FLORIDA POWER CORPORATION

SITE CERTIFICATION APPLICATION

POLK COUNTY SITE

AUGUST 1992

Florida Power
CORPORATION

Volume 1

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SITE CERTIFICATION APPLICATION

FOR

FLORIDA POWER CORPORATION

POLK COUNTY SITE

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APPLICANT INFORMATION

Applicant's Official Name Florida Power Corporation

Address P. O. Box 14042, St. Petersburg, FL 33733

Address of Official Headquarters Same

Business Entity (corporation, partnership, co-operative) Corporation

Names, owners, etc. Florida Progress Corporation

Name and Title of Chief Executive Officer Mr. A. J. Keesler Jr.
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Site Location (county) Polk

Nearest Incorporated City Fort Meade

Latitude and Longitude Latitude 27° 47' 15"; Longitude 81° 52' 21"

UTM's Northerly 1,255,200

Easterly 541,600

Section, Township, Range S13, T31S, R24E

Location of any directly associated transmission facilities (counties) Polk, Hillsborough

Name Plate Generating Capacity 470 MW

Capacity of Proposed Additions and Ultimate Site Capacity (where applicable) 3,200 MW

Remarks: (Additional information that will help identify the applicant) Applicant is represented by: Mr. Gary Sams
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LIST OF ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
ac	Acre(s)
ACOE	U.S. Army Corps of Engineers
ACSR	Aluminum Conductor, Steel Reinforced
AM	Amplitude Modulated
ANOVA	Analysis of Variance
API	American Petroleum Institute
APT	Aquifer Performance Test
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BACT	Best Available Control Technology
BEBR	Bureau of Economic and Business Research
BOCC	Board of County Commissioners
BOD	Biochemical Oxygen Demand
BuRec	U.S. Department of the Interior, Bureau of Reclamation
Btu	British Thermal Unit
CAA	Clean Air Act
CARL	Conservation and Recreation Land
CC	Combined Cycle
CEC	Cation Exchange Capacity
CFR	Code of Federal Regulations
CFRPC	Central Florida Regional Planning Council
cfs	Cubic Feet Per Second
CG	Coal Gasification
CGCC	Coal Gasification Combined Cycle
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
CompQAP	Comprehensive Quality Assurance Plan
CR	County Road
CT	Combustion Turbine
CUP	Conditional Use Permit
CWA	Clean Water Act
DACS	Florida Department of Agriculture and Consumer Services

dB	Decibel
dBA	Decibel (A-weighted level)
dBμv/m	Decibels above one micro volt per meter
DCA	Florida Department of Community Affairs
DHR	Florida Department of State, Division of Historical Resources
DHRS	Florida Department of Health and Rehabilitative Services
DO	Dissolved Oxygen
DRI	Development of Regional Impact
EMF	Electric and Magnetic Field
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
FAA	Federal Aviation Administration
FAAQS	Florida Ambient Air Quality Standards
F.A.C.	Florida Administrative Code
FDER	Florida Department of Environmental Regulation
FDLES	Florida Department of Labor and Employment Security
FDNR	Florida Department of Natural Resources
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FGFWFC	Florida Game and Fresh Water Fish Commission
FGD	Flue Gas Desulfurization
FGS	Florida Geological Survey
FGT	Florida Gas Transmission Company
FICA	Florida Industrial Cogeneration Association
FIPR	Florida Institute for Phosphate Research
FLUCCS	Florida Land Use, Cover and Forms Classification System
FM	Frequency Modulated
FNAI	Florida Natural Areas Inventory
FPC	Florida Power Corporation
FRG	Floridians for Responsible Utility Growth
F.S.	Florida Statutes
FSRI	Florida Sinkhole Research Institute
ft	Foot (feet)
FWS	U.S. Fish and Wildlife Service
GEP	Good Engineering Practice

