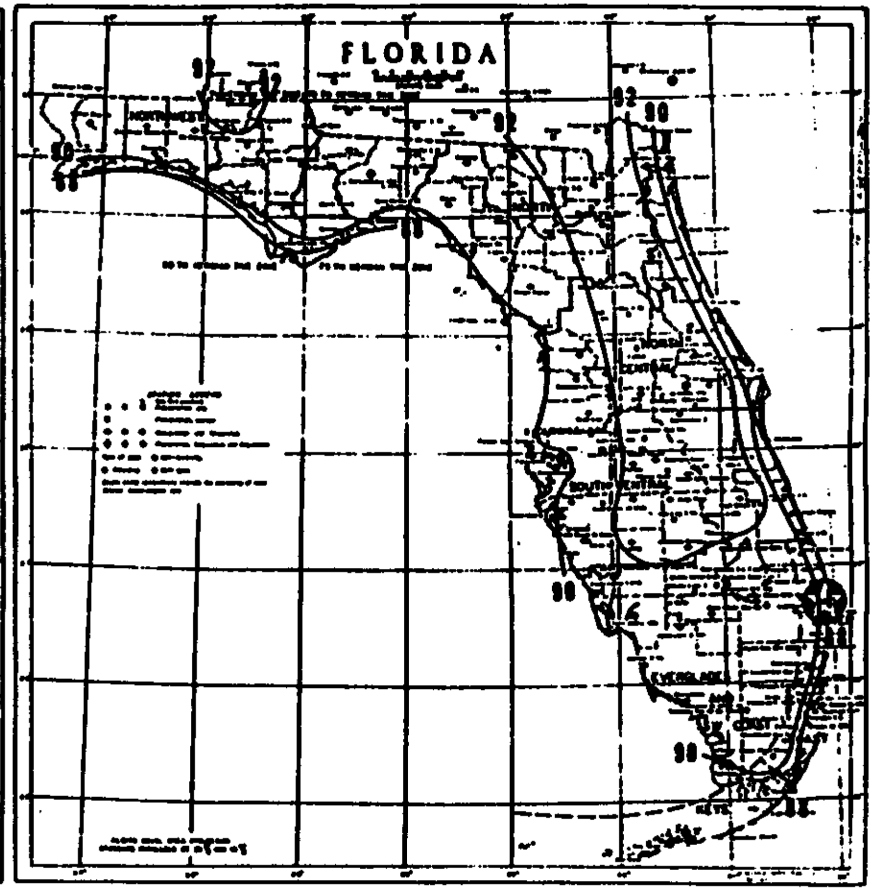
FIGURE 5.3

MEAN MAXIMUM TEMPERATURE (°F.), JANUARY



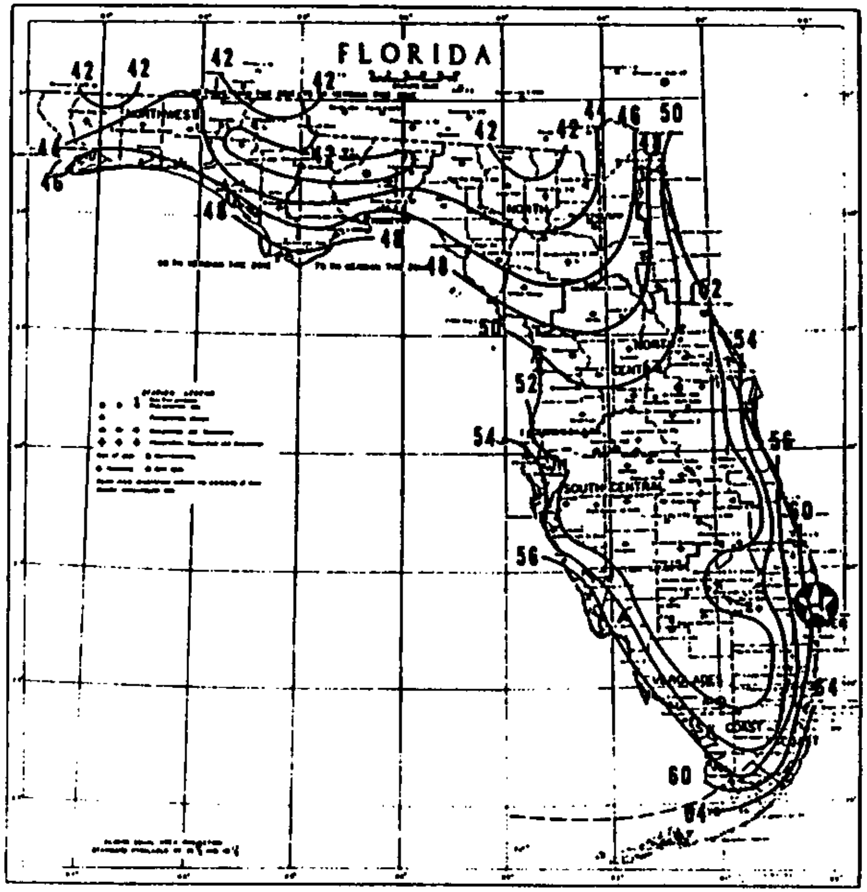
Data are based on the period 1931-52. Isolines are drawn through points of approximately equal value. Caution should be used in interpolating on these maps.

MEAN MAXIMUM TEMPERATURE (°F.), JULY



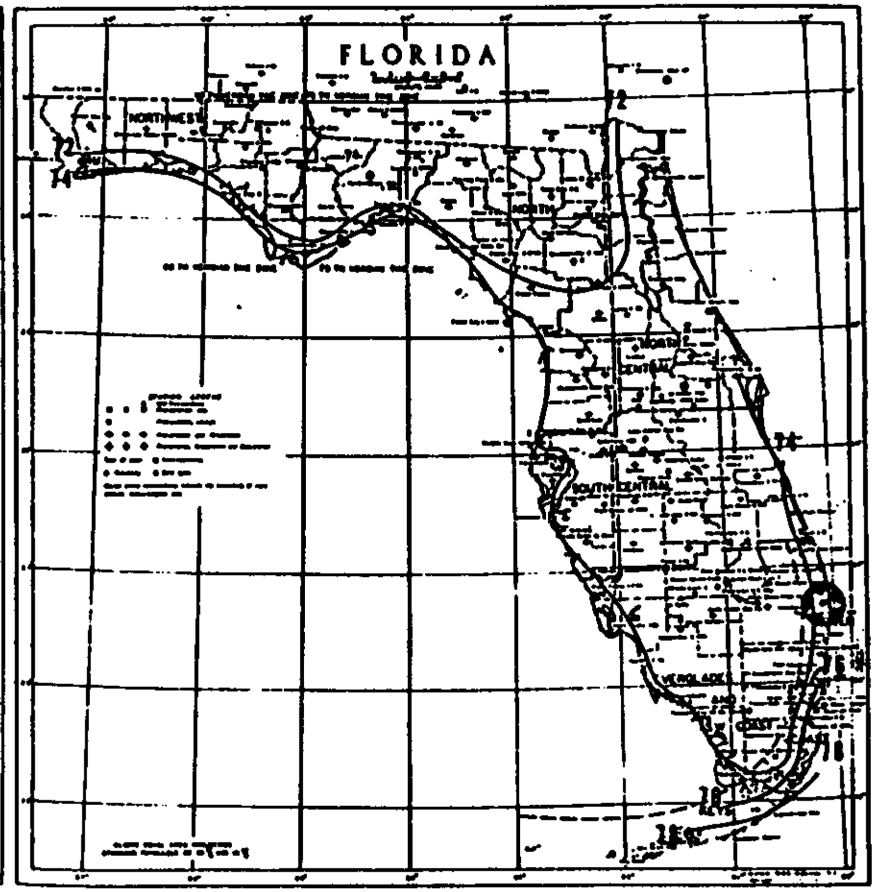
Data are based on the period 1931-52. Isolines are drawn through points of approximately equal value. Caution should be used in interpolating on these maps.

MEAN MINIMUM TEMPERATURE (°F.), JANUARY



Data are based on the period 1931-52. Isolines are drawn through points of approximately equal value. Caution should be used in interpolating on these maps.

MEAN MINIMUM TEMPERATURE (°F.), JULY



Data are based on the period 1931-52. Isolines are drawn through points of approximately equal value. Caution should be used in interpolating on these maps.

Data Source: CLIMATE OF THE STATES, Vol.1, Water Information Center, Inc., 1974

FIGURE 5.4

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

FREQUENCY OF TROPICAL STORMS BY YEARS IN FLORIDA

Year	Of Known Hurricane Intensity	Not or Of Doubtful Hurricane Intensity	Total	Year	Of Known Hurricane Intensity	Not or Of Doubtful Hurricane Intensity	Total
1885	3	1	4	1930	0	1	1
1886	3	1	4	1931	0	0	0
1887	1	1	2	1932	1	1	2
1888	2	1	3	1933	2	2	4
1889	1	2	3	1934	0	0	0
1890	0	0	0	1935	3	0	3
1891	1	1	2	1936	1	2	3
1892	0	2	2	1937	0	3	3
1893	3	2	5	1938	0	1	1
1894	2	1	3	1939	1	1	2
1895	1	3	4	1940	0	0	0
1896	3	0	3	1941	1	1	2
1897	0	1	1	1942	0	0	0
1898	2	0	2	1943	0	0	0
1899	1	2	3	1944	1	0	1
1900	0	1	1	1945	2	1	3
1901	0	2	2	1946	1	1	2
1902	0	1	1	1947	2	1	3
1903	1	0	1	1948	2	0	2
1904	1	0	1	1949	1	0	1
1905	0	0	0	1950	2	2	4
1906	3	1	4	1951	0	1	1
1907	0	1	1	1952	0	1	1
1908	0	0	0	1953	1	2	3
1909	1	1	2	1954	0	0	0
1910	1	0	1	1955	0	0	0
1911	1	1	2	1956	1	0	1
1912	1	0	1	1957	0	3	3
1913	0	0	0	1958	0	1	1
1914	0	0	0	1959	0	2	2
1915	1	1	2	1960	1	2	3
1916	3	0	3	1961	0	0	0
1917	1	0	1	1962	0	0	0
1918	0	0	0	1963	0	1	1
1919	1	1	2	1964	3	2	5
1920	0	1	1	1965	1	1	2
1921	1	0	1	1966	2	0	2
1922	0	0	0	1967	0	0	0
1923	0	1	1	1968	4	0	4
1924	2	1	3	1969	1	1	2
1925	1	0	1	1970	1	1	2
1926	3	0	3	1971	0	0	0
1927	0	0	0				
1928	3	0	3				
1929	1	0	1	Total	84	66	150

CHANCES OF HURRICANE FORCE WINDS IN ANY GIVEN YEAR

City	Chances	City	Chances
Jacksonville	1 in 100	Key West	1 in 8
Daytona Beach	1 in 50	Fort Myers	1 in 11
Melbourne-Vero Beach	1 in 20	Tampa-St. Petersburg	1 in 25
Palm Beach	1 in 7	Apalachicola-St. Marks	1 in 17
Miami	1 in 6	Pensacola	1 in 8

Data Source: CLIMATE OF THE STATES, Vol.1, Water Information Center, Inc., 1974

Regional Climatology

There are two full time, full service weather stations within 100 km of the proposed facility:

- Palm Beach International Airport
- Miami International Airport

The Palm Beach International Airport is approximately 9.5 kilometer (5.9 miles) southeast of the proposed facility. The Miami International Airport is approximately 100 kilometers (62 miles) south of the proposed facility. Both stations lie within the Florida lower east coast climatological regime.

Meteorological normals for these two stations are shown in Exhibit Tables 5.2 and 5.3. The meteorological data from the Palm Beach International Airport can be considered representative of the site location for the purpose for air quality modeling analyses. While surface weather data are available from the Palm Beach International Airport, Miami International Airport is the closest available station with recorded upper air data that can be considered as representative for modeling purposes.

A wind frequency distribution summarized for the data collection period from 1970-1974 is available for the Palm Beach International. The joint distribution of these data as a function of wind speed and direction are shown in Figure 5.5. A directional summary of these data in wind rose format is shown in Figure 5.6, along with the average speed for each direction.

The annual average wind speed derived from the 1970-1974 summary wind frequency distribution is approximately 4.27 m/s (9.6 mph). The highest average speed as a function of wind direction is approximately 5.83 m/s (13.0 mph) for winds from the ENE. The winds with the highest frequency of occurence are from the E (17.2%). Winds from the E and ESE account for 27.3% of all occurences and winds from an expanded sector ENE through SE account for 44.2% of all occurences. The summary joint distributions of the wind directions and stability classes are shown in Figure 5.7 and 5.8. The proportion stable stability classes: 5 & 6 per total frequency for each wind direction exceeds 50% for the directions SSW through NW. These two classes are 62% of all the winds from the west (W). These two classes represent less than 20% of the observations for winds from the NNE through E.

The wind distribution, average speeds and stability category data are based on USDEP, COMM. NOAA, EDS, NCC STAR Program results. These data were used to generate annual impact concentrations.

The Summary by Hour analyses given in the monthly Local Climatological Data (LCD) for West Palm Beach for the period 1970 -1974 were used to generate seasonal diurnal distributions for the resultant wind directions and average wind speeds. Winter consists of all available data for the months of December, January and February. Spring consisted of all available data for the months of March, April and May, etc. The derived seasonal diurnal variations for wind direction are shown in Figure 5.9.

The diurnal variations of the wind directions for the spring and summer seasons are almost identical and uniquely different from the diurnal curve for

NORMALS, MEANS, AND EXTREMES

MIAMI, FL — INTERNATIONAL AIRPORT — EASTERN — 25° 48′ N — 80° 16′ W — 7 FT — 1975

Month	Temp °F Normal Daily maximum	Daily minimum	Monthly	Extremes Record highest	Year	Record lowest	Year	Normal Degree days Base 65 °F Heating	Cooling	Precipitation in inches Water equivalent Normal	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, Ice pellets Maximum monthly	Year	Maximum in 24 hrs.	Year	Relative humidity pct. 01	07	13	19 (Local time)	Wind Mean speed m.p.h.	Prevailing direction	Fastest mile Speed m.p.h.	Direction	Year	Pct. of possible sunshine	Mean sky cover, tenths, sunrise to sunset	Mean number of days Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Ice pellets 1.0 inch or more	Thunderstorms	Heavy fog, visibility 1/4 mile or less	Temperatures °F Max. 90° and above (b)	Max. 32° and below	Min. 32° and below	Min. 0° and below	Average station pressure mb. Elev. 12 feet m.s.l.
(a)				11		11					33		33		33		33		33		11	11	11	11	20	13	10	10			27	26	26	26	39	26	26	27	11	11	11	11	3
J	75.6	58.7	67.2	88	1967	33	1971	53	121	2.15	6.66	1969	0.04	1951	3.40	1973	0.0		0.0		80	84	61	70	9.3	NNW	37	31	1964		5.3	10	13	8	7	0	1	1	0	0	0	0	1019.0
F	76.6	59.6	67.8	88	1975	36	1967	47	101	1.99	6.36	1960	0.01	1944	3.73	1966	0.0		0.0		78	82	59	65	10.0	SSE	36	30	1964		5.3	9	11	8	6	0	1	1	0	0	0	0	1018.9
M	79.3	63.0	71.3	90	1974	37	1960	17	206	2.07	7.22	1949	0.02	1956	7.07	1949	0.0		0.0		77	83	56	63	10.3	SE	40	04	1966		5.3	9	14	8	6	0	1	1	0	0	0	0	1017.4
A	82.7	67.3	75.0	96	1971	46	1971	0	300	3.60	18.51	1960	0.07	1971	5.10	1960	0.0		0.0		75	80	54	64	10.6	ESE	32	33	1950		5.1	8	15	7	6	0	2	1	0	0	0	0	1017.9
M	85.3	70.7	78.0	93	1974	51	1971	0	403	6.12	18.54	1968	0.44	1962	8.42	1958	0.0		0.0		80	83	60	70	9.4	ESE	37	32	1962		5.8	5	15	10	10	0	7	1	1	0	0	0	1016.8
J	88.0	73.9	81.0	94	1967	67	1972	0	480	9.00	22.36	1968	1.81	1945	7.63	1966	0.0		0.0		86	87	67	76	8.2	SE	31	13	1967		6.9	3	14	13	18	0	13	0	4	0	0	0	1016.0
J	89.1	75.3	82.3	96	1969	70	1965	0	536	6.91	13.51	1947	1.77	1963	4.53	1933	0.0		0.0		83	86	63	73	7.8	SE	30	18	1960		6.6	3	16	12	16	0	16	0	8	0	0	0	1017.3
A	89.9	75.8	82.9	96	1970	70	1967	0	555	6.72	16.88	1943	1.69	1954	6.92	1966	0.0		0.0		83	87	66	76	7.7	SE	74	36	1964		6.5	2	19	10	17	0	16	0	11	0	0	0	1017.3
S	88.2	75.0	81.7	93	1960	70	1966	0	501	8.74	24.40	1960	2.63	1951	7.58	1960	0.0		0.0		83	89	67	77	8.3	ESE	69	04	1960		6.6	2	17	11	18	0	11	0	5	0	0	0	1016.8
O	84.6	71.0	77.8	96	1969	56	1968	0	397	8.10	21.08	1952	1.90	1968	9.93	1965	0.0		0.0		83	87	65	74	9.3	ENE	61	08	1964		6.1	4	16	11	15	0	3	0	1	0	0	0	1016.7
N	79.9	64.5	72.3	87	1973	40	1970	13	219	2.72	13.15	1959	0.09	1970	7.93	1959	0.0		0.0		80	86	60	70	9.4	N	33	08	1966		5.3	6	14	8	8	0	1	1	0	0	0	0	1018.6
D	76.6	60.0	68.3	85	1960	36	1968	56	139	1.64	6.39	1958	0.15	1968	6.36	1964	0.0		0.0		78	83	58	68	9.0	N	38	32	1967		5.2	10	12	9	6	0	1	1	0	0	0	0	1019.6
YR	83.0	67.9	75.5	96	APR 1971	34	DEC 1968	206	4038	59.80	24.40	SEP 1960	0.01	FEB 1944	9.93	OCT 1965	0.0		0.0		81	84	61	70	9.1	ESE	74	36	AUG 1964		5.8	76	176	117	129	0	75	7	52	0	0	0	1017.6

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows: Airport locations: Highest temperature 100 in July 1942; lowest temperature 26 in December 1934 (28 in January 1940); maximum precipitation in 24 hours 12.58 in April 1942. City locations: Lowest temperature 27 in February 1917; maximum precipitation in 24 hours 15.10 in November 1925; fastest mile of wind 132 from the South in October 1950. Miami Beach (Allison Hospital): Fastest mile of wind 132 from the East, September 18, 1926.