HCM	Highway Capacity Manual
HRSG	Heat Recovery Steam Generator
IMC	International Minerals & Chemical Corporation
in	Inch(es)
ISCST	Industrial Source Complex, Short-Term
ISO	International Standards Organization
kcm	Thousand Circular Mils
km	Kilometers
kV	Kilovolt
L_{eq}	Equivalent Noise Level
LDN	Day/Night Noise Levels
LOS	Level of Service
m	Meter(s)
MBtu	Million British Thermal Units
mcy	Million Cubic Yards
$\mu g/m^3$	Micrograms Per Cubic Meter
MGD	Million Gallons Per Day
mi	Mile(s)
MSL	Mean Sea Level
MVA	Megavolt Amperes
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFPA	National Fire Prevention Association
NGVD	National Geodetic Vertical Datum
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NWS	National Weather Service
O_3	Ozone
OBERS	Office of Business Economics and Economic Research Service (now U.S. Department of Commerce, Bureau of Economic Analysis)
OSN	Outfall Serial Number
Pb	Lead
PC	Pulverized Coal

PM	Particulate Matter
PM_{10}	Particulate Matter less than 10 Microns in Diameter
POD	Point of Discharge
POS	Plan of Study
ppm	Parts Per Million
PPSA	Florida Electrical Power Plant Siting Act
PSC	Florida Public Service Commission
PSD	Prevention of Significant Deterioration
PVC	Polyvinyl Chloride
QA	Quality Assurance
QAPP	QA Project Plan
RARE	Roadless Area Review and Evaluation Area
RCRA	Resource Conservation Recovery Act
ROW	Right of Way
SAR	Staff Analysis Report
SCA	Site Certification Application
SCR	Selective Catalytic Reduction
SCS	U.S. Soil Conservation Service
SNCR	Selective Non-Catalytic Reduction
SO_2	Sulfur Dioxide
SOQAP	Standard Operating and Quality Assurance Procedures
SR	State Road
ST	Steam Turbine
STP	Sewage Treatment Plant
SWCFGWB	Southern West-Central Florida Groundwater Basin
SWDA	Solid Waste Disposal Area
SWFWMD	Southwest Florida Water Management District
TDS	Total Dissolved Solids
TECO	Tampa Electric Company
TSS	Total Suspended Solids
TSP	Total Suspended Particulates
TPA	Tampa Port Authority
UMTA	Urban Mass Transit Administration
UNAMAP	User Network for Applied Modelling of Air Pollution
USAC	U.S. Agri-Chemical Company

USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound
WMA	Wildlife Management Area
WPI	Work Program Improvement

PREFACE

Florida Power Corporation (FPC) is an investor-owned utility which supplies electricity to about 4.4 million people in 32 Florida counties. FPC has over 5,500 employees and is headquartered in St. Petersburg, Florida. The corporate goal now and for the past 95 years has been to provide reliable, reasonably-priced power to our customers.

To meet the increasing demand for electricity, FPC proposes to develop generating capacity at the Polk County Site in phases, with the first phase consisting of about 940 megawatts (MW) of combined cycle power plants fueled primarily with natural gas. Over a period of about 20 years, the Polk County Site will be developed for up to 3,200 MW, potentially using a variety of technologies and fossil fuels.

FPC is seeking approval for development of the Polk County Site under the Florida Electrical Power Plant Siting Act (PPSA), Chapter 403, Part II, Florida Statutes (F.S.). The PPSA provides a centralized review process for new electrical generating facilities in Florida, involving a balancing of "the increasing demand for electrical power plants with the broad interests of the public," including human health, the environment, state waters and wildlife. Under the PPSA, the Florida Public Service Commission (PSC) is the sole forum for the determination of need for a proposed facility. The Florida Department of Environmental Regulation (FDER) acts as the coordinator for the remainder of the certification process, with input from various state, regional and local agencies. The ultimate disposition for this review process is by the Governor and Cabinet sitting as the Siting Board.