WEST PALM BEACH, FL — PALM BEACH INTL AP — EASTERN — 26° 41′ N — 80° 06′ W — 15 FT — 1975

Month	Temp °F Normal Daily maximum	Daily minimum	Monthly	Extremes Record highest	Year	Record lowest	Year	Normal Degree days Base 65 °F Heating	Cooling	Precipitation in inches Water equivalent Normal	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, Ice pellets Maximum monthly	Year	Maximum in 24 hrs.	Year	Relative humidity pct. 01	07	13	19 (Local time)	Wind Mean speed m.p.h.	Prevailing direction	Fastest mile Speed m.p.h.	Direction	Year	Pct. of possible sunshine	Mean sky cover, tenths, sunrise to sunset	Mean number of days Sunrise to sunset Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Ice pellets 1.0 inch or more	Thunderstorms	Heavy fog, visibility 1/4 mile or less	Temperatures °F Max. 90° and above (b)	Max. 32° and below	Min. 32° and below	Min. 0° and below	Average station pressure mb. Elev. 21 feet m.s.l.
(a)				11		11					37		37		37		30		30		11	11	11	11	33	14	26	26			37	30	30	30	33	33	33	33	11	11	11	11	3
J	75.0	55.9	65.5	87	1975	29	1970	53	98	2.60	8.30	1974	0.22	1960	6.30	1957	0.0		0.0		80	83	59	73	9.6	NW	48	29	1953		5.6	7	12	12	7	0	1	3	0	0	0	0	1019.0
F	76.0	56.2	66.1	89	1974	30	1967	91	127	2.00	6.88	1966	0.29	1948	4.70	1966	0.0		0.0		79	81	56	69	10.3	SE	46	29	1956		5.7	6	12	10	7	0	1	2	0	0	0	0	1018.8
M	79.3	60.2	69.8	92	1965	31	1968	35	169	3.32	11.99	1970	0.33	1956	4.88	1970	0.0		0.0		76	80	53	66	10.7	SE	35	27	1957		5.6	8	13	10	7	0	2	1	1	0	0	0	1018.9
A	82.9	64.9	73.9	99	1971	43	1971	0	270	3.31	18.26	1942	0.04	1967	13.23	1942	0.0		0.0		76	77	53	64	10.9	E	53	28	1950		5.4	8	14	8	7	0	3	1	1	0	0	0	1017.5
M	86.1	68.9	77.5	96	1971	36	1971	0	388	5.17	16.30	1968	0.37	1967	7.04	1955	0.0		0.0		77	77	57	68	9.6	ESE	43	07	1954		5.9	7	13	11	11	0	8	0	4	0	0	0	1015.8
J	88.3	72.7	80.5	98	1972	62	1965	0	465	8.14	17.91	1966	1.07	1951	9.21	1945	0.0		0.0		83	82	66	76	8.0	ESE	71	09	1957		6.9	4	13	14	14	0	13	0	6	0	0	0	1015.8
J	89.6	74.1	81.9	98	1969	68	1973	0	524	6.52	17.76	1941	1.22	1961	5.05	1972	0.0		0.0		84	84	64	75	7.5	ESE	40	34	1974		6.7	3	16	14	18	0	16	0	16	0	0	0	1016.7
A	90.2	74.6	82.3	97	1970	68	1969	0	536	6.91	13.92	1930	2.16	1951	5.09	1949	0.0		0.0		83	84	63	75	7.6	ESE	50	13	1964		6.5	3	16	12	16	0	16	0	16	0	0	0	1017.1
S	88.3	74.7	81.5	93	1972	68	1973	0	495	9.09	24.86	1960	2.73	1939	8.71	1960	0.0		0.0		84	89	66	78	8.7	ENE	91	03	1949		7.0	2	14	14	17	0	11	0	8	0	0	0	1016.7
O	84.3	70.1	77.2	93	1971	46	1968	0	378	8.73	18.76	1965	1.80	1972	9.38	1965	0.0		0.0		80	83	63	74	10.0	ENE	74	16	1964		6.3	4	13	12	14	0	5	0	1	0	0	0	1015.8
N	79.3	63.3	71.8	89	1973	37	1970	22	202	2.48	10.77	1971	0.33	1970	5.57	1973	0.0		0.0		78	81	58	71	9.9	ENE	38	34	1959		5.6	7	14	9	9	0	1	1	0	0	0	0	1018.2
D	76.1	57.0	66.6	87	1972	30	1968	78	134	2.21	8.73	1949	0.06	1960	3.36	1953	0.0		0.0		77	79	57	71	9.9	NNW	36	07	1950		5.5	9	12	10	7	0	1	1	0	0	0	0	1019.3
YR	83.0	66.0	74.5	99	APR 1971	29	JAN 1970	299	3706	61.06	24.86	SEP 1960	0.04	APR 1967	13.23	APR 1942	0.0		0.0		80	81	59	72	9.4	ESE	88	13	AUG 1964		6.4	73	157	136	131	0	79	8	54	0	*	0	1017.8

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows: Highest temperature 101° in July 1942.

(a) Length of record, years, through the current year unless otherwise noted, based on January data.
(b) 70° and above at Alaskan stations.
* Less than one half.
T Trace

NORMALS - Based on record for the 1941-1970 period.
DATE OF AN EXTREME - The most recent in cases of multiple occurrence.
PREVAILING WIND DIRECTION - Record through 1963.
WIND DIRECTION - Numerals indicate tens of degrees clockwise from true north. 00 indicates calm.
FASTEST MILE WIND - Speed is fastest observed 1-minute value when the direction is in tens of degrees.

Data Source:
CLIMATOGRAPHY OF THE UNITED STATES NO. 60
Climate of Florida
NOAA, EDS, NCC, October, 1976

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

EXHIBIT TABLE 5.2

*NORMALS BY CLIMATOLOGICAL DIVISIONS

Taken from "Climatography of the United States No. 81-4, Decennial Census of U. S. Climate"

TEMPERATURE (°F)

STATIONS (By Divisions)	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
LOWER EAST COAST													
FORT LAUDERDALE	67.0	68.4	70.7	74.3	77.5	80.4	81.8	82.4	81.5	77.9	72.4	69.0	75.4
HOMESTEAD EXP STA	65.6	66.5	69.2	72.8	75.9	79.2	80.2	80.7	80.0	76.3	70.7	66.9	73.7
MIAMI BEACH	69.1	69.6	71.6	74.9	78.2	81.1	82.3	82.9	81.7	78.6	73.8	70.3	76.2
MIAMI WSO	66.9	67.9	70.5	74.2	77.6	80.8	81.8	82.3	81.3	77.8	72.4	68.1	75.1
MIAMI 12 SSW	66.5	67.4	70.4	74.2	77.5	80.4	81.4	82.0	81.0	77.2	71.4	67.7	74.6
WEST PALM BEACH WSO	66.9	67.4	69.9	73.9	77.6	81.0	82.6	83.0	82.1	78.2	72.5	68.2	75.2
DIVISION	66.9	67.6	70.0	73.6	77.8	80.2	81.5	82.0	81.0	77.4	72.0	68.2	74.8
KEYS													
KEY WEST WSO	69.6	70.4	72.5	75.8	79.0	81.8	83.3	83.6	82.3	79.0	74.1	70.6	76.8
KEY WEST	70.4	71.5	73.6	77.1	80.2	82.4	84.0	84.3	83.0	79.6	74.9	71.4	77.7
DIVISION	70.2	71.0	73.3	76.6	79.8	82.4	83.5	83.8	82.5	79.2	74.5	71.2	77.5

PRECIPITATION (In.)

STATIONS (By Divisions)	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
LOWER EAST COAST													
FORT LAUDERDALE	2.20	2.06	2.84	4.19	5.29	7.42	5.96	6.88	8.94	8.39	3.18	2.90	60.29
HOMESTEAD EXP STA	1.75	1.71	2.38	3.69	6.46	8.77	8.01	8.29	8.61	6.72	2.20	1.22	64.69
MIAMI BEACH	1.60	1.64	1.95	2.92	4.34	5.63	4.49	5.06	7.30	6.71	2.53	1.70	46.26
MIAMI WSO	2.03	1.87	2.27	3.88	6.44	7.37	6.79	6.97	9.47	8.21	2.83	1.67	59.76
MIAMI 12 SSW	2.05	1.80	2.44	3.75	6.13	7.00	6.50	6.25	9.03	8.23	2.59	1.63	57.40
WEST PALM BEACH WSO	2.48	2.39	3.44	4.34	5.11	7.53	6.60	6.74	9.66	7.96	2.06	2.57	61.78
DIVISION	2.16	2.02	2.82	3.90	5.49	7.44	6.65	6.02	9.47	8.15	2.84	2.17	60.00
KEYS													
KEY WEST WSO	1.53	1.98	1.77	2.48	2.73	3.97	4.16	4.33	6.73	5.82	2.80	1.69	39.99
KEY WEST	1.49	2.00	1.73	2.51	2.77	4.01	4.16	4.25	6.53	5.87	2.81	1.71	39.84
DIVISION	1.71	1.88	1.92	2.29	3.10	4.33	4.54	4.68	7.05	6.73	2.45	1.88	42.55

* Normals for the period 1931-1960. Divisional normals may not be the arithmetical average of individual stations published, since additional data for shorter period stations are used to obtain better areal representation.

CONFIDENCE - LIMITS

In absence of trend or record changes, the chances are 9 out of 10 that the true mean will lie in the interval formed by adding and subtracting the values in the following table from the means for any station in the State. Because of the wider variation in mean precipitation, the corresponding monthly means and annual mean must be substituted for "p" in the precipitation table below to obtain mean precipitation confidence limits.

1.3	1.3	1.1	.8	.5	.4	.4	.3	.4	.5	.8	1.2	.4	39√p	37√p	44√p	48√p	47√p	48√p	38√p	43√p	53√p	50√p	44√p	35√p	44√p

COMPARATIVE DATA

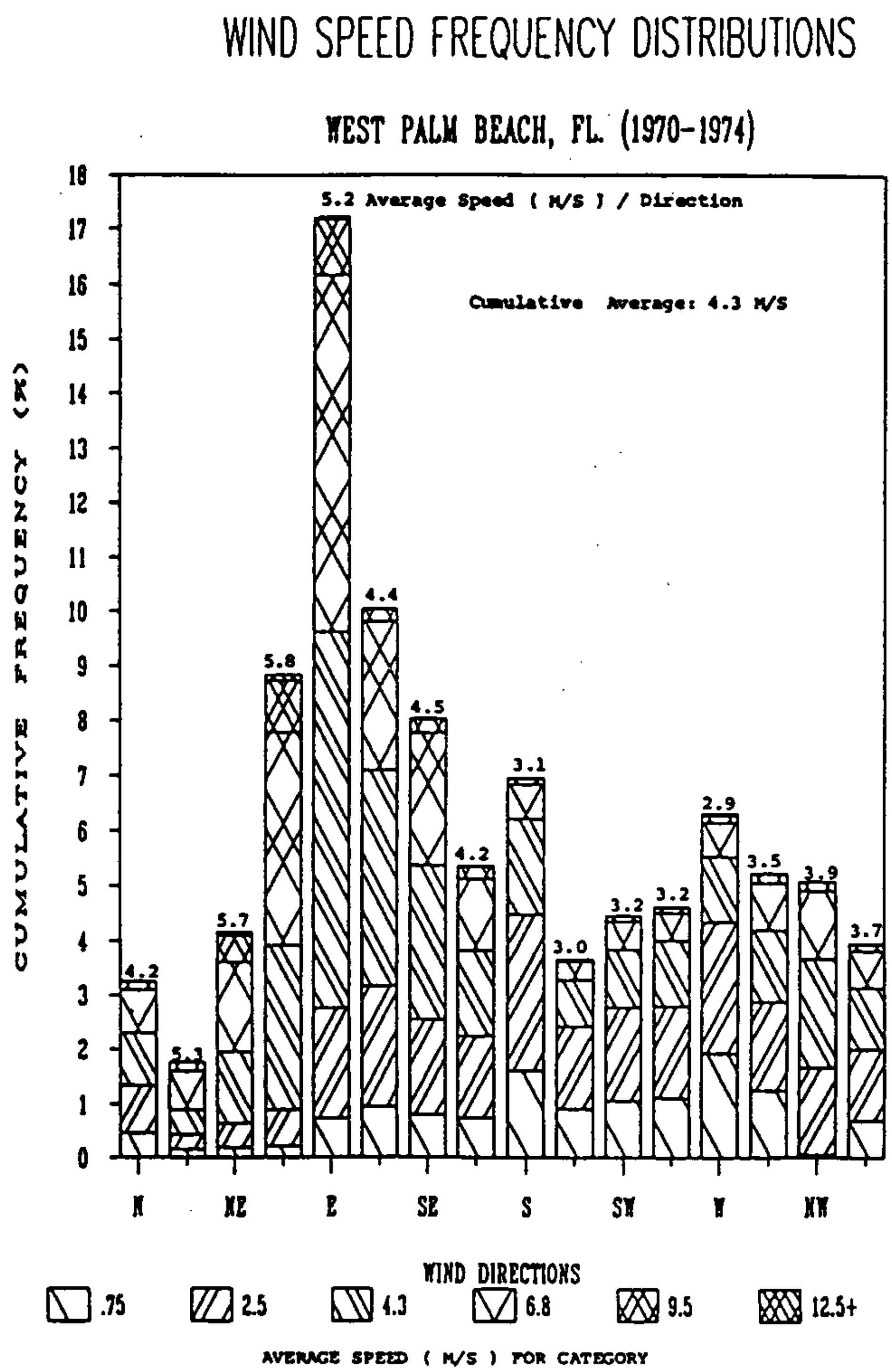
Data in the following table are the mean temperature and average precipitation for St. Leo's Abbey, Florida, for the period 1901-1930 and are included in this publication for comparative purposes.

60.3	61.7	66.3	70.6	75.8	79.2	80.8	80.7	79.2	73.2	65.4	60.3	71.1	2.07	2.54	2.90	2.20	4.44	8.19	8.22	8.40	6.91	3.70	2.30	2.51	55.16

Data Source: CLIMATE OF THE STATES, Vol.1, Water Information Center, Inc., 1974

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

EXHIBIT TABLE 5.3



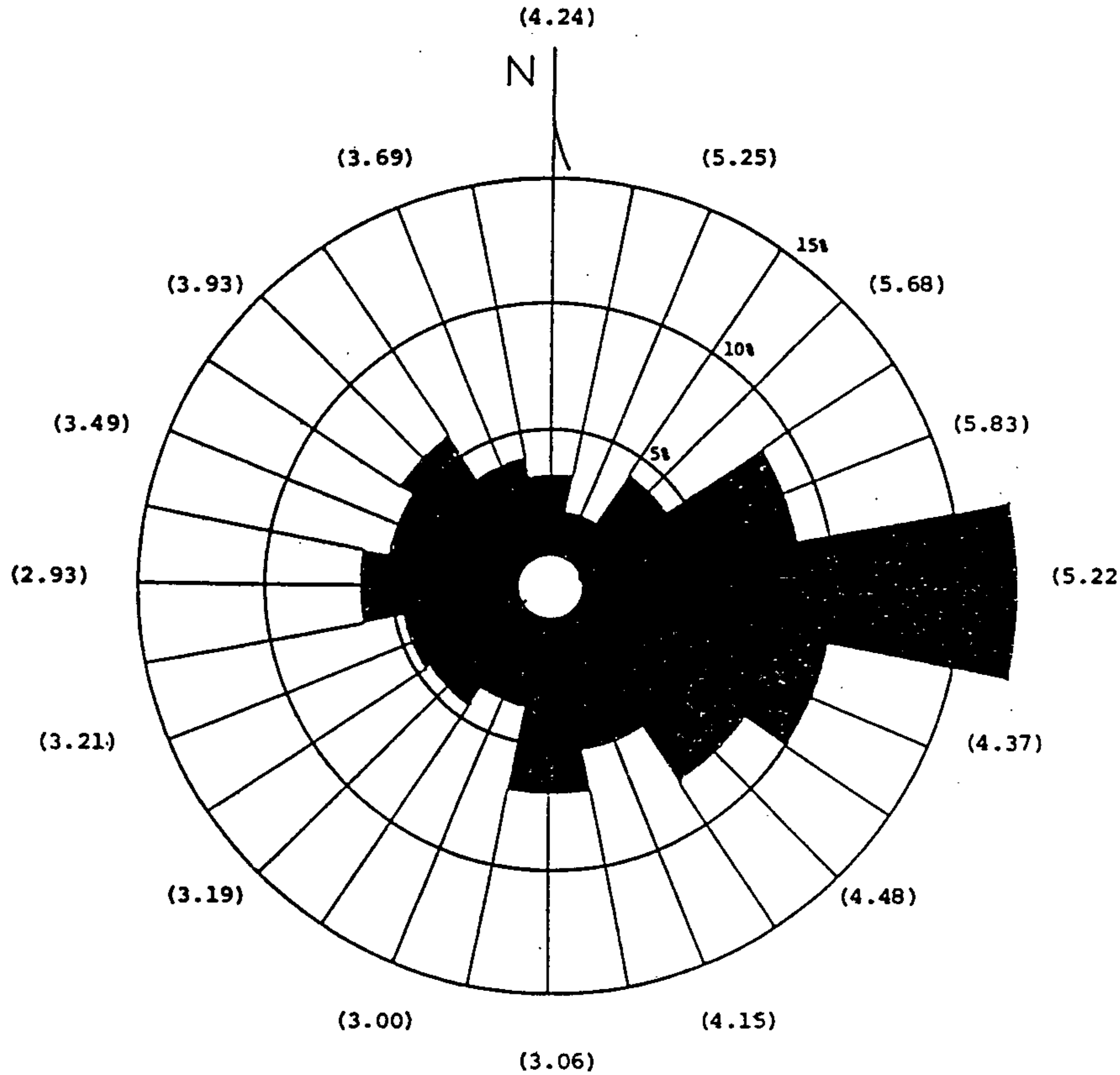
PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

FIGURE 5.5

WIND DIRECTION FREQUENCY DISTRIBUTION

WEST PALM BEACH: 1970-1974

(Annual Average Wind Speed: 4.3 M/S)

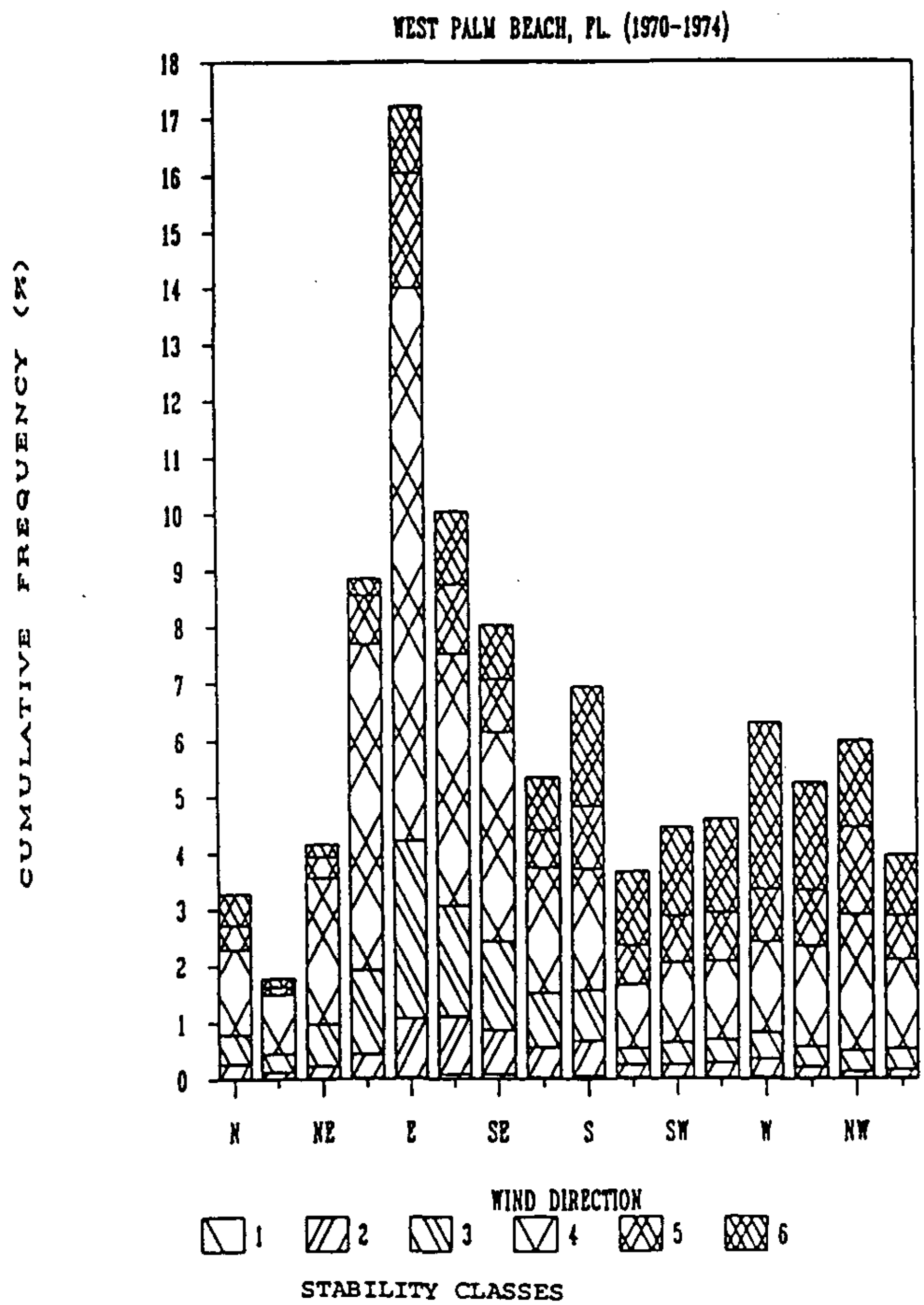


Average Wind Speed: (m/s)

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

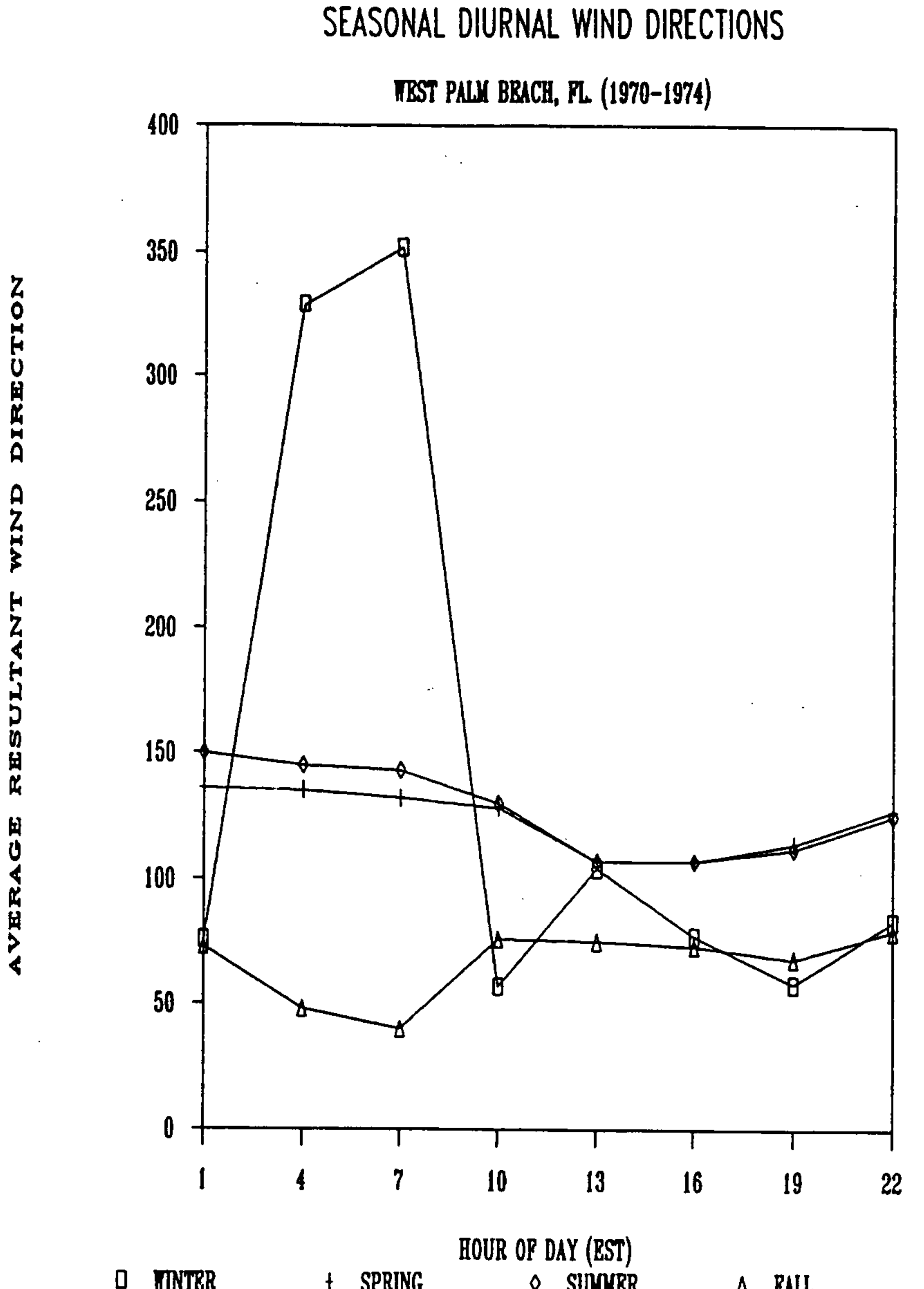
FIGURE 5.6

STABILITY CLASS FREQUENCY DISTRIBUTIONS



PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

FIGURE 5.7



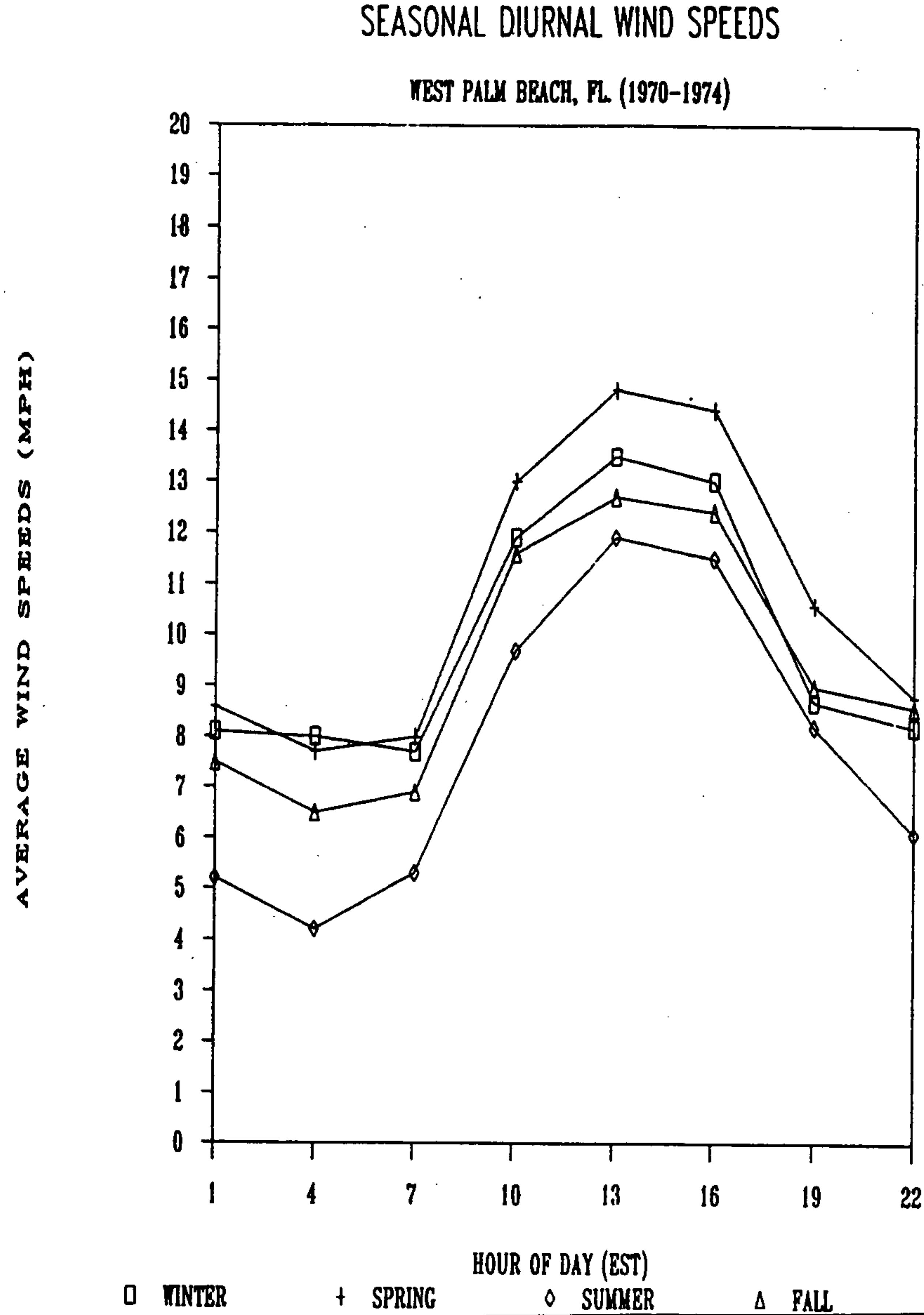
PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

FIGURE 5.8

the fall season. The winter season curve is erratic particularly during the early morning hours, but tends to correspond with that of the fall season during the daylight and early evening hours.

The diurnal wind direction patterns give no indication of a diurnal shift that would be consistent with an ocean sea breeze. They, instead confirm the dominant easterly trade winds that were observed in the annual wind direction frequency roses. The seasonal diurnal wind speed distributions shown in Figure 5.9 all have the same general form. The minimum wind speeds occurred at or between 0400-0700. The minimum average speed was 1.9 m/s (4.3 mph) at 0400 during the summer season. The maximum wind speeds occured at 1300. The highest average speed was 6.6 m/s (14.8 mph) during the spring season. The spring season (except at 0400) has the highest diurnal average wind speeds and the summer season (without exception) has the lowest diurnal average wind speed.

Seasonal mixing heights for the West Palm Beach, based on G.C. Holtzworth, differ slightly from those of Miami when they are extracted from Holtzworth's isopheth maps. These values are given in Exhibit Table 5.4.



PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

FIGURE 5.9

EXHIBIT TABLE 5.4

HOLTZWORTH* MIXING HEIGHTS FOR WEST PALM BEACH AND MIAMI

	MORNING		AFTERNOON	
PERIOD	WEST PALM	MIAMI#	WEST PALM	MIAMI#
ANNUAL	800	923	1375	1351
SPRING	800	980	1400	1457
SUMMER	900	1071	1400	1383
FALL	800	933	1350	1341
WINTER	700	707	1175	1221

*G.C. Holtzworth, Mixing Heights, Winds Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States: USEPA AP-101, January, 1972.

#APPENDIX B, Table B-1; all cases, Holtzworth, 1972.

5.4.2 Available Sources of Meteorological Data

When refined dispersion modeling analyses are performed, a full year (or more) of meteorological data is required. The short-term dispersion models require hour-by-hour meteorological data and the long-term models require seasonal or annual average data. The meteorological parameters needed include wind direction, wind speed, temperature, cloud cover, solar insolation, and mixing height. Mixing height is calculated using the CRSTER preprocessor program from surface temperature and upper air soundings of the rate of temperature change with height, the latter of which are usually obtained by balloon measurements.

The nearest NWS station to the proposed waste-to-energy facility is West Palm Beach Airport which is located 9.5 kilometers (5.9 miles) to the southeast. The nearest NWS station for upper air data is Miami Airport located 100 kilometers (62 miles) to the south. The Florida DER provided the most recent five-year surface and upper air meteorological data for the years 1970 thru 1974 inclusive and these data were used for the ISCST model runs.

5.4.3 Procedures for Using the Meteorological Data

Each of the five years of hourly meteorological data are used in separate refined modeling analyses to determine the maximum impacts of the proposed source by itself. The meteorological days which produced the 50 maximum 1, 3, 8 and 24-hour impacts for each of the 5 years were used in subsequent refined multisource modeling analyses to determine compliance with NAAQS consumption. Tables 5-5A thru E list these days for each of the years 1970 thru 1974. These results have been replaced by refined multisource modeling based all hourly meteorological data available.

5.5 Receptor Selection

5.5.1 Procedures for Receptor Selection

Receptor selection is an important part of the modeling analysis. Receptors must be selected in such a manner as to ensure that all possible locations of maximum impact are included in the analysis. This can be accomplished by developing receptor grids, supplemented by discrete receptors at critical locations, if necessary. Two types of receptor grids can be used, rectangular or polar.

With a rectangular grid, receptors are placed at the intersections of a selected set of equally spaced map coordinate lines, where the lines are oriented north/south and east/west. The selected set of receptors is usually centered on the proposed source and extends outward a prescribed distance. Available map coordinate systems include latitude/longitude, Universal Transverse Mercator (UTM) meters, and State grid feet. With a polar grid, receptors are placed at the intersections of radials that extend out from the proposed source. In order to develop a polar receptor grid, the PTPLU and PTDIS models were first used to predict maximum hourly impacts of the proposed source, based on PTPLU's built-in set of hypothetical meteorological data. For this analysis, the receptor elevation in PTPLU is set equal to the highest terrain elevation found within 1 kilometer of the proposed source's stack. The proposed source is modeled using PTPLU to determine the distances (without regard to direction) at which

TABLE 5-5A

METEOROLOGICAL DAYS OF OCCURRENCE FOR THE 50 MAXIMUM IMPACTS FOR THE INDICATED TIME PERIOD
BASED ON INITIAL ISCST MODEL RUN FOR THE YEAR 1970

1-HOUR MAXIMUM DAY	3-HOUR MAXIMUM DAY	8-HOUR MAXIMUM DAY	24-HOUR MAXIMUM DAY	CUMULATIVE DAY	
49	20	60	33	20	215
155	32	61	60	32	216
161	33	73	61	33	218
164	60	76	121	49	224
175	73	121	129	60	226
176	121	152	242	61	228
180	139	194	269	73	231
187	218	211	270	76	239
190	224	215	279	121	241
216	226	226	280	129	242
306	228	231	292	139	269
318	231	241	328	152	270
	239	270	342	161	274
	241	291		164	279
	270	342		175	280
	274			176	291
	342			180	292
				187	306
				190	318
				194	328
				211	342

TABLE 5-5B

METEOROLOGICAL DAYS OF OCCURRENCE FOR THE 50 MAXIMUM IMPACTS FOR THE INDICATED TIME PERIOD
BASED ON INITIAL ISCST MODEL RUN FOR THE YEAR 1971

1-HOUR MAXIMUM DAY	3-HOUR MAXIMUM DAY	8-HOUR MAXIMUM DAY	24-HOUR MAXIMUM DAY	CUMULATIVE DAY	
104	19	33	19	19	196
148	34	58	33	33	207
157	58	114	34	34	211
162	85	186	58	58	214
166	111	214	101	85	215
168	114	268	268	101	220
171	168	309	310	104	256
172	172	319	319	111	268
176	191	320	320	114	309
195	193	321	321	148	319
196	207	327	327	157	320
211	220	336	335	162	321
215	309	353	357	166	327
220	319	357		168	335
256	320	358		171	336
319	353	359		172	353
	356			176	356
	357			186	357
	359			191	358
				193	359
				195	

TABLE 5-5C

METEOROLOGICAL DAYS OF OCCURRENCE FOR THE 50 MAXIMUM IMPACTS FOR THE INDICATED TIME PERIOD
BASED ON INITIAL ISCST MODEL RUN FOR THE YEAR 1972

1-HOUR MAXIMUM DAY	3-HOUR MAXIMUM DAY	8-HOUR MAXIMUM DAY	24-HOUR MAXIMUM DAY	CUMULATIVE DAY	
40	16	71	71	16	183
75	17	81	101	17	193
88	62	95	119	40	195
103	71	100	120	62	206
170	94	101	127	71	209
172	95	126	168	75	212
183	100	127	170	81	215
193	101	170	174	88	218
195	119	209	285	94	225
206	126	280	295	95	228
215	127	285	296	100	232
218	133	286	306	101	233
225	169	287		103	280
228	170	294		119	285
232	171	295		120	286
233	193			126	287
	209			127	294
	212			133	295
	233			168	296
	280			169	306
	294			170	351
	295			171	353
	296			172	356
	351			174	
	353				
	356				

TABLE 5-5D

METEOROLOGICAL DAYS OF OCCURRENCE FOR THE 50 MAXIMUM IMPACTS FOR THE INDICATED TIME PERIOD
BASED ON INITIAL ISCST MODEL RUN FOR THE YEAR 1973

1-HOUR MAXIMUM DAY	3-HOUR MAXIMUM DAY	8-HOUR MAXIMUM DAY	24-HOUR MAXIMUM DAY	CUMULATIVE DAY	
119	17	17	17	17	177
132	29	29	32	29	179
142	33	32	74	32	182
143	64	33	84	33	186
167	94	74	105	64	189
177	97	84	106	74	191
182	104	97	107	84	209
186	105	104	108	94	217
187	107	106	110	97	221
189	108	107	111	104	234
191	110	108	284	105	258
209	111	111	285	106	259
217	112	121	294	107	261
221	132	122	295	108	262
234	179	123		110	266
258	186	179		111	267
262	259	287		112	284
266	261	294		119	285
267	266	314		121	287
	284	315		122	294
	285			123	295
	296			132	296
	314			142	314
	315			143	315
	355			167	355

TABLE 5-5E

METEOROLOGICAL DAYS OF OCCURRENCE FOR THE 50 MAXIMUM IMPACTS FOR THE INDICATED TIME PERIOD
BASED ON INITIAL ISCST MODEL RUN FOR THE YEAR 1974

1-HOUR MAXIMUM DAY	3-HOUR MAXIMUM DAY	8-HOUR MAXIMUM DAY	24-HOUR MAXIMUM DAY	CUMULATIVE DAY	
80	39	65	74	39	197
90	47	73	101	47	201
127	73	74	110	65	204
133	74	101	111	73	205
155	83	102	277	74	208
158	92	103	278	80	211
173	101	110	285	83	222
197	102	111	294	90	229
201	111	115	295	92	231
204	115	137	357	101	234
205	130	184		102	247
208	161	278		103	256
211	170	279		110	265
222	184	294		111	267
229	265	295		115	277
231	277	296		127	278
234	278	330		130	279
247	284	357		133	284
256	295			137	285
267	306			155	294
				158	295
				161	296
				170	306
				173	330
				184	357

maximum impacts occur. All maximum distances were approximated as rings in the ISCST modeling with additional rings at prudent intervals.

A polar grid was used in the screening model analyses to determine the size of the modeling area. A polar grid was also used on the refined RDF source and multisource modeling analyses. Discrete receptors were placed at ambient air quality monitoring stations within the study area. Table 5-6 lists the monitoring stations together with the pollutions that are monitored at each site. When additional refined modeling was performed, these discrete receptors were supplimented by the location of the specific sources and the nearest point of impact of the Class I area: Everglades National Park. The UMT coordinates for all the discrete receptors are shown in Table 5-6A.

5.6 Modeling Procedures and Preliminary Analysis Results

5.6.1 PTPLU and PTDIS Screening Modeling Analyses

The initial screening modeling analyses were performed to determine the critical downward distances using PTPLU and PTDIS models. All receptors and the proposed facility were assumed to be at zero elevations. Maximum impacts depending on stability class were identified at 571, 926, 1046 and 1615 meters. 571 meters is within the facility boundaries.

5.6.2 ISCST Modeling Analyses

Initial modeled impacts were calculated at 27 concentric rings of receptors centered on the proposed waste to energy facility stack and spaced at every 6° azimuth. The ring distances from the stack were selected based on the results of the earlier screening modeling analyses performed using the PTPLU model with the source located at UMT coordinate 2960180 N. Supplemental model impacts were generated when the location of the source was moved due north from UMT coordinate 2960180 N to 2960474 N. These SO_2 impacts were calculated on a 1-hour, 3-hour, 8-hour, 24-hour and annual average basis using ISCST. SO_2 impacts were calculated for each of the five years (1970 through 1974) of available meteorological data. The impacts of each of the other pollutants emitted by the facility were determined based on the ratio of the emission rate of the other pollutant versus the appropriate SO_2 emission rate.

Refined multisource runs were performed for the existing sources in Table 5-7 to determine the maximum combined SO_2 impacts of all sources. Also included in Table 5-7 are the stack parameters and UTM coordinates for each source. Since single source ISCST modeling determined that the proposed source did not produce significant short-term SO2 impacts upon the existing sources (see Tables 5-8 and 5-8A) only the impacts of the existing sources in combination with the proposed source downwind of the proposed source were evaluated by ISCST. Downwind radials were located at the angle

TABLE 5-6

MONITORING STATION LOCAL ADDRESSES, UTM COORDINATES AND LOCATION (DISTANCE & ANGLE) RELATIVE TO THE PROPOSED PALM BEACH COUNTY RDF FIRED WATERWALL FURNACE FACILITY

(FACILITY UMT COORDINATES: 2960474N; 585820E; UMT ZONE 17)

SITE NO.	ADDRESS (MONITORING CAPABILITY)	UTM COORDINATES ZONE 17	DISTANCE FROM PROPOSED FACILITY (METERS)	DIRECTION RELATIVE TO PROPOSED FACILITY (NORTH = 0 (360) DEGREES) (DEGREES)
1 (4760-001)	WEST PALM BEACH WATER TREATMENT PLANT FIRST STREET & TAMARIND AVENUE WEST PALM BEACH, FLORIDA (CO, NO2, METEOROLOGY)	2955030N 0593232E	9197	126
1 A (4760-003)	PALM BEACH COUNTY HEALTH DEPARTMENT 901 EVERNIA STREET WEST PALM BEACH, FLORIDA (SUSPENDED PARTICULATE)	2955030N 0593232E	9197	126
2 (3060-001)	NORTH PALM BEACH WATER TREATMENT PLANT 603 ANCHORAGE DRIVE NORTH PALM BEACH, FLORIDA (SUSPENDED PARTICULATE)	2965817N 0592780E	8774	053
3 (2220-001)	LAKE WORTH WATER TREATMENT PLANT 301-303 COLLEGE STREET LAKE WORTH, FLORIDA (SUSPENDED PARTICULATE)	2943537N 0592793E	18316	158
4 (1000-002)	DELRAY BEACH WATER TREATMENT PLANT 202 NW FIRST STREET DELRAY BEACH, FLORIDA (SUSPENDED PARTICULATE)	2927488N 0592195E	33596	169
5 (0280-001)	BOCA RATON FIRE STATION #1 1151 NORTH FEDERAL HIGHWAY BOCA RATON, FLORIDA (SUSPENDED PARTICULATE)	2915768N 0591313?E	45042	173

TABLE 5.6 Cont'd

MONITORING STATION LOCAL ADDRESSES, UTM COORDINATES AND LOCATION (DISTANCE & ANGLE) RELATIVE TO THE PROPOSED PALM BEACH COUNTY RDF FIRED WATERWALL FURNACE FACILITY

(FACILITY UMT COORDINATES: 2960474N; 585820E; UMT ZONE 17)