On February 25, 1992, the PSC determined the need for the first 470 MW of combined cycle power plants, fueled primarily with natural gas. The PSC concluded that

> [T]he first two proposed combined cycle units on Florida Power Corporation's proposed Polk County site will contribute to electric system reliability and integrity.... [T]he addition of the first two units will enable Florida Power to meet...winter reserve margin criteria and to withstand the outage of its largest unit at time of system peak. The combined cycle technology chosen is a sufficiently mature and reliable generating option for Florida Power's system. The first two Polk County Units will contribute to diversifying Florida Power's system fuel mix, and thus contribute to the integrity of Florida Power's system.

This Site Certification Application (SCA) is being filed with the FDER pursuant to requirements of the PPSA and Chapter 17-17, Florida Administrative Code (F.A.C.). It addresses the environmental and socioeconomic aspects of the Polk County Site by presenting information on the existing natural and human environments, on the generating and associated facilities proposed to be constructed and operated, and on the impacts of those facilities on those environments. The SCA fulfills the provisions of a binding written agreement issued by FDER, which establishes the scope, quantity and specificity of information to be supplied by FPC in this application. The binding written agreement is found in Appendix 10.4.3 of this SCA. That agreement was developed pursuant to Section 403.5063, F.S., and Rule 17-17.041, F.A.C., following review of FPC's proposed Plan of Study (POS) for this SCA by state, regional and local agencies. In accordance with the POS, this SCA is based upon data developed on the Polk County Site to reflect current conditions and planned conditions, based on completion of reclamation activities at the site.

Polk County's adopted comprehensive plan allows power plants in the phosphate mining land use category, provided certain criteria are met. The Polk County Site meets all the criteria and fits well into the comprehensive plan. The Polk County Board of County Commissioners approved a conditional use permit (CUP) for the site on June 2, 1992.

FPC is seeking certification under the PPSA for the construction and operation of approximately 470 MW of natural gas-fired combined cycle units with distillate oil as the backup fuel. FPC also is seeking a determination that the site has ultimate capacity to accommodate the retrofitting of these units with coal gasification facilities, enabling them to burn coal-derived gas, and the addition of subsequent units that would be fueled by either coal-derived gas or pulverized coal, with an ultimate site capacity of up to 3,200 MW. The SCA, as proposed in the POS, addresses the total impacts that would occur from the construction and operation of all these proposals and their associated facilities, including power generating facilities, coal gasification facilities, fuel delivery and storage facilities, a gas pipeline lateral, and an initial electrical transmission line upgrade. However, additional transmission lines will be addressed in supplemental SCAs for generating capacity increments with which they will be associated.

This project represents a beneficial reuse of a mined-out phosphate area. Construction over a number of years will enable FPC to implement capital expenditures in the best interests of its customers consistent with the need for power. Accommodation of several types of fuels will provide flexibility to respond to construction phasing and future conditions of fuel availability and price. Certification that the site and affected environments have adequate ultimate capacity to accommodate these proposals will maximize regulatory and utility efficiency while enabling all agencies to conduct coordinated, comprehensive reviews of the Polk County Site.

CHAPTER 1

NEED FOR POWER AND THE PROPOSED FACILITIES

1.1 NEED SUMMARY

In August 1991, Florida Power Corporation (FPC) petitioned the Florida Public Service Commission (PSC) for a determination of the need to construct four natural gas-fired combined cycle (CC) generating units in Polk County during the years 1998-2000. In that petition, an integrated resource study demonstrated that FPC will require additional generating resources to meet customer load growth in the years following 1997.

FPC's use of integrated resource planning has led to the development of a balanced, cost-effective portfolio of resources for supplying its customers' needs. The integrated resource plan, which includes the proposed Polk County CC units, first makes aggressive use of the demand side management resources inherent in its service area. The plan further diversifies the resource portfolio by placing a significant reliance on capacity and energy from qualifying facilities, out-of-state purchases, and the installation of new transmission resources.

FPC's planning studies call for meeting 1,445 megawatts (MW) of demand - almost 30 percent of projected load growth - with demand side management programs. An additional 751 MW - about 15 percent of load growth - will be provided by qualifying facilities, all of which have signed contracts with FPC. FPC also will install about 364 MW of combustion turbine (CT) peaking capacity in November 1992 and 404 MW of CT peaking capacity in November 1993. Additional capacity equivalent to 984 MW will be added with the completion of a 500-kilovolt (kV) tie line to the Southern Company, a purchase from the Southern Company, and the addition of interruptible load customers. The integrated resource study demonstrated that the remainder of FPC's load growth - approximately 940 MW - can be supplied in a cost-effective manner by the Polk County units.

The proposed plants will be sited on a parcel of mined phosphate lands in Polk County. This site was chosen by a lengthy, careful search conducted in consultation with community and environmental interests. The existing site has clay settling ponds and other topographic features that are readily adaptable to power plant use. Moreover, the site can accommodate more than 2,000 additional MW of future electrical generating capacity, as well as coal gasification (CG) facilities. Finally, the site is centrally located with respect to FPC's load and will require minimal additional transmission construction.

The Polk County units, together with the proposed conversion of existing FPC generation, will allow FPC to make a substantial commitment to the use of natural gas. This commitment will play a key role in bringing new natural gas transportation capacity to Florida. The use of natural gas also will play a vital role in FPC's compliance strategies for meeting the Clean Air Act requirements for the year 2000.

On February 25, 1992, the PSC approved its Hearing Officer's recommendations on FPC's petition of need for the first two Polk County CC units (470 MW). The additional 470 MW of natural gas-fired CC capacity, will require further PSC consideration near the time of their construction.

1.2 PSC ORDER ON NEED

On February 25, 1992, the PSC determined the need for the first 470 MW of CC power plants, fueled primarily with natural gas. The PSC, which has sole responsibility for the determination of need for the facility, concluded that

> [T]he first two proposed combined cycle units on Florida Power Corporation's proposed Polk County site will contribute to electric system reliability and integrity.... [T]he addition of the first two units will enable Florida Power to meet...winter reserve margin criteria and to withstand the outage of its largest unit at time of system peak. The combined cycle technology chosen is a sufficiently mature and reliable generating option for Florida Power's system. The first two Polk County units will contribute to diversifying Florida Power's system fuel mix, and thus contribute to the integrity of Florida Power's system.

The PSC also concluded that

> [T]he first two proposed Polk County units will contribute to the provision of adequate electricity to Florida Power and the State of Florida at a reasonable cost....
>
> * * *
>
> [T]he reasonably anticipated costs of environmental compliance of the first two Polk County units have been adequately considered...
>
> * * *
>
> Florida Power selected the Polk County site...with the assistance of a group of educators, environmentalists, and community leaders.... The site preparation will be predominantly the same for two units as it would be for four units....[I]t is important for Florida Power to secure a site to meet its future generation needs, and approval of the first two Polk County units will be sufficient to that end.
>
> * * *

> Florida Power has demonstrated that it reasonably considered capacity purchases from other utilities and nonutility generators to meet future generation needs.
>
> * * *
>
> Florida Power has adequately considered the conservation measures that are reasonably available to it to avoid the need for capacity as required by section 403.519, F. S.

A copy of the February 25, 1992 PSC Order (Docket No. 910759-EI) is provided as Appendix 10.7. This Order represents approval for the initial 470 MW of generation at the Polk County Site.

On March 26, 1992, the Florida Industrial Cogeneration Association (FICA) filed a notice of appeal of the Commission's Order No. 25805 granting FPC's petition for a determination of need. On April 7, 1992, the Florida Supreme Court stayed the appeal pending disposition of a motion for reconsideration filed by the Floridians for Responsible Utility Growth (FRG).

On June 11, 1992, the PSC denied the motion for reconsideration filed by FRG, leaving its original February order unchanged. FRG has agreed to not pursue an appeal, leaving FICA as the sole appellant.

Briefing on the FICA appeal will begin in September of 1992, with oral argument and a decision expected in 1993.