SITE NO.	ADDRESS (MONITORING CAPABILITY)	UTM COORDINATES ZONE 17	DISTANCE FROM PROPOSED FACILITY (METERS)	DIRECTION RELATIVE TO PROPOSED FACILITY (NORTH = 0 (360) DEGREES) (DEGREES)
6 (3420-005)	SOUTHWEST FIRE DEPARTMENT 1108 SOUTH MILITARY TRAIL WEST PALM BEACH, FLORIDA (SUSPENDED PARTICULATE)	2949018N 0588207E	11702	168
7 (0280-002)	COLLEGE OF BOCA RATON SOUTH MILITARY TRAIL BOCA RATON, FLORIDA (SUSPENDED PARTICULATE)	2918354N 0587320E	42147	178
8 (3420-006)	SOUTH FLORIDA WATER MANAGEMENT PUMP STATION TWENTY MILE BEND STATE ROAD 80 (SUSPENDED PARTICULATE, OZONE, METEOROLOGY)	2951402N 0562879E	24669	248
9 (3340-001)	PAHOKEE SEWAGE TREATMENT PLANT 1050 McCLURE ROAD PAHOKEE, FLORIDA (SUSPENDED PARTICULATE)	2964200N 0532300E	53650	274
10 (3420-007)	ROYAL PALM BEACH R.V. AREA 10999 OKEECHOBEE BOULEVARD ROYAL PALM BEACH, FLORIDA (OZONE, METEOROLOGY)	2954150N 0578100E	9980	231
11 (3840-003)	PALM BEACH COUNTY HEALTH DEPARTMENT WAREHOUSE 2030 AVENUE "L" RIVIERA BEACH, FLORIDA (SULFUR DIOXIDE)	2962350N 0592490E	6919	074
12 (0240-003)	BELLE GLADE HEALTH DEPARTMENT 1024 NW AVENUE "D" BELLE GLADE, FLORIDA (SUSPENDED PARTICULATE)	2953082N 0533160E	53176	262

TABLE 5-6A

DISCRETE RECEPTOR SEQUENCE
RFD FACILITY UMT COORDINATES: 2960474 N; 585820 E
UMT ZONE 17

STATION SAROAD NO.	SITE NO.	UNIT COORD. (ZONE 17)	STATION SAROAD NO.	SITE NO.	UNIT COORD. (ZONE 17)
4760-001 4760-003	1 & 1A	2955030 N 0593232 E	3060-001	2	2965817 N 0592780 E
2220-001	3	2943537 N 0592793 E	1000-002	4	2927488 N 0592195 E
0280-001	5	2915768 N 05913137 E	3420-005	6	2949018 N 0588207 E
0280-002	7	2918354 N 0587320 E	3420-006	8	2951402 N 0562879 E
3340-001	9	2964200 N 0532300 E	3420-007	10	2951402 N 0578100 E
3840-003	11	2962350 N 0592480 E	0240-003	12	2953082 N 0533160 E

ADDITIONAL RECEPTORS

EVERGLADES NATIONAL PARK	2848635 N 0533619 E	PRATT & WHITNEY	2974400 N 0565500 E
FLORIDA POWER & LIGHT	2960600 N 0594200 E	LAKE WORTH UTILITIES	2943700 N 0592800 E

TABLE 5-8

SO2 IMPACT OF THE PROPOSED FACILITY ON EXISTING MAJOR SO2 SOURCES
WITHIN THE MODELING AND SCREENING AREA

(FACILITY UMT COORDINATES: 2960474N;585820E;UMT ZONE 17)

SOURCE NO.	NAME & ADDRESS	DISTANCE (METERS)/ DIRECTION (DEGREES) (NORTH = 0 (360) DEGREES) RELATIVE TO PROPOSED FACILITY	MET YEAR	MAXIMUM IMPACT OF PROPOSED FACILI ON THE EXISTING SOURCE (UG/M3) 3-HOUR(1)	24-HOUR(1)	ANNUAL MEAN
1	PRATT & WHITNEY	24634/304	1970	14.7	3.1	0.22
	301-303 COLLEGE STREET		1971	17.9	3.1	0.27
	LAKE WORTH, FLORIDA		1972	14.2	3.1	0.26
	UTM ZONE 17;		1973	12.6	3.7	0.34
	2974400N; 0565500E		1974	12.1	3.1	0.28
2	FLORIDA POWER & LIGHT	8381/089	1970	25.3	4.7	0.29
	RIVIERA BEACH, FLORIDA		1971	15.6	3.7	0.24
	UTM ZONE 17;		1972	15.8	4.0	0.21
	2960600N; 0594200E		1973	20.1	4.6	0.21
			1974	19.2	3.7	0.23
3	LAKE WORTH UTILITIES AUTHORITY	18168/157	1970	9.3	2.5	0.16
	TOM G. SMITH MUNICIPAL POWER PLANT		1971	15.1	2.9	0.15
	127 COLLEGE STREET		1972	14.9	2.1	0.16
	LAKE WORTH, FLORIDA 33460		1973	13.6	3.6	0.20
	UTM ZONE 17;		1974	12.7	2.3	0.15
	2943700N; 0592800E					

Note 1: Highest Second Highest Concentration (2100 TPD; 99.2 GMS^{-1}; 29.9 MS^{-1})

Note 2: Average of N Days (1800 TPD; 85.1 GMS^{-1}; 21.3 MS^{-1})

HAYDEN-WEGMAN /
BARKER, OSHA & ANDERSON
ENGINEERS - PLANNERS

TABLE 5-8A

SO_2 IMPACTS OF COMBINED SOURCES ON EXISTING MAJOR SOURCES

(FACILITY UMT COORDINATES: 2960474N; 585820E; UMT ZONE 17)

SOURCE NO.	NAME & ADDRESS	DISTANCE (METERS)/ DIRECTION (DEGREES) (NORTH = 0 (360) DEGREES) RELATIVE TO PROPOSED FACILITY	MET YEAR	COMBINED SOURCES IMPACTS ON THE EXISTING SOURCES: 3-HOUR (1)	24-HOUR (1)	ANNUAL MEAN (2)
1	PRATT & WHITNEY 301-303 COLLEGE STREET LAKE WORTH, FLORIDA UTM ZONE 17; 2974400N; 0565500E	24634/304	1970	273	69	3.2
			1971	163	32	3.0
			1972	195	36	3.2
			1973	163	35	3.4
			1974	179	41	3.4
2	FLORIDA POWER & LIGHT RIVIERA BEACH, FLORIDA UTM ZONE 17; 2960600N; 0594200E	8381/089	1970	329	42	3.2
			1971	483	73	4.8
			1972	306	61	4.3
			1973	283	61	4.5
			1974	359	61	4.7
3	LAKE WORTH UTILITIES AUTHORITY TOM G. SMITH MUNICIPAL POWER PLANT 127 COLLEGE STREET LAKE WORTH, FLORIDA 33460 UTM ZONE 17; 2943700N; 0592800E	18168/157	1970	156	26	1.8
			1971	80	17	1.8
			1972	349	55	2.7
			1973	163	23	1.9
			1974	153	26	2.1

NOTE 1: Highest Second Highest (RDF: 2100TPD, 99.2 GMS^{-1}; 29.9 MS^{-1})

NOTE 2: Average of N Days (RDF: 1800TPD; 85.1 GMS^{-1}, 21.3 MS^{-1})

from each existing source to the proposed source and at 1° increments and decrements to ± 5° or an 11° sector downwind of the proposed source. Rings were selected from the minimum fence line distance of 730 meters and for every 100 meters starting at 800 meters thru 2000 meters inclusive. This procedure yielded a total of 33 radials and 14 rings which were used for all the refined multisource ISCST model runs.

5.6.3 Modeling Results

The results of the five years of single source ISCST modeling analysis are summarized by year in Tables 5-9A thru E. Cumulative 5-year results are presented in Table 5-9F. The data in Table 5-9F show that the proposed facility will not produce any impacts that exceed ambient air quality standards or PSD requirements.

The results of five years of ISCST multisource modeling analysis are summarized in Table 5-10.

Table 5-11 provides an overall summary of both single and multisource impacts as well as background levels and the Air Quality and PSD standards and demonstrates that the proposed facility's air quality impact together with other sources will not exceed ambient air quality or PSD requirements. These results are portrayed in Figures 5-10 and 5-11.

TABLE 5-9A

IMPACT OF PALM BEACH COUNTY RDF FIRED SPREADER STOKER FURNACES ON AIR QUALITY
BASED ON ISCST MODEL FOR METEOROLOGICAL YEAR 1970

HIGHEST 2ND HIGH MODELED CONCENTRATION (UG/M3) FOR THE INDICATED AVERAGING TIMES (1)

	1-HOUR (2) (1000M; 108D) (D175; P12)	3-HOUR (2) (1400M; 268D) (D218; P5)	8-HOUR (2) (1300M; 264D) (D231; P2)	24-HOUR (2) (1200M; 252D) (D121)	ARITHMETIC MEAN (3) (1400M; 268D)
CARBON MONOXIDE	152.0	100.0	78.6	34.6	5.1
NITROGEN DIOXIDE	50.8	33.5	26.3	11.6	1.7
SULFUR DIOXIDE	114.0	75.4 (76.7)*	59.1	26.0	3.8
CHLORIDES	44.5	29.3	23.0	10.1	1.5
VOLATILE ORGANIC COMPOUNDS	2.5	1.7	1.3 E-1	5.8 E-1	8.5 E-2
PARTICULATE MATTER	8.3	5.5	4.3	1.9	2.8 E-1
SULFURIC ACID MIST	5.1 E-3	3.3 E-3	2.6 E-3	1.2 E-3	1.7 E-4
FLUORIDES	5.1 E-1	3.4 E-1	2.6 E-1	1.2 E-1	1.7 E-2
LEAD	1.8 E-1	1.2 E-1	9.2 E-2	4.0 E-2	5.9 E-3
MERCURY	3.8 E-2	2.5 E-2	2.0 E-2	8.7 E-3	1.3 E-3
BERYLLIUM	1.1 E-4	7.5 E-5	5.9 E-5	2.6 E-5	3.8 E-6
2,3,7,8-TCDD	1.1 E-6	7.1 E-7	5.6 E-7	2.5 E-7	3.6 E-8

NOTES

1. Data developed by ISCST modeling the impacts of the SO_2 emission then multiplying The ratio of the component emission to the SO_2 emission by the maximum SO_2 impact to determine the component's impact.
2. Based on 2100 TPD-fired; 99.2 $gmsec^{-1}$ SO_2; vs = 24.9 ms^{-1}
3. Based on 1800 TPD-fired; 85.1 $gmsec^{-1}$ SO_2; vs = 21.3 ms^{-1}; 365 days

* Value of 76.7 ug/m^3 at 1200M; 267D (D226; P4)

TABLE 5-9B

IMPACT OF PALM BEACH COUNTY RDF FIRED SPREADER STOKER FURNACES ON AIR QUALITY BASED ON ISCST MODEL FOR METEOROLOGICAL YEAR 1971

HIGHEST 2ND HIGH MODELED CONCENTRATION (UG/M3) FOR THE INDICATED AVERAGING TIMES (1)

	1-HOUR (2) (730M; 096D) (D104; P12)	3-HOUR (2) (1200M; 324D) (D206; P5)	8-HOUR (2) (1300M; 268D) (D168; P2)	24-HOUR (2) (730M; 258D) (D327)	ARITHMETIC MEAN (3) (1400M; 269D)
CARBON MONOXIDE	176.0	89.8	58.8	29.9	3.3
NITROGEN DIOXIDE	58.7	30.0	19.6	10.0	1.1
SULFUR DIOXIDE	132.0	67.5 (71.3)*	44.2	22.5	2.5
CHLORIDES	51.3	26.3	17.2	8.8	9.6 E-1
VOLATILE ORGANIC COMPOUNDS	2.9	1.5	9.8 E-1	5.0 E-1	5.5 E-2
PARTICULATE MATTER	9.6	4.9	3.2	1.6	1.8 E-1
SULFURIC ACID MIST	5.8 E-3	3.0 E-3	2.0 E-3	1.0 E-3	1.1 E-4
FLUORIDES	5.9 E-1	3.0 E-1	2.0 E-1	1.0 E-1	1.1 E-2
LEAD	2.1 E-1	1.1 E-1	6.9 E-2	3.5 E-2	3.9 E-3
MERCURY	4.4 E-2	2.2 E-2	1.5 E-2	7.5 E-3	8.3 E-4
BERYLLIUM	1.3 E-4	6.8 E-5	4.4 E-5	2.3 E-5	2.5 E-6
2,3,7,8-TCDD	1.2 E-6	6.4 E-7	4.2 E-7	2.1 E-7	2.4 E-8

NOTES

1. Data developed by ISCST modeling the impacts of the SO_2 emission then multiplying The ratio of the component emission to the SO_2 emission by the maximum SO_2 impact to determine the component's impact.
2. Based on 2100 TPD-fired; 99.2 $gmsec^{-1}$ SO_2; vs = 24.9 ms^{-1}
3. Based on 1800 TPD-fired; 85.1 $gmsec^{-1}$ SO_2; vs = 21.3 ms^{-1}; 365 days

* Value of 71.3 ug/m^3 at 1300M; 273D (D168; P5)

TABLE 5-9C

IMPACT OF PALM BEACH COUNTY RDF FIRED SPREADER STOKER FURNACES ON AIR QUALITY BASED ON ISCST MODEL FOR METEOROLOGICAL YEAR 1972

HIGHEST 2ND HIGH MODELED CONCENTRATION (UG/M3) FOR THE INDICATED AVERAGING TIMES (1)

	1-HOUR (2) (730M; 264D) (D225; P12)	3-HOUR (2) (1300M; 060D) (D233; P4)	8-HOUR (2) (1400M; 300D) (D222; P2)	24-HOUR (2) (730M; 246D) (D295)	ARITHMETIC MEAN (3) (1500M; 268D)
CARBON MONOXIDE	180.0	93.1	55.3	27.4	3.4
NITROGEN DIOXIDE	60.3	31.1	18.5	9.2	1.2
SULFUR DIOXIDE	136.0	70.0	41.6	20.6	2.6
CHLORIDES	52.7	27.2	16.2	8.0	1.0
VOLATILE ORGANIC COMPOUNDS	3.0	1.6	9.2 E-1	4.6 E-1	5.7 E-2
PARTICULATE MATTER	9.8	5.1	3.0	1.5	1.9 E-1
SULFURIC ACID MIST	6.0 E-3	3.1 E-3	1.8 E-3	9.1 E-4	1.1 E-4
FLUORIDES	6.0 E-1	3.1 E-1	1.8 E-1	9.2 E-2	1.2 E-2
LEAD	2.1 E-1	1.1 E-1	6.5 E-2	3.2 E-2	4.0 E-3
MERCURY	4.5 E-2	2.3 E-2	1.4 E-2	6.9 E-3	8.6 E-4
BERYLLIUM	1.4 E-4	7.0 E-5	4.2 E-5	2.1 E-5	2.6 E-6
2,3,7,8-TCDD	1.3 E-6	6.6 E-7	3.9 E-7	2.0 E-7	2.5 E-8

NOTES

1. Data developed by ISCST modeling the impacts of the SO2 emission then multiplying The ratio of the component emission to the SO2 emission by the maximum SO2 impact to determine the component's impact.
2. Based on 2100 TPD-fired; 99.2 $gmsec^{-1}$ SO_2; vs = 24.9 ms^{-1}
3. Based on 1800 TPD-fired; 85.1 $gmsec^{-1}$ SO_2; vs = 21.3 ms^{-1}; 366 days

TABLE 5-9D

IMPACT OF PALM BEACH COUNTY RDF FIRED SPREADER STOKER FURNACES ON AIR QUALITY
BASED ON ISCST MODEL FOR METEOROLOGICAL YEAR 1973

HIGHEST 2ND HIGH MODELED CONCENTRATION (UG/M3) FOR THE INDICATED AVERAGING TIMES (1)

	1-HOUR (2) (730M; 054D) (D187; P11)	3-HOUR (2) (1300M; 274D) (D123; P5)	8-HOUR (2) (1300M; 294D) (D247; P2)	24-HOUR (2) (730M; 269D) (D107)	ARITHMETIC MEAN (3) (1500M; 270D)
CARBON MONOXIDE	182.0	88.6	56.4	31.3	3.6
NITROGEN DIOXIDE	60.8	29.6	18.8	10.4	1.2
SULFUR DIOXIDE	137.0	66.6	42.4	23.5	2.7
CHLORIDES	53.2	25.9	16.5	9.1	1.1
VOLATILE ORGANIC COMPOUNDS	3.0	1.5	9.4 E-1	5.2 E-1	6.0 E-2
PARTICULATE MATTER	9.9	4.8	3.1	1.7	2.0 E-1
SULFURIC ACID MIST	6.1 E-3	3.0 E-3	1.9 E-3	1.0 E-3	1.2 E-4
FLUORIDES	6.1 E-1	3.0 E-1	1.9 E-1	1.0 E-1	1.2 E-2
LEAD	2.1 E-1	1.0 E-1	6.6 E-2	3.7 E-2	4.2 E-3
MERCURY	4.6 E-2	2.2 E-2	1.4 E-2	7.8 E-3	9.0 E-4
BERYLLIUM	1.4 E-4	6.7 E-5	4.2 E-5	2.4 E-5	2.7 E-6
2,3,7,8-TCDD	1.3 E-6	6.3 E-7	4.0 E-7	2.2 E-7	2.6 E-8

NOTES

1. Data developed by ISCST modeling the impacts of the SO_2 emission then multiplying The ratio of the component emission to the SO2 emission by the maximum SO2 impact to determine the component's impact.
2. Based on 2100 TPD-fired; 99.2 $gmsec^{-1}$ SO_2; vs = 24.9 ms^{-1}
3. Based on 1800 TPD-fired; 85.1 $gmsec^{-1}$ SO_2; vs = 21.3 ms^{-1}; 365 days

TABLE 5-9E

IMPACT OF PALM BEACH COUNTY RDF FIRED SPREADER STOKER FURNACES ON AIR QUALITY
BASED ON ISCST MODEL FOR METEOROLOGICAL YEAR 1974

HIGHEST 2ND HIGH MODELED CONCENTRATION (UG/M3) FOR THE INDICATED AVERAGING TIMES (1)

	1-HOUR (2) (730M; 078D) (D127; P11)	3-HOUR (2) (1500M; 276D) (D184; P5)	8-HOUR (2) (730M; 258D) (D101; P2)	24-HOUR (2) (1300M; 246D) (D110)	ARITHMETIC MEAN (3) (1400M; 270D)
CARBON MONOXIDE	176.0	91.6	59.6	36.4	3.6
NITROGEN DIOXIDE	58.9	30.6	19.9	12.2	1.2
SULFUR DIOXIDE	133.0	68.9	44.8	27.4	2.7
CHLORIDES	51.6	26.8	17.4	10.7	1.1
VOLATILE ORGANIC COMPOUNDS	2.9	1.5	9.9 E-1	6.1 E-1	6.1 E-2
PARTICULATE MATTER	9.6	5.0	3.2	2.0	2.0 E-1
SULFURIC ACID MIST	5.9 E-3	3.1 E-3	2.0 E-3	1.2 E-3	1.2 E-4
FLUORIDES	5.9 E-1	3.1 E-1	2.0 E-1	1.2 E-1	1.2 E-2
LEAD	2.1 E-1	1.1 E-1	7.0 E-2	4.3 E-2	4.3 E-3
MERCURY	4.4 E-2	2.3 E-2	1.5 E-2	9.1 E-3	9.1 E-4
BERYLLIUM	1.3 E-4	6.9 E-5	4.5 E-5	2.7 E-5	2.7 E-6
2,3,7,8-TCDD	1.3 E-6	6.5 E-7	4.2 E-7	2.6 E-7	2.6 E-8

NOTES

1. Data developed by ISCST modeling the impacts of the SO_2 emission then multiplying The ratio of the component emission to the SO2 emission by the maximum SO2 impact to determine the component's impact.
2. Based on 2100 TPD-fired; 99.2 $gmsec^{-1}$ SO_2; vs = 24.9 ms^{-1}
3. Based on 1800 TPD-fired; 85.1 $gmsec^{-1}$ SO_2; vs = 21.3 ms^{-1}; 365 days

TABLE 5-9F

IMPACT OF PALM BEACH COUNTY RDF FIRED SPREADER STOKER FURNACES ON AIR QUALITY
BASED ON ISCST MODEL FOR METEOROLOGICAL YEARS 1970-1974

HIGHEST 2ND HIGH MODELED CONCENTRATION (UG/M3) FOR THE INDICATED AVERAGING TIMES (1)

	1973 1-HOUR (2) (730M; 054D) (D187; P11)	1970 3-HOUR (2) (1400M; 268D) (D218; P5)	1970 8-HOUR (2) (1300M; 246D) (D231; P2)	1974 24-HOUR (2) (1300M; 246D) (D110)	1970 ANNUAL ARITHMETIC MEAN (3) (1400M; 268D)
CARBON MONOXIDE	182.0	100.0	78.6	36.4	5.1
NITROGEN DIOXIDE	60.8	33.5	26.3	12.2	1.7
SULFUR DIOXIDE	137.0	75.4 (76.7)*	59.1	27.4	3.8
CHLORIDES	53.2	29.3	23.0	10.7	1.5
VOLATILE ORGANIC COMPOUNDS	3.0	1.7	1.3	6.1 E-1	8.5 E-2
PARTICULATE MATTER	9.9	5.5	4.3	2.0	2.8 E-1
SULFURIC ACID MIST	6.1 E-3	3.3 E-3	2.6 E-3	1.2 E-3	1.7 E-4
FLUORIDES	6.1 E-1	3.4 E-1	2.6 E-1	1.2 E-1	1.7 E-1
LEAD	2.1 E-1	1.2 E-1	9.2 E-2	4.3 E-2	5.9 E-3
MERCURY	4.6 E-2	2.5 E-2	2.0 E-2	9.1 E-3	1.3 E-3
BERYLLIUM	1.4 E-4	7.5 E-5	5.9 E-5	2.7 E-5	3.8 E-6
2,3,7,8-TCDD	1.3 E-6	7.1 E-7	5.6 E-7	2.6 E-7	3.6 E-8

NOTES

1. Data developed by ISCST modeling the impacts of the SO_2 emission then multiplying The ratio of the component emission to the SO_2 emission by the maximum SO_2 impact to determine the component's impact.
2. Based on 2100 TPD-fired; 99.2 $gmsec^{-1}$ SO_2; vs = 24.9 ms^{-1}
3. Based on 1800 TPD-fired; 85.1 $gmsec^{-1}$ SO_2; vs = 21.3 ms^{-1}; 365/366 days

* Value of 76.7 ug/m3 at 1200M; 267D (D228; P4)

TABLE 5-10

CUMULATIVE IMPACTS OF PALM BEACH COUNTY RDF-FIRED SPREADER STOKER FURNACES AND OTHER MAJOR SOURCES OF SO_2 ON AIR QUALITY (BASIS: RDF @ 2100 TPD, 9 LB S/TON RDF)

YEAR	AVERAGING TIME	MAX. ALL SOURCES PEAK CONCENTRATION ug/m3	MAX. ALL SOURCES PEAK CONCENTRATION MET. DAY	RDF SOURCE CONTRIBUTION ug/m3	RDF SOURCE CONTRIBUTION MET. DAY	LOCATION METERS	LOCATION DEGREE
1970	3 HR*	495	118/1	45	289/4#	2000	129
	24 HR*	85	118/1	9	41/1#	2000	120
	ANNUAL##	13		4		1200	267
1971	3 HR*	459	133/8	41	58/4#	800	332
	24 HR*	78	133/1	10	218/1#	1300	334
	ANNUAL##	10		2		1100	268
1972	3 HR*	347	25/1	47	189/3#	2000	264
	24 HR*	68	24/1	15	347/1#	1100	268
	ANNUAL##	10		2		1100	268
1973	3 HR*	482	213/2	45	343/4#	1800	129
	24 HR*	81	212/1	11	93/1#	730	342
	ANNUAL##	10		3		1000	270
1974	3 HR*	395	240/8	58	165/5#	1700	266
	24 HR*	77	170/1	8	40/1#	730	129
	ANNUAL##	11		3		1000	270
5 YEAR MAXIMUMS							
1970	3 HR*	495	118/1	45	289/4#	2000	129
1970	24 HR*	85	118/1	9	41/1#	2000	120
1970	ANNUAL##	13		4		1200	267

* Maximum 2nd high impact for all sources

\# Concentration for same location, not concurrent occurrences

\#\# Based on 1800 TPD, 9 lb s/ton RDF - 365/366 days

TABLE 5-11

SUMMARY OF MAXIMUM AIR QUALITY IMPACTS OF THE PROPOSED PALM BEACH COUNTY WASTE TO ENERGY FACILITY

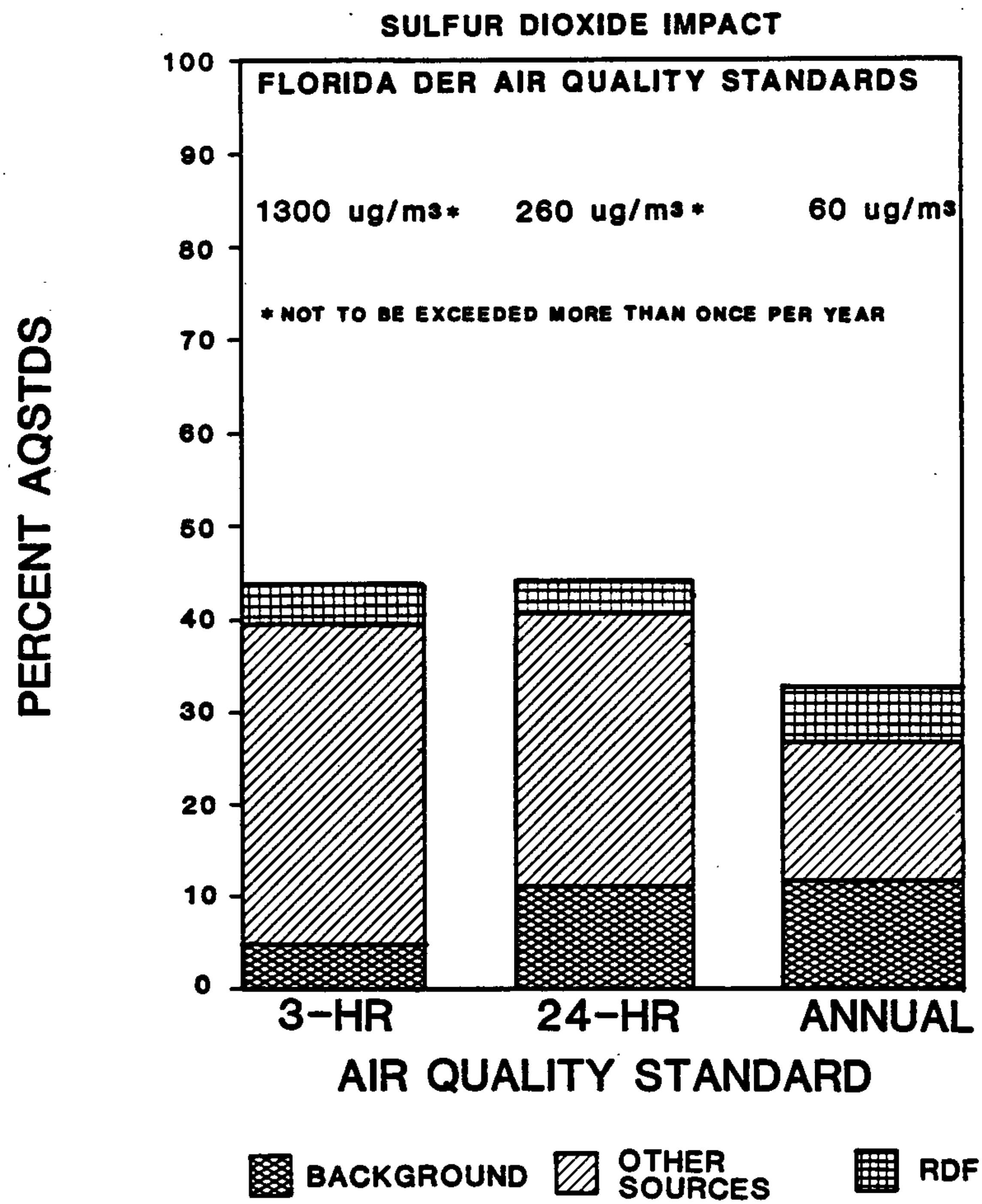
POLLUTANT	AMBIENT AIR QUALITY STANDARD (UG/M3)	PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT (UG/M3)	BACKGROUND CONCENTRATION (UG/M3) (2)	PALM BEACH COUNTY WASTE TO ENERGY FACILITY IMPACT (UG/M3) (3)	TOTAL POINT SOURCE IMPACT (UG/M3) (5) (3) TOTAL IMPACT	RDF CONTRIB.
SULFUR DIOXIDE						
MAX 3-HOUR CONCENTRATION	1300 (1)	512	63	76.7*	495	45
MAX 24-HOUR CONCENTRATION	260 (1)	91	29	27.4	86	9
ANNUAL ARITHMETIC MEAN	60	20	7	4	13	4
PARTICULATE MATTER						
MAX 24-HOUR CONCENTRATION	150 (1)	37	107	2	NC	
ANNUAL GEOMETRIC MEAN	60	19	43	0.3	NC	
NITROGEN DIOXIDE						
ANNUAL ARITHMETIC MEAN	100	NO STANDARD	20	2	5.6(6)	
OZONE						
DAILY MAX 1-HOUR CONCENTRATION	235 (1)	NO STANDARD	172	NE	NA	
LEAD						
QUARTERLY ARITHMETIC MEAN	1.5	NO STANDARD	NM	4.3E-2 (4)	0.11(6)	
CARBON MONOXIDE						
MAX 1-HOUR CONCENTRATION	40000 (1)	NO STANDARD	9943	182	NC	
MAX 8-HOUR CONCENTRATION	10000 (1)	NO STANDARD	4500	79	NC	

NA = NOT APPLICABLE; NC = NOT CALCULATED SINCE PROPOSED FACILITY'S IMPACT IS BELOW SIGNIFICANCE LEVEL;
NE = NOT EMITTED; NM = NOT MONITORED.

1. CONCENTRATION LIMITS NOT TO BE EXCEEDED MORE THAN ONCE PER YEAR.
2. BACKGROUND INFORMATION IS BASED UPON DATA COMPILED BY THE PALM BEACH COUNTY ANNUAL REPORT DATED 1983.
3. DETAILED MODELING RESULTS FOR THE PROPOSED SOURCE COVERING 5 YEARS OF HOURLY METEOROLOGICAL DATA IS INCLUDED IN TABLES 5-9A THRU 9F. (EXIT VELOCITY = 24.9 M/S)
4. QUARTERLY MEAN NOT GENERATED. VALUE CITED IS 24-HOUR MAXIMUM 2ND-HIGH.
5. TOTAL IMPACTS ARE INCLUSIVE OF THE PROPOSED SOURCE.
6. TOTAL IMPACTS assume same emission factor for all sources applied to annual averages.

* Maximum impact from combined sources model results. Value at 1200M; 267D (D226; P4).

CONTRIBUTIONS TO AQSTD



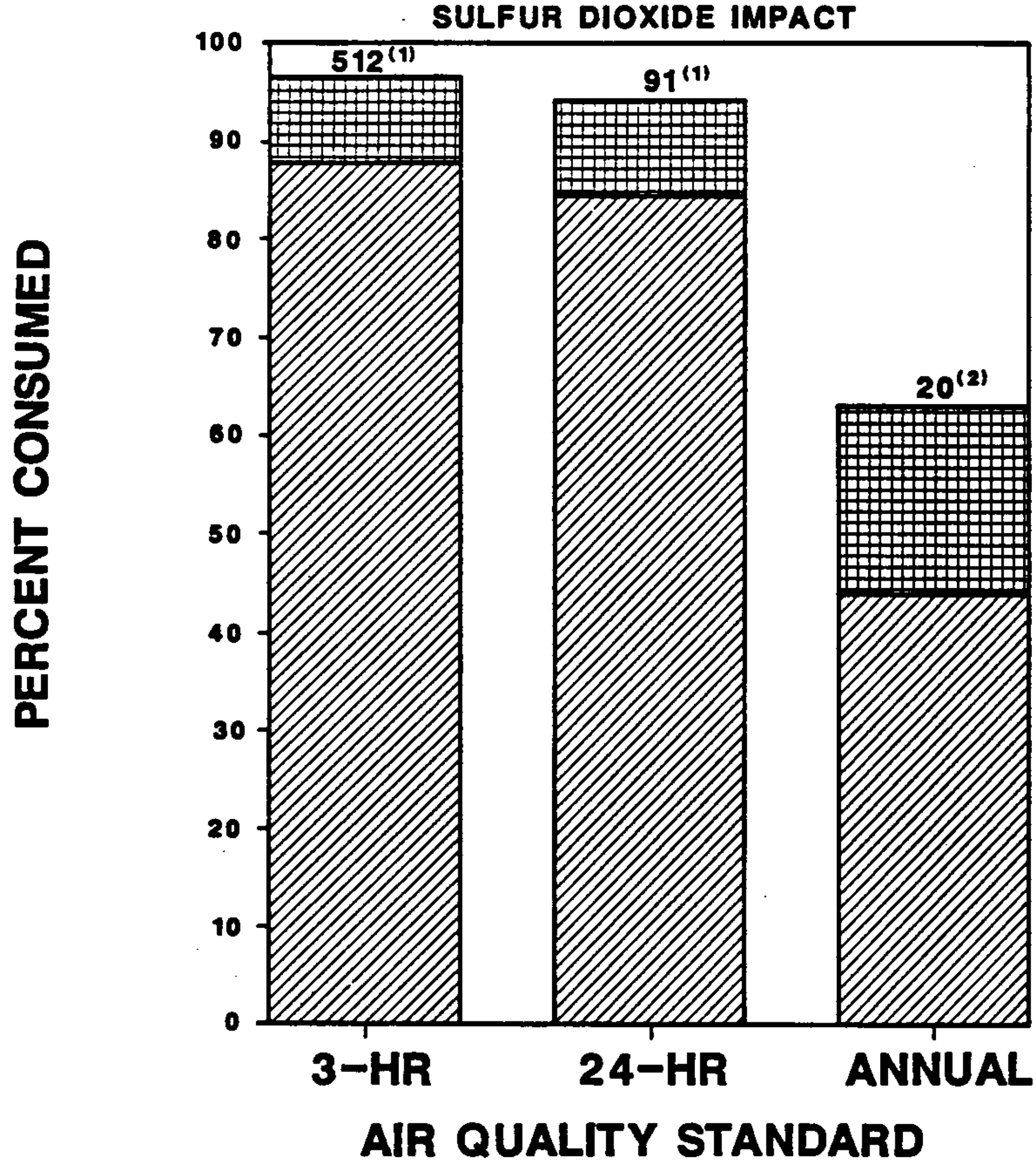
% CONSUMED		BACKGROUND	OTHER SOURCES	RDF
	3-HR	4.85	34.6	3.45
	24-HR	11.15	29.6	3.3
	ANNUAL	11.7	14.8	6.3

UPDATED: DEC. 2, 1985

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

FIGURE 5.10

PSD INCREMENT (ug/m³)



% CONSUMED		OTHER SOURCES	RDF
	3-HR	87.9	8.8
	24-HR	84.6	9.5
	ANNUAL	44.5	18.9

NOTE 1: AVAILABLE PSD INCREMENT NOT TO BE EXCEEDED MORE THAN ONCE PER YEAR

NOTE 2: AVAILABLE PSD INCREMENT NOT TO BE EXCEEDED

UPDATED: DEC. 2, 1985

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

FIGURE 5.11

6.0 SUMMARY AND CONCLUSIONS

An analysis of best available control technology and an evaluation of ambient impacts have been presented herein for the proposed Palm Beach County waste-to-energy facility. It has been determined that the proposed facility is subject to PSD review.

The results of the BACT analysis indicate that the only recommended add-on control device is an electrostatic precipitator for the control of particulate matter. Sulfur dioxide emissions will be minimized through the use of refuse derived fuel which inherently has a low sulfur content and by utilizing No. 2 fuel oil or natural gas as available as an auxiliary fuel. Good combustion design and practice is proposed as BACT for nitrogen oxides, carbon monoxide and volatile organic compounds.

Predicted concentrations of the acid gas pollutants are calculated to be well below state standards. Trace metal emissions will be controlled as particulate matter in the electrostatic precipitator.

An extensive air quality impact analyses has been performed. This analysis demonstrates that all applicable PSD increments, federal and state air quality standards will not be exceeded as a result of the proposed Palm Beach County waste-to-energy facility acting alone or in concert with other existing sources.

Assuming that all VOC emissions are converted to ozone, the maximum 1 hour source impact in any year would be <u>3 ug/m3</u>. Based on local 1982-83 ambient air quality data as background, this maximum impact would not exceed the ozone standard. The maximum 3-hour average VOC impact is only 1.3 ug/m^3. This is less than 1% of the 160ug/m^3 that had been used as a guideline standard for ozone.

There are no existing legal ambient air quality standards for the compound 2,3,7,8-TCDD. The New York State Department of Environmental Conservation in its Air Guide No. 1 (revised 12/15/83 has recommended an acceptable ambient air level (AAL) on an annual average basis of 9.2×10^{-8} ug/m^3. The maximum annual impact generated by the conservative assumptions of this report is <u>3.6 $\times 10^{-8}$ ug/m^3</u>.

<u>On an annual basis, all impacts in the West Palm Beach Water Catchment Area will be less than any established de-minus levels.</u> In making this determination, a variety of conservative assumptions were employed in the analysis. For example, maximum design capacity operations were assumed for all 8,760 hours of the year; other major sources were assumed to fire oil continuously when in fact natural gas which contain virtually no sulfur is predominantly used; and the other source category includes Florida Power and Light whose operations will be offset by the electrical output of the proposed facility. Because of these and other conservative assumptions, it can be stated with confidence that public health will be protected with an adequate margin of safety.

7.0 REFERENCES

1. State of Florida - "Instruction Guide for Certification Applications: Electrical Power Plant Site, Associated Facilities, and Associated Transmission Lines." October 21, 1983.

2. United States Environmental Protection Agency. "Prevention of Significant Deterioration Workshop Manual," Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, October, 1980.

3. California Air Resource Board, Air Pollution Control at Resource Recovery Facilities (Draft), May 7, 1984.

4. Radian Corporation. "The Cost Digest Cost Summaries of Selected Environmental Control Technologies," prepared for the Industrial Environmental Research Laboratory, Austin, TX, 1984.

5. United States Environmental Protection Agency. "Compilation of Air Pollutant Emission Factors." AP-42, 1977.

6. Rigo, H.G., Raschko, J., and Worster, S. "Consolidated Data Base for Waste to Energy Plant Emissions." Proceedings of the 1982 National Waste Processing Conference (ASME), May 1982.

7. Reid, R.S. and Heber, D.H. "Flue Gas Emissions from a Shredded-Municipal-Refuse-Fired Steam Generator, Proceedings of the 1978 National Waste Processing Conference, May 1978, pgs. 167-178.

8. Arthur D. Little, Inc. Municipal Incinerator Emission Estimates - Onondaga County Resource Recovery Project, March, 1981.

9. Greenberg, R.R., Zoller, W.H., and Gordon, G.E. "Compilation and Size Distributions of Particles Released in Refuse Incineration," Environmental Science and Technology, Volume 12, No. 5, May 1978, pgs. 566-573.

10. United States Environmental Protection Agency. "User's Network for Applied Modeling of Air Pollution (UNAMAP), Version 5" (Computer Programs on Tape), PB83-244368, National Technical Information Service, Springfield, VA 22161, 1983.

11. United States Environmental Protection Agency. "PTPLU - A single Source Gaussian Dispersion Algorithm," EPA-600/8-82-014, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, August, 1982.

12. United States Environmental Protection Agency. "Industrial Source Complex (ISC) Dispersion Model User's Guide," EPA-450/4-79-030, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, December, 1979.

13. Rinaldi, G.M., et al., "An Evaluation of Emission Factors for Waste-to-Energy Systems," EPA Publication 600/7-8-135, July 1980.

<u>References</u> (continued)

14. Law, S.L. and Gordon, G.E.. "Sources of Metals in Municipal Incinerator Emissions," Environmental Science and Technology, 13:4, 1979.

15. Henningson, Durham & Richardson. "Application for Certification of Proposed Resource Recovery - Electrical Generating Facility," prepared for Pinellas County, Florida October, 1978.

16. Cleverly, D.H. "Chlorinated Dibenzo-P-Dioxins and Furans in incineration of Municipal Solid Waste," New York City Department of Sanitation, December, 1983.

17. Bowman, J.T. and Crowder, J.W.. "Discrepancies in Annual Concentrations between Long-Term and Short Term Modeling Techniques," JAPCA, 34 (8), August, 1984.

18. United States Environmental Protection Agency. "Guidelines for Air Quality Planning and Analysis Volume 10 (Revised): Procedures for Evaluating Air Quality Impact of New Stationary Sources," <u>EPA-450/4-77-001</u>, Office of Air Quality Planning and Standards, Research Triangle Park, NC 27711, October, 1977.

19. Amundsun, R. G., 1983; "Yield Reduction of Soybean Due to Exposure to Sulfur Dioxide and Nitrogen Dioxide in Combination;" JEQ 12 (4): 454-459; 1983.

20. Chakrabarti, A.G., 1976; Effects of Carbon Monoxide and Nitrogen Dioxide on Garden Pea and String Bean, Bull Envir. Contam. Toxicol. 15(2):214-222.

21. Frink, C. R., G.K. Voigt, M. K. Musser, 1976; "Potential Effects of Acid Precipitation on Soils in the Humid Temperature Zone." in L. S. Dochinger, T.A. Seliga (eds.) <u>Proc. of the 1st International Symposium on Acid Precipitation and the Forest Ecosystem,</u> Ohio State University, USDA for Serv. Gen. Tech. Rept. No. -23, pp. 665-709; 1976.