1.3 POLK COUNTY SITE SELECTION PROCESS

In January 1989, recognizing that forecasts indicated a need for additional generation capacity, FPC began the comprehensive process of locating a suitable site for a large new generation facility. A large site is desirable in order to maximize the economies of development and long-term operation.

Specifically, the objective of the site selection program was to determine a primary and alternate site that would be:

- Multi-unit and clean coal capable
- Technology- and fuel-flexible
- Cost effective
- Fully compatible with FPC's commitment to environmental protection
- In compliance with all government regulations
- Consistent with state and local land use policies

FPC used a systematic site selection approach to ensure that all of the above concerns were fully addressed. The process involved the following five phases, each with a specific objective:

Phase I

The first phase, **Area Screening**, began by screening the entire state of Florida. This phase screened out or eliminated areas that were either environmentally protected or clearly unsuited for development of the proposed facility. Phase I concluded by defining 172 large potential areas suitable for the project.

Phase II

The next phase, **Area Ranking**, ranked the 172 potential areas using criteria that evaluated environmental, socioeconomic and engineering issues. Phase II concluded by defining the top 60 candidate areas.

Phase III

The third phase, **Site Identification**, identified specific sites among the 60 candidate areas by conducting another screening process on a more refined geographic basis. Phase III concluded by defining 22 potential "semifinalist" sites.

Phase IV

The fourth phase, **Site Ranking**, ranked the 22 semifinalist sites using advanced criteria that further evaluated environmental, socioeconomic and engineering issues. Phase IV concluded by defining the top five candidate sites.

Phase V

The final phase, **Site Selection**, confirmed the Phase IV site ranking with additional field data and/or analytical evaluation. Phase V concluded in October 1990 by identifying the preferred and alternate sites.

Throughout this lengthy and careful process, FPC was assisted by an independent group of environmentalists, educators, and community leaders. This Environmental Advisory Group provided advice on matters of public concern, with their major function being to review plans for each of the five phases of the siting process and suggest changes in the evaluation process. FPC also systematically elicited the preferences of this independent panel for use in the development of ranking criteria used in the evaluation process. In addition to the input received from the Environmental Advisory Group, FPC consulted with various regulatory agencies at specific points in the process to obtain their perspective on siting criteria.

As a result of this extensive statewide search, FPC selected a location in Polk County as the primary site of its next generating units and an alternative site in Hardee County. Both locations meet FPC's goal for a large site capable of handling staged development of various generation and fuel options. FPC's research indicates that the Polk County Site is capable of supporting approximately 3,000 MW total generation. Providing for the use of coal as a fuel ensures the flexibility to switch to gasification or other future coal-based technologies as economies dictate. Obtaining a site with this flexibility and capacity was the primary objective of the site selection process.

1.4 TECHNOLOGY SELECTION

1.4.1 Generation Alternatives

FPC's need for additional generation is based upon specific system reliability criteria. A set of 10 generation expansion alternatives were developed which would satisfy FPC's system reliability criteria. These 10 alternatives were evaluated to ensure that FPC examined and quantified the costs and benefits of a variety of generation expansion technologies, plant sizes, and construction options.

In developing the expansion alternatives, FPC considered four major constraints. First, the technologies used in alternative plans must meet FPC's criteria for technical feasibility, reliability, and potential cost effectiveness. Second, the alternative plans must result in a system that meets or exceeds FPC's reliability criteria during each year of the plan. Third, the alternative plan must be consistent with FPC's commitment to environmental protection, and in particular must permit FPC to comply with the revised Clean Air Act limitations on sulfur dioxide emissions. Finally, the alternative must represent a plan that is well integrated with the present operation and configuration of the FPC system.

The 10 generation alternatives that were evaluated included combinations of large and small pulverized coal (PC) units, CTs, CCs, fluidized bed, and coal and orimulsion (emulsified low grade Venezuelan crude oil) gasification plants, and additional capacity purchases from existing, low cost units. Each of the alternatives would come into service between 1997 and 2000.