22. Garsed, S. G., and Rutter, A. J., 1982; "The Relative Sensitivities of Conifer Populations to SO_2 in screening Tests with Different Concentrations of Sulfur Dioxide," <u>Effects of Gaseous Air Pollution in Agriculture and Horticulture</u>, Butterworth Scientific, London, pp. 474-475; 1982.

23. Heck, W. W., D. T. Tingey, 1970; "Nitrogen Dioxide: Time Concentration Model to Predict Acute Foliar Injury," presented at the 1st National Biological Congress, Symposium on Photochemical Oxidants, a Serious Air Pollution Problem Affecting Vegetation," Detroit, Michigan; 1970.

24. Huntzicher, J. J., R. R. Cary, C. S. Ling, 1980; "Neutralization of H_2SO_4 Aerosol by Ammonia, ES & T Vol. 14, No. 7, pp. 819-824; 1980.

25. Jones, H. C., F. P. Weatherford, J. C. Noggle, N. T. Lee and J. R. Cunningham, 1979; "Power Plant Siting: Assessing Risks of Sulfur Dioxide Effects on Agriculture," 72nd Annual Meeting of the Air Pollution Control Association, Cincinnati, OH; 1979.

26. Jones, H. S., D. Weber, D. Basillie, 1974; "Acceptable Limits for Air Pollution Dosages and Vegetation Effects: Sulfur Dioxide," 67th Annual Meeting of the Air Pollution Control Association, Denver, CO; 1974.

27. NYSDEC, 1983; Air Guide No. 1, Revised 12/15/85, Department of Environmental Conservation, Albany, NY 12233; 1983.

28. Spierings, F.. 1971; "Influences of Fumigations with NO_2 on Growth and Yield of Tomato Plants: Netherland Journal of Plant Pathology, Vo. 77, pp. 194-200; 1971.

29. Taylor, O. C.. C. R. Thompson, D. T. Tingey, R. a. Reinert, 1975; "Oxides of Nitrogen," in: J. B. Mudd and T. T. Koslowski (eds.) Response of Plants to Air Pollution, New York Academic Press, Inc.; 1975.

30. Thompson, C. R., D. T. Tingey, R. A. Reinert, 1974; "Acceptable Limits for Air Pollution Dosages and Vegetation Effects: Nitrogen Dioxide," presented at 67th Annual Meeting, ACPA, Denver, CO; 1974.

31. Zimmeman, P. W. et al., 1983; The Effect of Carbon Monoxide on Plants, Contribs. Boyce Thompson Institute, 5(2):195-211, Ithica, NY; 1983.

INSERT SECTION

CLASS I IMPACT ANALYSES

CLASS I IMPACT ANALYSES

Computer analyses have been executed using the EPA ISCST Model for the meterological years 1970-1974. The proposed RDF source will be located at the UMT coordinates 2960474N, 0585820E, Zone 17. The nearest Class I area, Everglades National Park, at its closest point, is located at UMT coordinates 2848635N, 0533619E, Zone 17. This site was included in the modeling as a discrete receptor. The modeling was based on hourly meterological data from the Palm Beach International Airport, West Palm Beach, FL. It was assumed that these meterological conditions did not change between the RDF source and the Everglades National Park receptor point. The receptor is on a bearing of 205° and at a distance of approximately 123 km (76 miles) from the proposed facility. This distance is substantially greater than the 50 km range that is normally considered as the range of validity for most models. For additional conservatism, no decay of pollutants was considered.

SULFUR DIOXIDE IMPACTION

The SO_2 maximum impaction values [highest second highest (HSH) for 3-hour and 24-hour averaging periods and highest annual] are tabulated in Exhibit I for the proposed RDF facility and for the RDF combined with exising local sources.

Based on the modeling and its assumptions, Exhibit I indicates that the combined-source impactions exceeded the significant 3-hour impact levels in 1970, 1971 and 1973. The significant impact for the 24-hour averaging period with the combined sources was exceeded in 1970. The combined sources did not exceed the annual average. In instances where the impact was exceeded, the proposed RDF source was not a contributing factor. The impact of the RDF is at less than significant levels for all averaging periods in pollutant parameters.

The proposed RDF facility will not cause existing sources to exceed levels of significant impact and PSD increments applicable to the Everglades National Park Class I, nor will the proposed RDF facility significantly exacerbate those instances where the impact would be exceeded as projected from existing sources.

Exhibit 1

RDF AND COMBINED SOURCES
MAXIMUM PROJECTED HIGHEST SECOND HIGHEST (HSH)
SO_2 IMPACT CONCENTRATIONS (ugm^{-3})
ON EVERGLADES NATIONAL PARK
(BEARING 205° FROM RDF AT 123 KM)

YEAR		FDER AAQS	SIGNIF IMPACT (2)	MAX PSD (2)	PROPOSED RDF	PERCENT SIGNIF.	COMBINED SOURCES	PERCENT RDF CONTRIBUTION (3)
1970	HSH 3 HR	1300(1)	25	25	4.16	16.6	44.7	9.3
	HSH 24 HR	260(1)	5	5	0.57	11.4	6.3	9.0
	ANNUAL	60	1	2	0.014	1.4	2.3E-1	6.0
1971	HSH 3 HR	1300(1)	25	25	1.53	6.1	35.6	4.3
	HSH 24 HR	260(1)	5	5	0.19	3.8	4.4	4.3
	ANNUAL	60	1	2	0.005	0.5	1.7E-1	3.0
1972	HSH 3 HR	1300(1)	25	25	3.87	15.5	19.9	19.4
	HSH 24 HR	260(1)	5	5	0.60	12.0	3.7	16.4
	ANNUAL	60	1	2	0.016	1.6	1.8E-1	8.7
1973	HSH 3 HR	1300(1)	25	25	2.71	10.8	75.9	3.6
	HSH 24 HR	260(1)	5	5	0.34	6.8	3.0	11.3
	ANNUAL	60	1	2	0.009	0.9	1.7E-1	5.4
1974	HSH 3 HR	1300(1)	25	25	2.57	10.3	19.8	13.0
	HSH 24 HR	260(1)	5	5	0.32	6.4	2.5	13.0
	ANNUAL	60	1	2	0.008	0.8	1.4E-1	5.8

NOTE 1: Not to be exceeded more than once per year

NOTE 2: Class I

NOTE 3: The percentages are based on the highest second high values (HSH) as tabulated. The maximum HSH impact values for the RDF and the combined sources were not generated on the same meteorological day. It is assumed, therefore, that the RDF impact concentration contribution to the maximum HSH impact of the combined sources will always be less than the maximum HSH impact concentration shown for the RDF source itself.

OTHER POLLUTANTS

The emission ratios of the pollutants nitrogen dioxide and total violate organics relative to sulfer dioxide can be used to generate the maximum RDF facility impact of these pollutants at its closest receptor point in the Everglades National Park. These results are summarized below:

Average Interval	Pollution Concentrations (ugm^{-3}) Nitrogen Dioxide	Total Volatile Organics
3 hour*	1.8	9.2E-2
24 hour*	0.3	1.3E-2
Annual	7.0E-3	3.5E-4

A significant impact level exists only for the nitrogen dioxide annual average. This value is 1.0 ugm^{-3}. The projected impact from the proposed RDF source is only 0.7% of this value and negligible relative to the FDER AAQS of 100 ugm^{-3}.

The projected impacts shown above are negligible with respect to ozone formation in the Park.

* Highest second highest value

VISIBILITY SCREENING

A visibility screening analysis has been performed based on the instructions for Level-1 Screening Analysis as available in Latimer and Ireson, Workbook for Estimating Visibility Impairment, Draft, July, 1980.

Emission factors for this analysis have been derived from Section 2.3.7.2, Table 2.3-12.

The absolute factors of the contrast parameters obtained were significantly less than the critical level of 0.1 at a distance of 120 km from the proposed facility (see Exhibit 2).

EXHIBIT 2

SCREENING ANALYSIS
VISIBILITY LEVEL ONE

DIST. TO LVL. I AREA		BCKGND VISUAL RANGE		SIGMA Z AT STBL :F	
120.	KM	40.	KM	100.	M

MASS EMISSIONS: MTPD		OPTICAL THICKNESS:		CONTRAST PARAMETER	
0.531	QPAR	0.00885	PART	-0.000883	CSJY
3.265	QNOX	0.00925	NO2	-0.000008	CTER
7.348	QSO2	0.00431	ASOL	0.001581	CS/T

DER FORM 17 - 1.202(1)

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO CONSTRUCT/OPERATE AIR POLLUTANT EMISSION SOURCE

APIS

1. Type of Application

Construction Init.	Construction Modif.	Operation Init.	Operation Renewal	Site Cert.	Amendment
[X]	[ ]	[X]	[ ]	[X]	[ ]

2. Source Identification/Jurisdiction

District	Office	County	Facility	Source

3. Facility Owner (Company Name): PALM BEACH COUNTY SOLID WASTE AUTH.

4. Facility Ownership Code: U

5. Facility Name/Location: 2900 FT. WEST FLORIDA TURNPIKE 3500 FT. NORTH 45th STREET

6. City: N/A — Code:

7. County: PALM BEACH

8. Facility Zip: 33412

9. Facility Codes: Type — CDS — VOC

10. Facility UTM Coordinates (km): Zone 17 — East 585.8 — North 2690.474

11. Facility Lat./Long. (°, ', "): Latitude 26° 46' 14" — Longitude 80° 08' 30"

12. Authorized Agent (Address and Telephone)

Name	Title	Organization/Firm
S. G. TIMMERMAN	ASSOCIATE	HAYDEN-WEGMAN, INC.

Street or P.O. Box	City	St.	Zip	Telephone
5114 OKEECHOBEE BLVD. 2-B	W. PALM BEACH	FL	33409	305-471-0444

13. STATEMENT BY OWNER OR AUTHORIZED AGENT

I, the undersigned, am the owner or authorized representative* of the facility described above. I certify that the statements made in this application for a permit are true, correct, and complete to the best of my knowledge and belief. Further, I agree to operate and maintain the air pollution source and pollution control equipment described in this application so as to comply with all provisions of Chapter 403, Florida Statutes, and all applicable rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable, and I will promptly notify the department upon sale or legal transfer of the permitted source.

*Attach letter of authorization — Signed: [signature] — Date: April 25, 1985

14. Professional Engineer (Address and Telephone)

Name	Fla. Regis. No.	Organization/Firm
GEORGE E. CRANSTON	21733	HAYDEN-WEGMAN, INC.

Street or P.O. Box	City	St.	Zip	Telephone
330 W. 42nd STREET	NEW YORK	NY	10036	212-563-6900

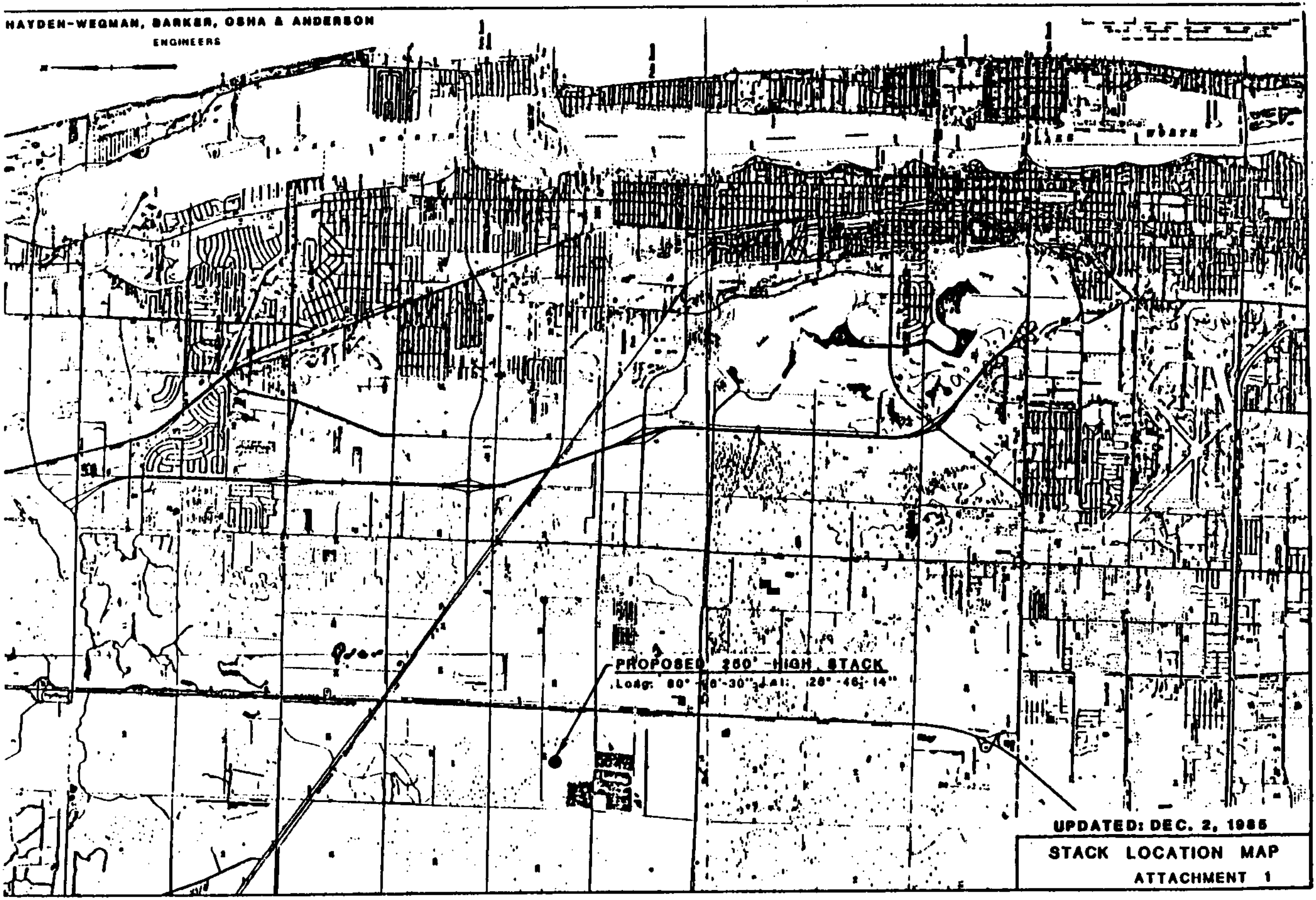
15. STATEMENT BY PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

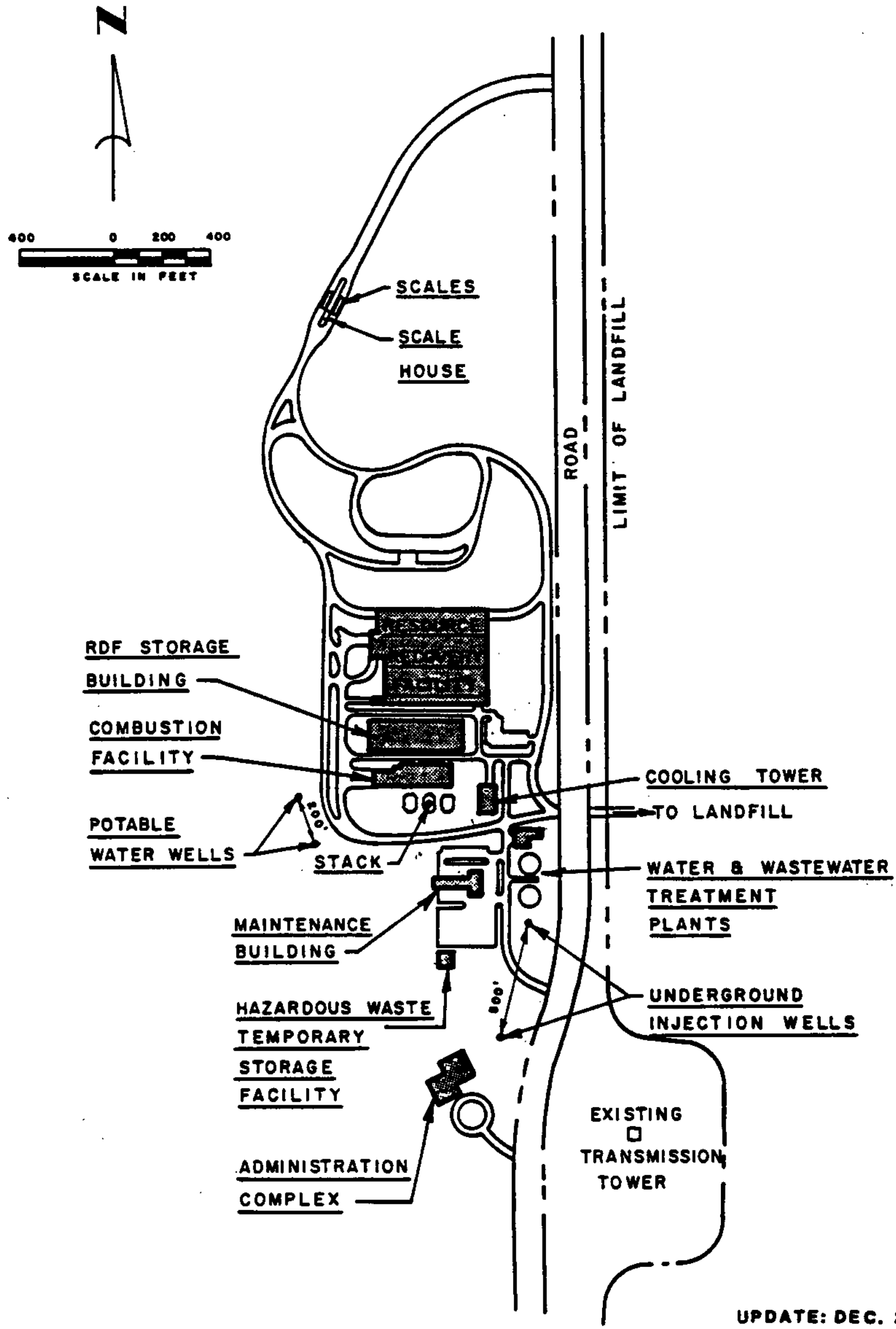
I, the undersigned, certify that the engineering features of this project have been designed or examined by me and found to be in conformity with modern engineering principles applicable to the control of emissions of the air pollutants characterized in this permit application. There is reasonable assurance, in my professional judgment, that the air pollution source and the pollution control equipment, when properly operated and maintained, will comply with all applicable statutes of the State of Florida and all applicable rules and regulations of the department.

Signed: George E. Cranston — Date: 4-24-85

(Affix Seal)

16. Facility Comment

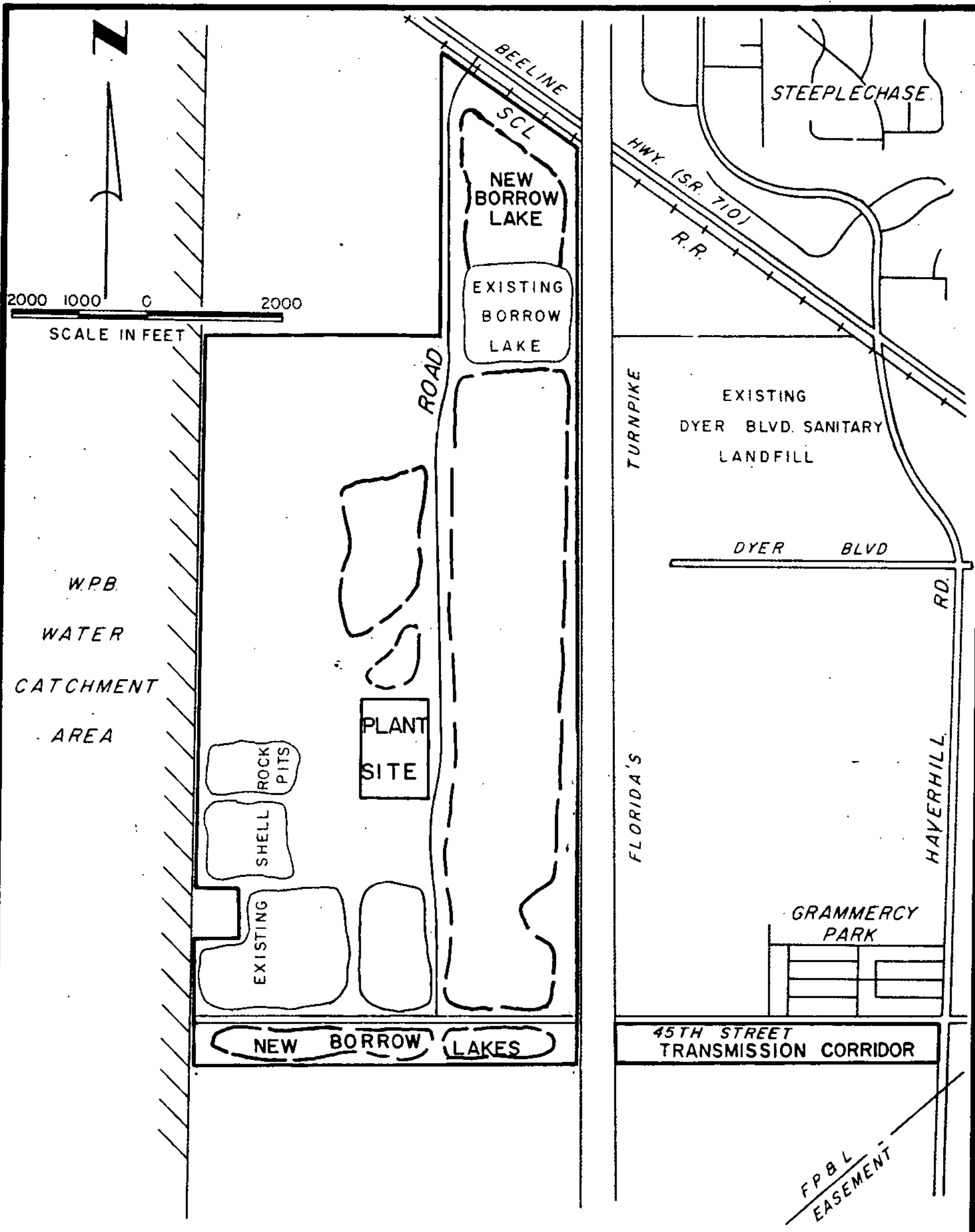

HAYDEN-WEGMAN, BARKER, OSHA & ANDERSON
ENGINEERS
PROPOSED
HIGH STACK
UPDATED: DEC. 2, 1985
STACK LOCATION MAP
ATTACHMENT 1



UPDATE: DEC. 2, 1985

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

ATTACHMENT 2

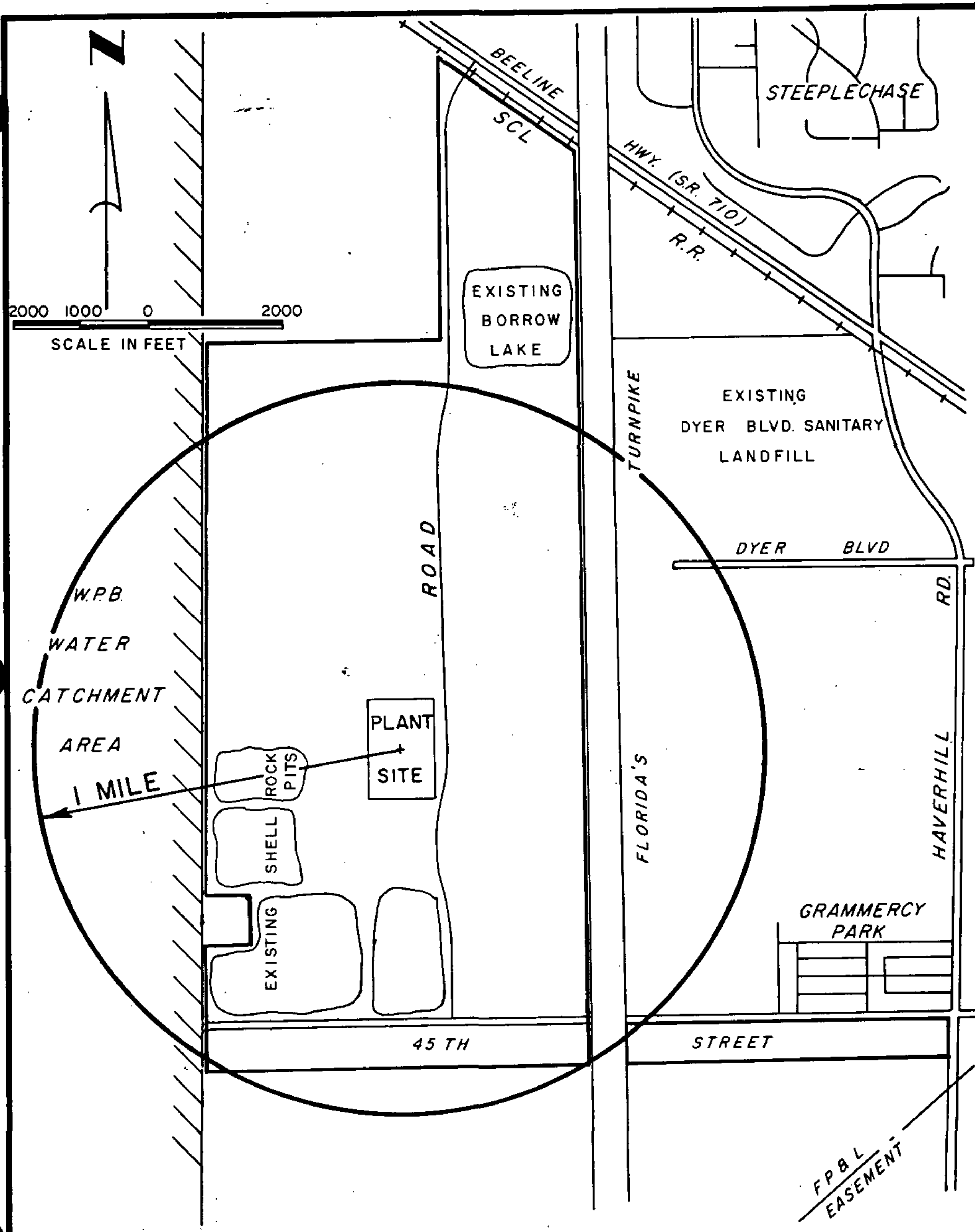


UPDATED: DEC.2, 1985

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

RESOURCE RECOVERY FACILITY AND ADJACENT PROPERTIES

FIG. 2.1-2

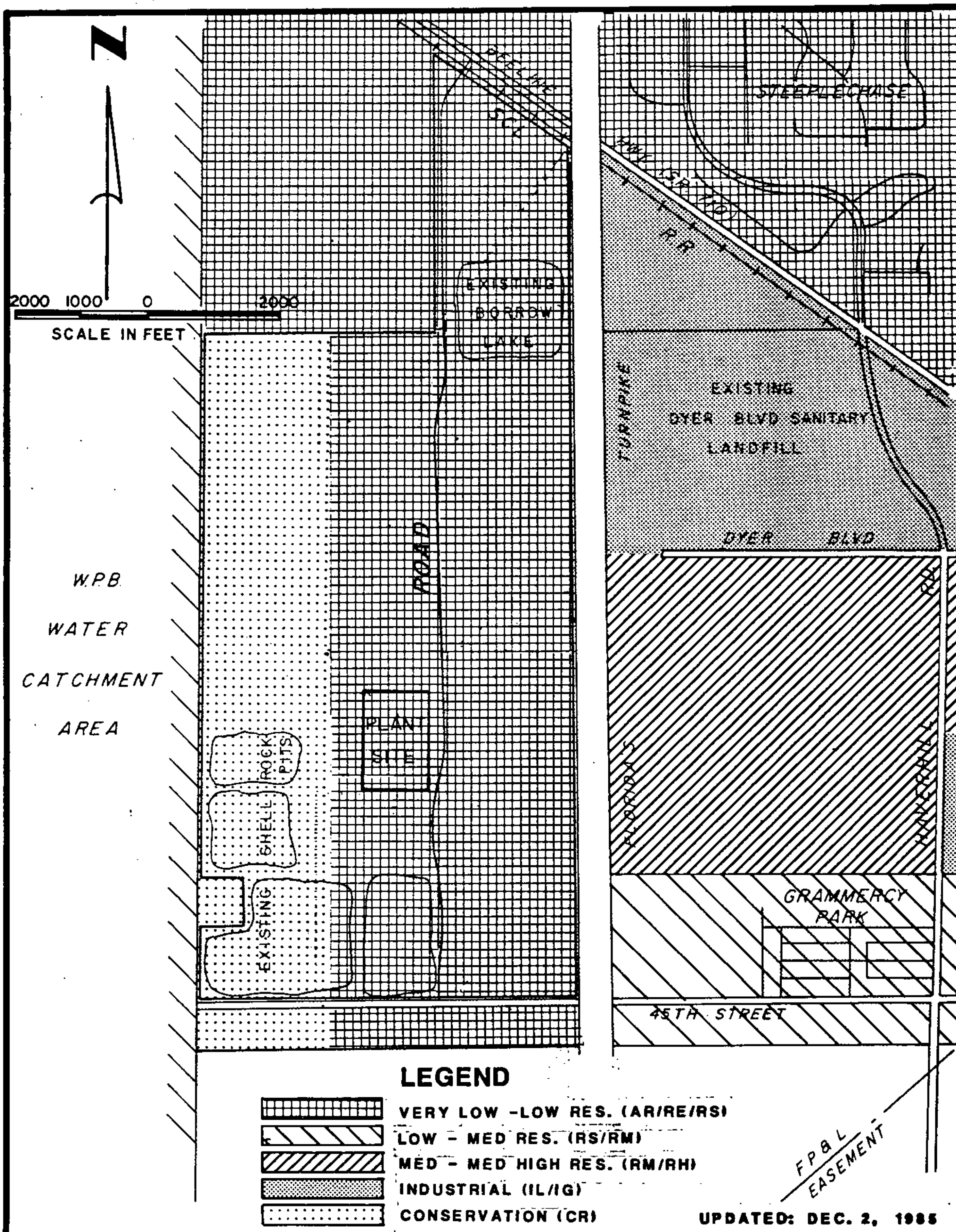


UPDATED: DEC.2, 1985

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

SPECIAL CATEGORY AREAS WITHIN
I MILE OF PLANT

FIG. 2.2-2

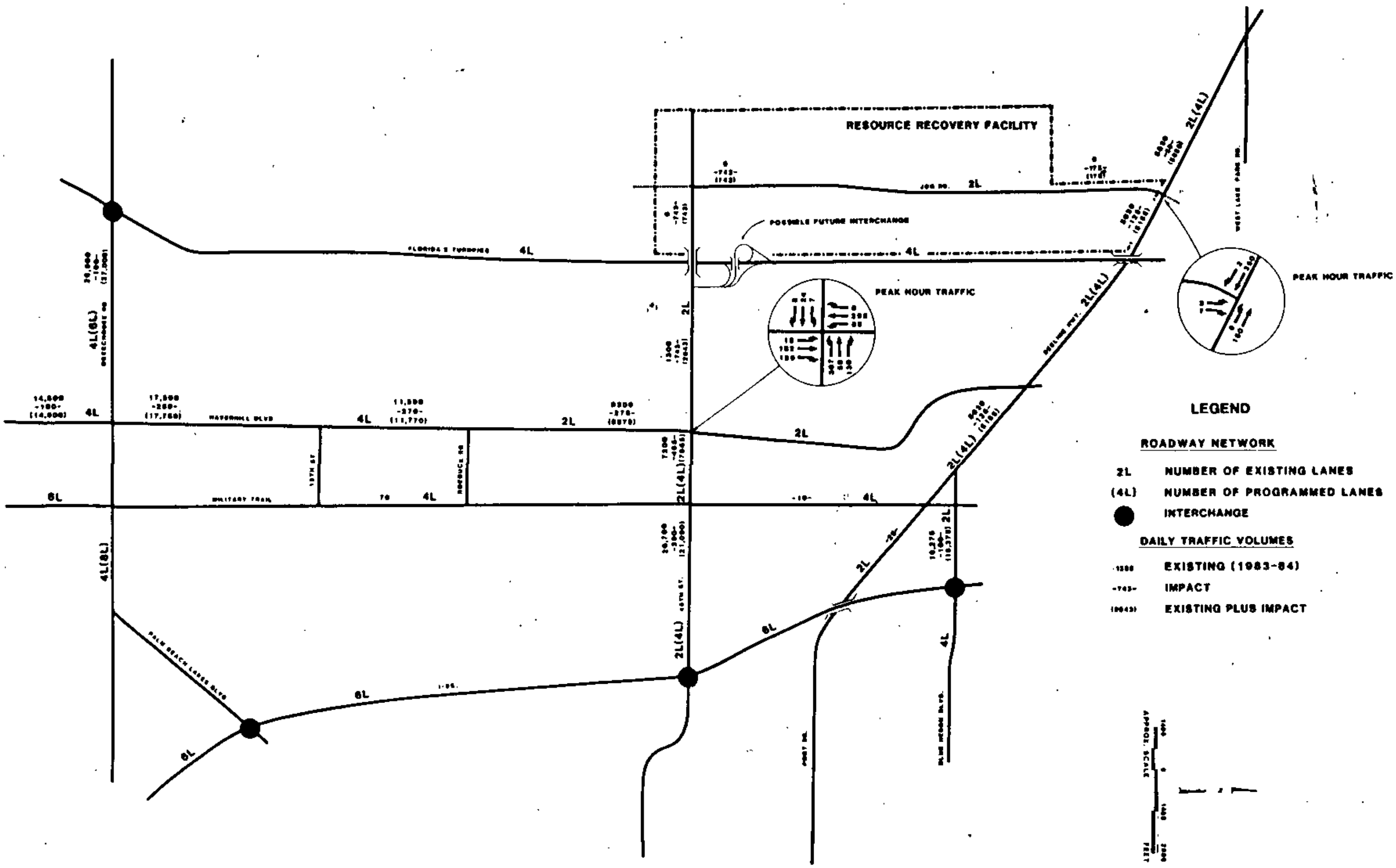


PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

INTERACTION OF
RESOURCE RECOVERY FACILITY
WITH COMPREHENSIVE PLAN

FIG. 2.2-3

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

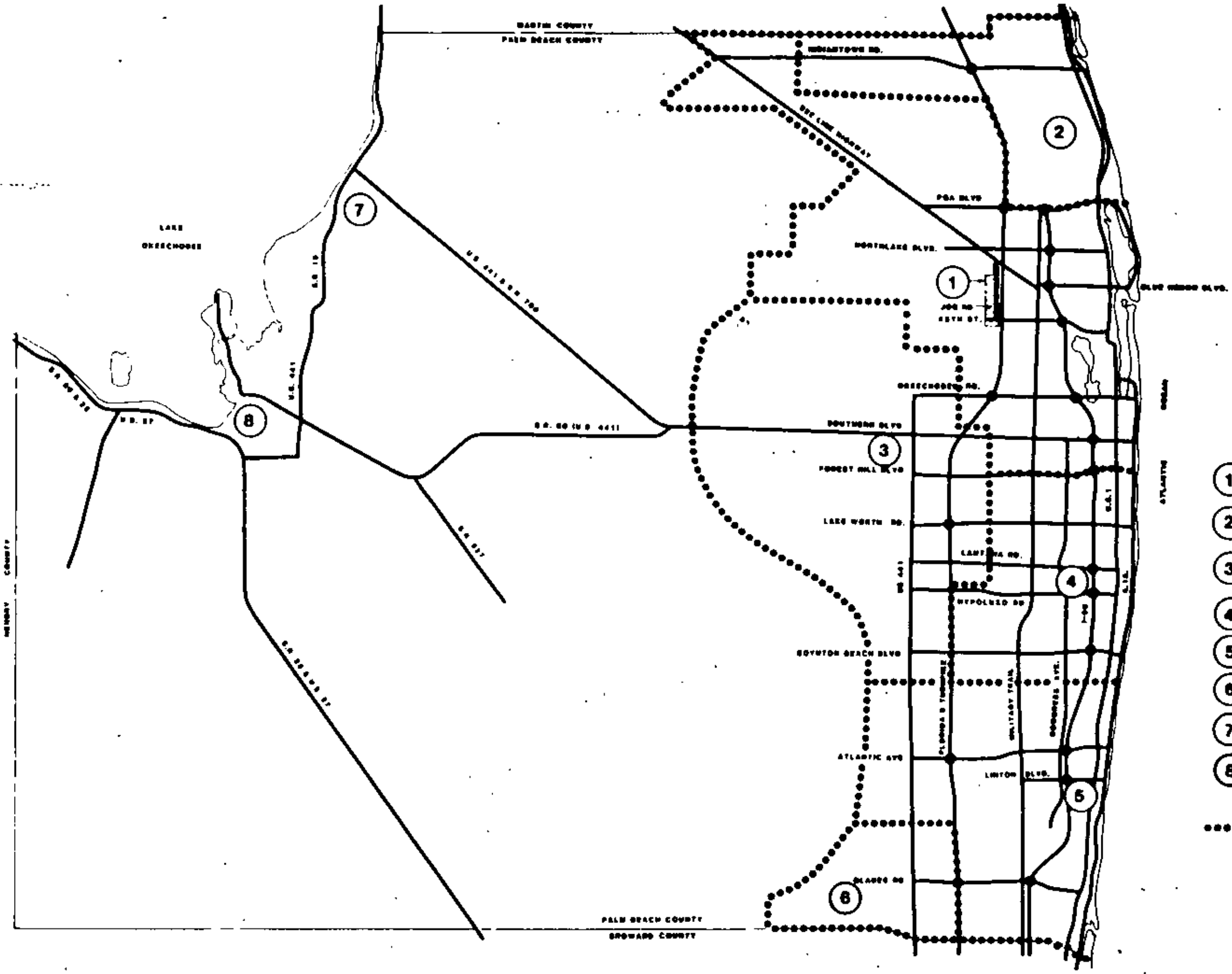


TRAFFIC ASSIGNMENT

UPDATED: DEC. 2, 1985

FIG. 2.3-31

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY



LEGEND

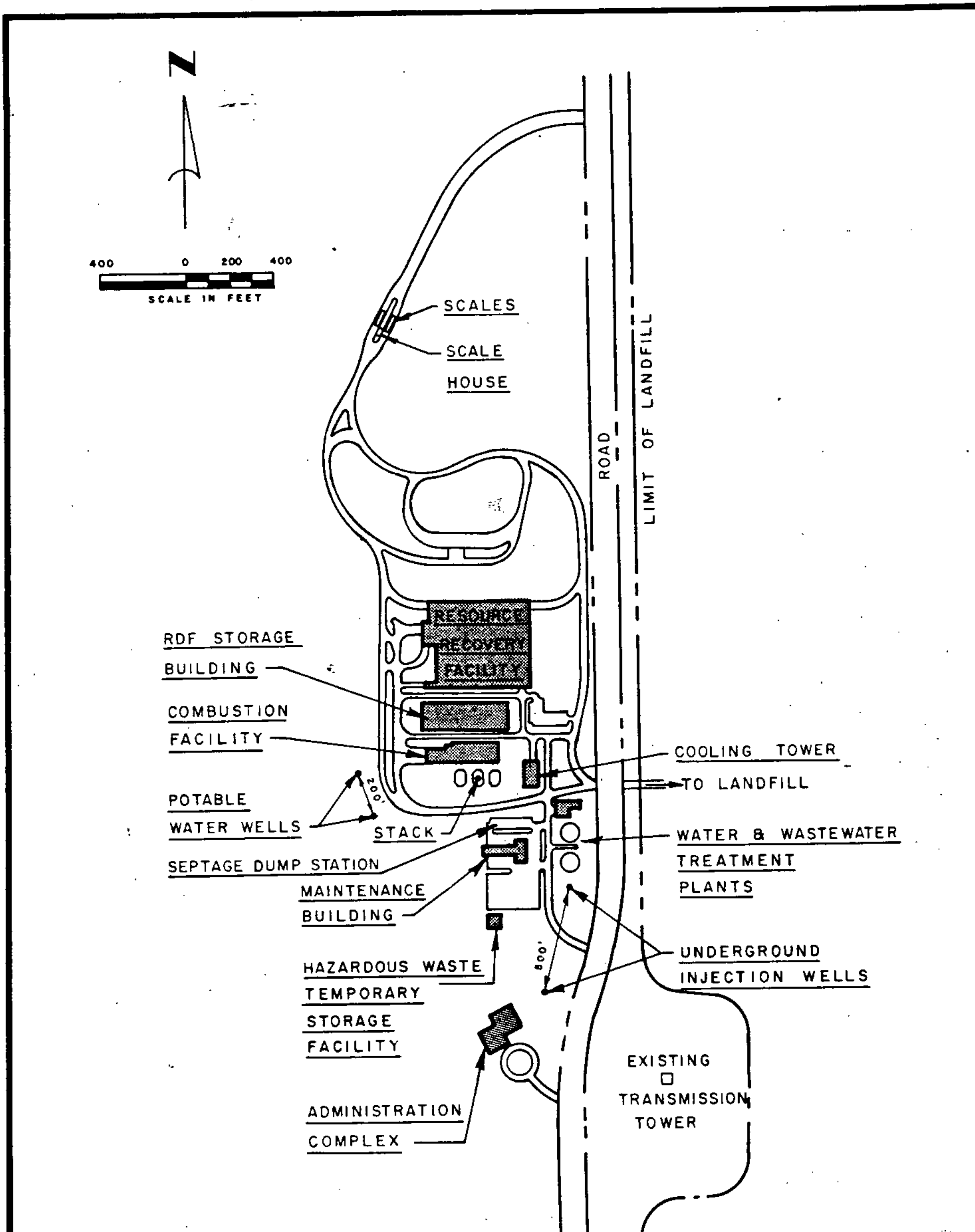
1. RESOURCE RECOVERY FACILITY
2. NORTH COUNTY TRANSFER FACILITY
3. WEST CENTRAL COUNTY TRANSFER FACILITY
4. SOUTH CENTRAL TRANSFER FACILITY
5. SOUTH COUNTY TRANSFER FACILITY
6. SOUTHWEST COUNTY TRANSFER FACILITY & CLASS III LANDFILL
7. PAHOKEE LANDFILL FACILITY
8. BELLE GLADE LANDFILL & TRANSFER FACILITY