FPC's economic evaluation of the 10 alternatives included cumulative present worth revenue requirement comparisons. In addition, FPC evaluated 27 different uncertainties for each alternative based on the high, medium and low demand and energy forecast; the high, medium, and low fuel forecast; and the high, medium, and low conceptual cost estimates. The final result of this decision analysis was an expected cumulative present worth revenue requirement of that alternative on FPC's system. Supporting data was also generated for 27 various scenarios which, when accumulated with their probability of occurring, would equal their expected value. Cumulative and annual cost curves were also generated over time to enable revenue requirement cash flow comparisons.

The Polk County CC plants emerged from all of these calculations as the most cost-effective alternative. In other words, these units are expected to lead to the lowest cost of service and the lowest rates, when viewed on a present value or present worth basis. The units also do not pose any unusual risks in the event that some of the key planning assumptions used by FPC turn out to vary according to their expected probability distribution.

1.4.2 Combined Cycle Design

The technology selected for the initial development of the Polk County Site is based on the use of modern, high efficiency gas-fired CTs and steam turbines (ST) configured in a "combined cycle." Generating stations are referred to as CC when they have two sequential electrical generating stages. The first stage of a CC plant is a CT, much like a utility peaking plant. In the second stage of the process, the hot gas from the CT is passed through a heat recovery steam generator (HRSG), where steam is produced and directed to the ST. The CT and ST can be designed to drive individual electrical generators or to drive a single generator.

In sum, because CC plants make excellent use of the energy in their input fuel, they have an extremely low heat rate. The modern CC power plant is one of the most efficient power cycles available today.

1.5 POLK COUNTY SITE STRATEGIC ASSESSMENT

1.5.1 Schedule Flexibility

Development of the Polk County Site provides FPC with the flexibility to add incremental capacity to approximate anticipated load growth. It is expected that additional generating units planned for the Polk County Site will have a relatively short construction lead time, thus delaying decisions on future additions as long as possible. For example, a supplemental site certification application for the second 470 MW block of CC units could be filed during 1996 in order to meet FPC's scheduled in-service dates of 1999 and 2000 for those additional units.

1.5.2 Fuel Flexibility

The Polk County Site provides FPC with the flexibility to convert to CG or to add PC capacity in the future should circumstances warrant. Not only is the site an excellent one for receiving and handling coal fuel, but the CC units are very adaptable to coal-derived gas.

As approved by the PSC Order, the initial Polk County CC units will also be capable of burning natural gas or distillate fuel oil. Natural gas, the primary fuel initially, is considered one of the cleanest fuels and will be a major factor in meeting future environmental regulations. To maintain fuel flexibility, the CC units will be capable of converting to burn gas produced by a gasification process using coal as a feedstock.

1.5.3 Clean Air Act Requirements

The requirements of the recently amended Clean Air Act make it essential for FPC to have a plan that not only meets the expected number of sulfur dioxide allowances FPC will receive, but also has the operational flexibility to meet environmental regulations under unexpected circumstances such as longer than expected unit outages. An extended outage of a major base load plant may require that other units be run off of economic dispatch in order to comply with the FPC emissions limit. The CC units can be run at high capacity factors in order to reduce the total system emissions. In addition to their high efficiency, the Polk County CC units are being designed to have relatively low environmental impact. Airborne emissions will be limited by the use of a clean fuel and the application of control technologies.

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CHAPTER 2

SITE AND VICINITY CHARACTERISTICS

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2.0 SITE AND VICINITY CHARACTERISTICS

This chapter covers the basic information on those physical, biological, and sociological characteristics of the area environment that might be affected by the construction and operation of power plant facilities on the proposed Florida Power Corporation (FPC) Polk County Site. Linear features associated with the site are addressed in Chapter 6.