•••••• AREAS SERVED BY FACILITIES

UPDATED: DEC. 2, 1985

SOLID WASTE MANAGEMENT
FACILITIES LOCATIONS

FIG. 2.3-32

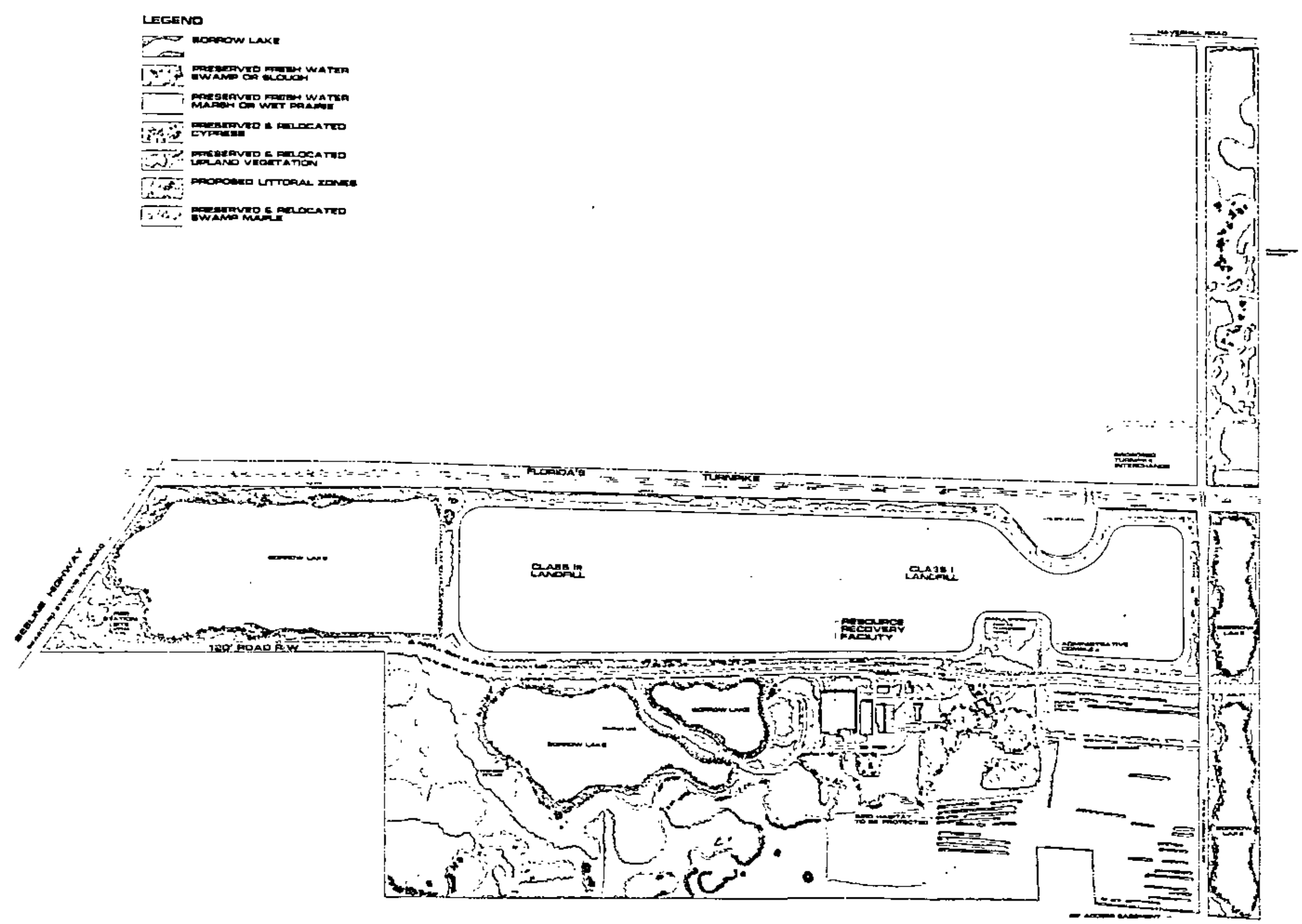


UPDATED:DEC. 2, 1985

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

RESOUCE RECOVERY FACILITY
SITE PLAN

FIG. 3.2 -1

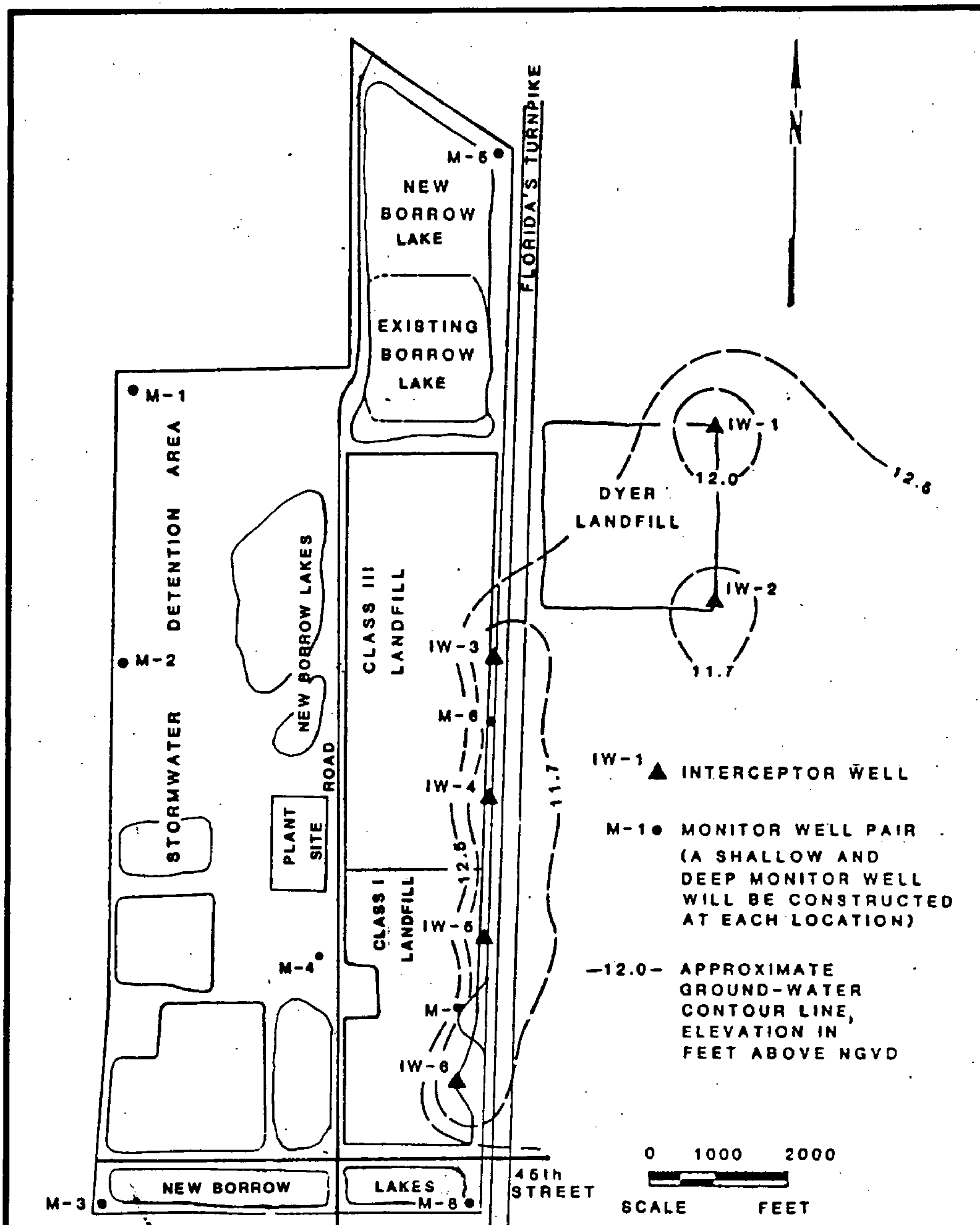


UPDATED: DEC. 2, 1985 FIG. 3.2-3

PALM BEACH COUNTY SOLID WASTE AUTHORITY

RESOURCE RECOVERY FACILITY

MASTER SITE FLAN



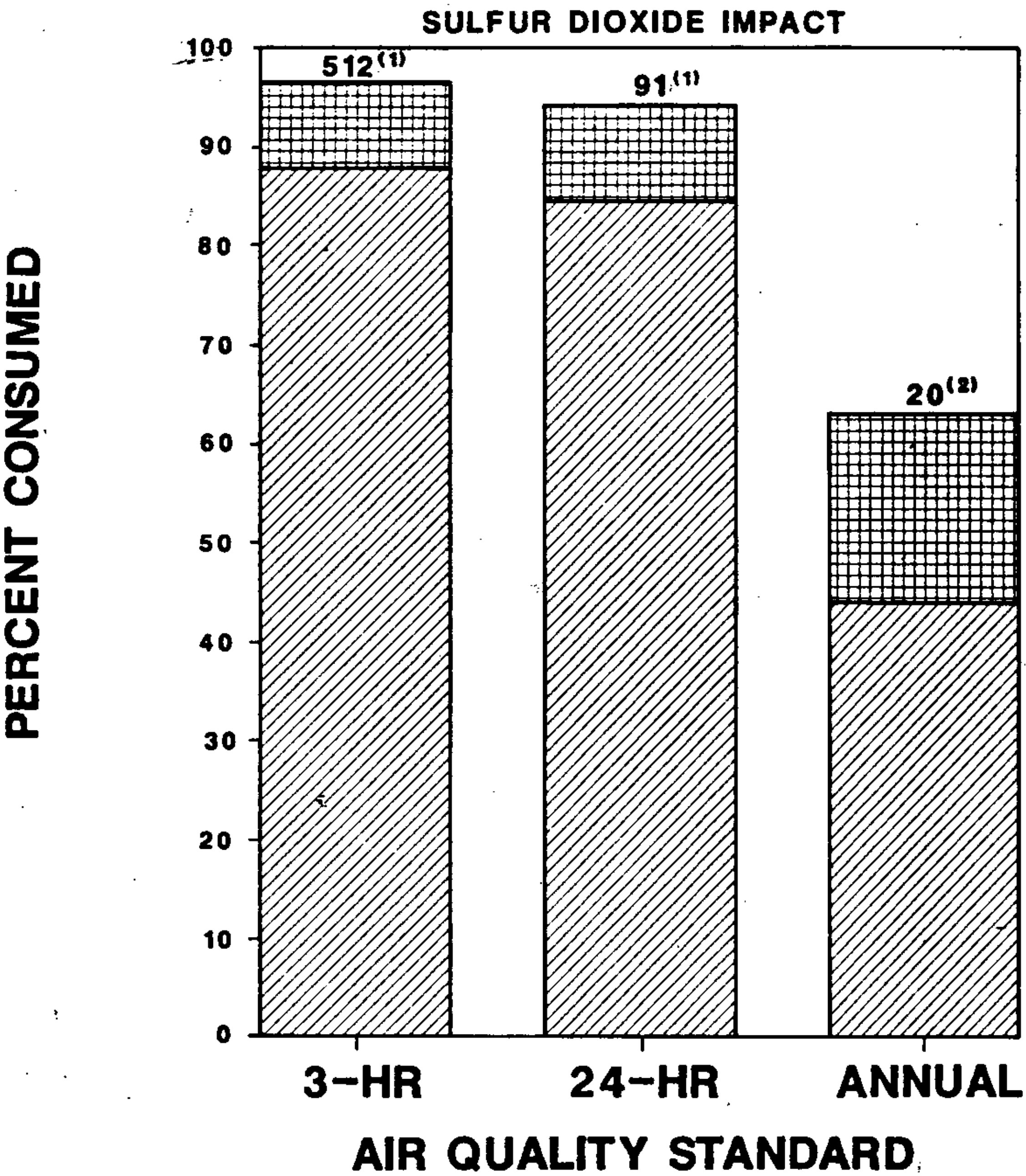
UPDATED: DEC.2, 1985

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

INTERCEPTOR AND MONITOR WELL LOCATIONS AND APPROXIMATE CONES OF DEPRESSION

Figure 4.2-1

PSD INCREMENT (ug/m³)



% CONSUMED		OTHER SOURCES	RDF
	3-HR	87.9	8.8
	24-HR	84.6	9.5
	ANNUAL	44.5	18.9

NOTE 1: AVAILABLE PSD INCREMENT NOT TO BE EXCEEDED MORE THAN ONCE PER YEAR

NOTE 2: AVAILABLE PSD INCREMENT NOT TO BE EXCEEDED

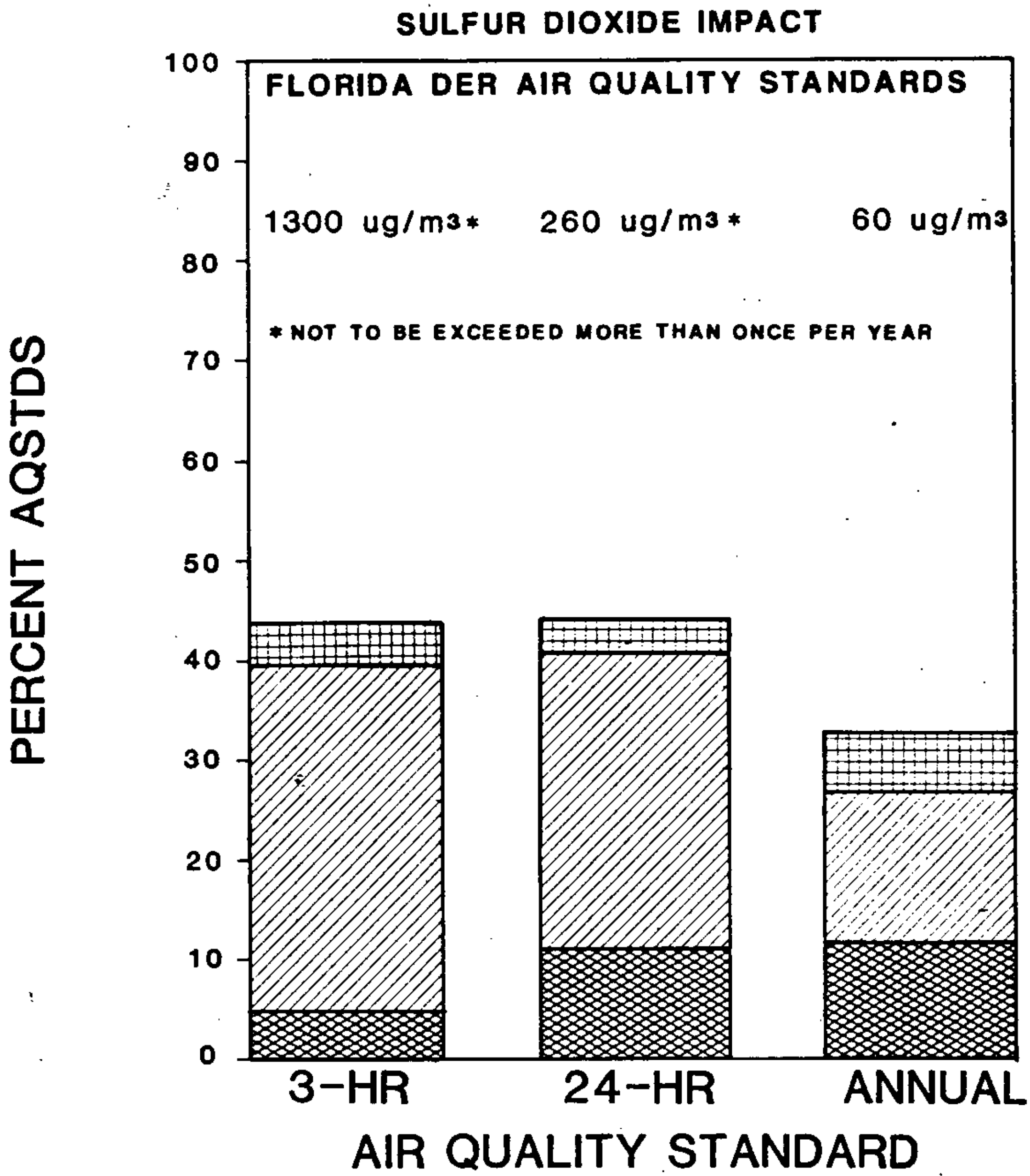
UPDATED: DEC. 2, 1985

PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

PSD INCREMENT

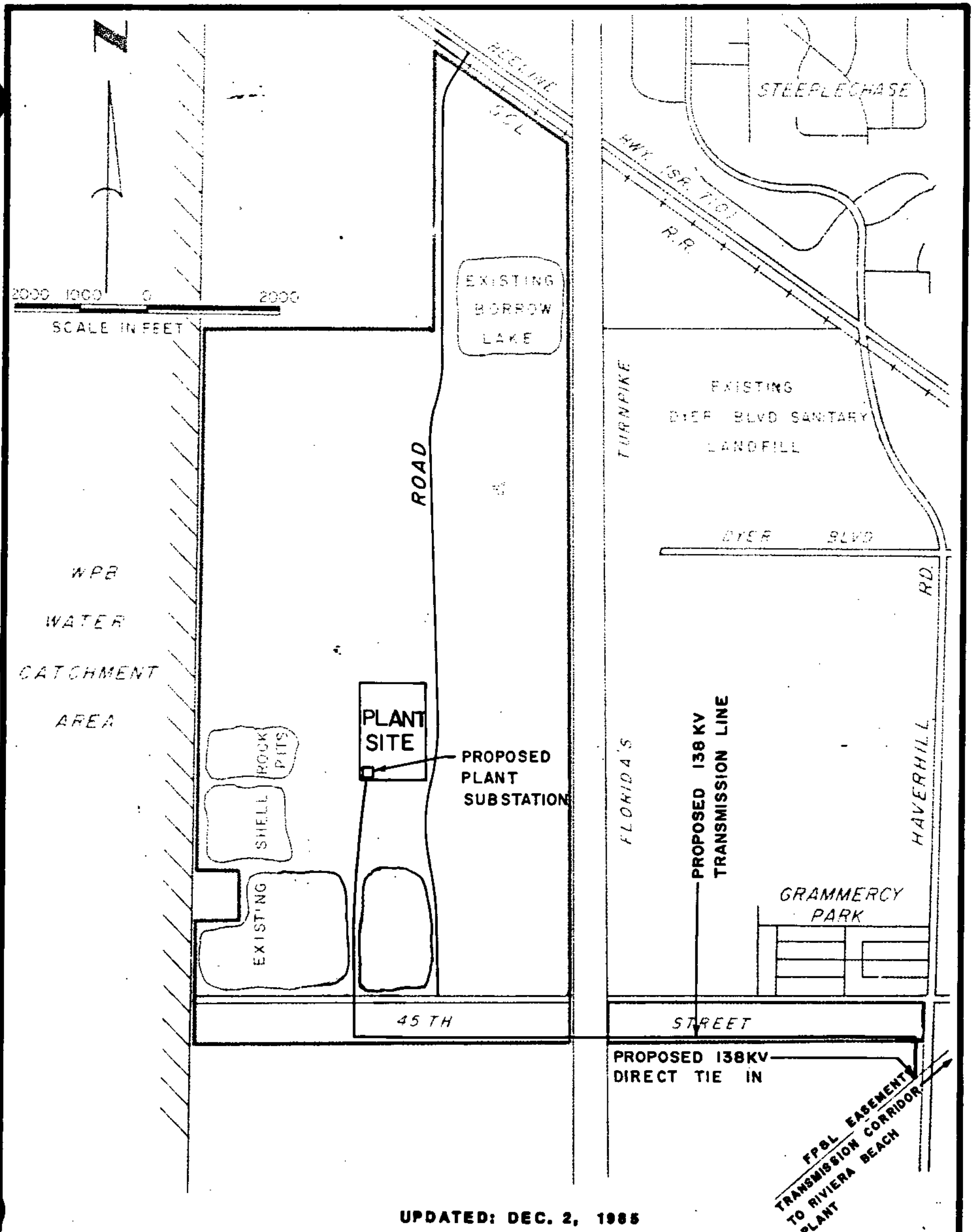
FIGURE 5.6-1

CONTRIBUTIONS TO AQSTD



% CONSUMED		BACKGROUND	OTHER SOURCES	RDF
	3-HR	4.85	34.6	3.45
	24-HR	11.15	29.6	3.3
	ANNUAL	11.7	14.8	6.3

UPDATED: DEC. 2, 1985



PALM BEACH COUNTY
SOLID WASTE AUTHORITY
RESOURCE RECOVERY FACILITY

TRANSMISSION LINE CORRIDOR

FIG. 6.1-1