2.1 SITE AND ASSOCIATED FACILITIES DELINEATION

The FPC Polk County Site is in southwest Polk County, Florida, approximately 3.5 miles northwest of Fort Meade, 3 miles south of Bartow, and about 40 miles east of Tampa (Figure 2.1.1-1). The nearest unincorporated community, Homeland, lies about 1 mile to the northeast of the site boundary. The site is bounded on the north by County Road (CR) 640, and along the southeast and south by a U.S. Agri-Chemical Company (USAC) mine. CR 555 runs through the site.

2.1.1 Description of the Site and Surrounding Area

The Polk County Site encompasses approximately 8,200 acres, over 900 acres of which will be occupied ultimately by generating and related facilities. It lies in a region of the state dominated by phosphate mining operations including mines, settling ponds, sand tailings piles, gypsum stacks, and chemical and beneficiation plants. Figures 2.1.1-2A and 2.1.1-2B show existing topography.

The majority of the land surrounding the proposed power plant site is being or has been mined and either has been or can be expected to be reclaimed primarily as pasture, cropland, wetlands or lakes. Some of the land surrounding the site still remains to be mined. Also, as some mining operations are completed, processing plant sites on unmined areas, such as the adjoining Estech facilities, may be abandoned and come onto the market as potential industrial sites, or may be mined and then later reclaimed.

Adjacent land uses also consist entirely of phosphate mining, except for one mobile home on the corner of CR 555 and CR 640, approximately 3 miles from the proposed plant island. The adjacent phosphate mine owners are Estech, Inc. (Estech); IMC Fertilizer, Inc. (IMC); USAC; and Mobil Mining and Minerals Company (Mobil). The three nearest residential areas of Bradley Junction, Homeland, and Fort Meade are several miles away from the primary area to be developed, i.e., the plant island area. From the standpoint of land use compatibility and potential noise and visual impact during construction and operation, the site location is suitable for power plant facilities. A complete discussion of land use in the area of the Polk County Site is presented in Section 2.2 of this Site Certification Application (SCA).

2.1.2 Establishment of the Baseline Condition

This section describes the baseline conditions against which the impacts of project construction and operation are then measured in Chapters 4 and 5, respectively. Usually, these baseline conditions are the existing conditions of the site and the surrounding area. Due to the unique character of the Polk County Site, a site that has been and is still being mined for phosphate, the question of what is the baseline condition is not so straightforward as in the typical case of a power plant proposed for a so-called "green field" site.

An important factor in the selection of the Polk County Site was its disturbed character. The site met the essential criteria of access to transmission, fuel delivery, proximity to FPC's load center, and similar considerations. However, the site did not rank best on cost of development, nor did it present the fewest engineering issues. The tradeoff recognized by FPC and the Environmental Advisory Group during the site selection process was that while the cost of site development would be higher on this entirely disturbed site, there would be minimal environmental impact from power plant development. In fact, the site presented opportunities for net gain in environmental benefit.

For purposes of the impact analysis included in this SCA, FPC has defined the baseline condition as the future condition without the project. That projected condition is then compared to the "with project" scenario to establish the impacts. Because the Polk County Site is in various stages of phosphate mining, ranging from yet-to-be-mined to recently reclaimed and released by Florida Department of Natural Resources (FDNR), existing conditions throughout the site are transitory. The following paragraphs describe how the baseline condition, the future without-project condition, was determined.

The entire site consists of properties owned by three mining companies: IMC, Estech, and USAC. Each mine parcel has a designation referring either to IMC's Noralyn or Phosphoria mine (N-series and P-series) or to a geographic area in the Estech Silver City mine (SA-series). Also, a small portion of the site to be used as a buffer area is currently part of the USAC N-9 settling area within the Rockland mine and is referred to as N-9. These mine parcel designations are useful for identifying specific areas of the site and are referred to throughout the SCA.

The various mine parcels can be divided roughly into areas that are subject to either mandatory reclamation requirements under FDNR's 1975 rules (mandatory areas) or potentially eligible for nonmandatory reclamation funding under the pre-1975 or "old lands" program (nonmandatory areas). Mandatory and nonmandatory areas of the Polk County Site are shown along with the mine parcel designations on Figure 2.1.2-1. Mandatory areas cover about half the site, including most or all of SA-9, SA-10, SA-11, SA-12, SA-13, N-9 (USAC), N-16, P-2, P-3, Phosphoria and the Triangle Lakes area. Nonmandatory areas include N-9B, N-11A, N-11B, N-11C, N-13, N-15, most of SA-8, portions of P-2 and P-3, and a portion of Camp Meeting Ground Branch. The vast majority of the nonmandatory areas have been used for clay disposal.

Mandatory reclamation regulations require that the pre-mining wetland acreage be reclaimed and that a minimum of 10 percent of the upland be returned to forested land uses. Clay settling areas, comprising more than half of the mandatory reclamation areas on-site, are normally drained and returned to row crop or pasture uses in an effort to restore the economic use of the land. Future without-project conditions in the mandatory areas are described and presented in the approved (pre-1992) reclamation plans for those areas. Approved reclamation plans for mandatory areas of the Polk County Site showing Florida Land Use, Cover and Forms Classification System (FLUCCS) designations (FDOT, 1985) are provided in Table 2.1.2-1, shown (along with FLUCCS designations for nonmandatory areas) on Figures 2.1.2-2A and 2.1.2-2B. This information is also included in Appendix 10.9. Figures 2.1.2-3A and 2.1.2-3B depict baseline topography, based on existing approved (pre-1992) reclamation plans, in the IMC N-16 and Estech mandatory areas.

In addition to the approved reclamation plans, characteristics or conditions not readily ascertainable from the reclamation plans themselves, including such characteristics as habitat quality, have been projected based on a review of existing on-site and off-site reclaimed areas with similar land use/vegetation and topography. These nearby on-site and off-site areas were taken to be representative of future without-project conditions for areas of the Polk County Site yet to be reclaimed. They were chosen from among IMC's reclamation projects and included those at Homeland-9, West of K-6, Hookers Prairie and Tiger Bay. These were among the most mature reclamation projects and included both upland and wetland communities. Three of the projects were ground-inspected and all four were thoroughly inspected by helicopter. Figure 2.1.2-4 shows where these baseline study areas were located.

A similar approach was used to project the future (without-project) conditions for nonmandatory areas of the site, except that in the case of the nonmandatory areas on the Polk County Site no approved reclamation plans were available. For purposes of establishing the baseline condition for nonmandatory areas, FPC assumed that the nonmandatory areas would also be reclaimed. This assumption was based on common industry practices and the economic incentives for returning the land to productive use. In informal discussions with FPC, IMC, the owner of most of the nonmandatory areas on-site, also confirmed their intent to reclaim the "old lands."

Nonmandatory reclamation is accomplished by the mining company either privately or under a reimbursement program established by the state to encourage the economic and environmental return of lands mined prior to 1975. The nonmandatory reclamation program is voluntary and the publicly funded portion is limited by the amount of funding (derived from phosphate severance taxes) available in any one fiscal year. Most mining companies and private owners of nonmandatory lands are active in the state's reimbursement program which provides a fixed amount of reimbursement per acre of eligible mined land.

Nonmandatory reclamation standards are less stringent than mandatory requirements in terms of requirements for reclamation of wetlands and forested uplands. The reclaimed landforms tend to favor the economic use of the land. Agriculture is the dominant reclaimed nonmandatory landform. Pastureland, citrus, and row crop production are in high demand in the central Florida region.

A 1990 Florida Institute of Phosphate Research (FIPR) study, Regional Study of Land Use Planning and Reclamation, predicted that much of Polk County's mined land, including nonmandatory areas, will be reclaimed to upland pasture, with clay settling areas being especially suitable for reclamation as upland pasture. The FIPR study report also cited promising research results on the use of old clay settling areas for alfalfa and row crops. In a comparison of pre-mining and post-reclamation land uses throughout the study area, the FIPR report projected pasture and cropland to increase substantially, while rangeland and forested uplands were expected to decrease from pre-mining coverage. Based on this study, nonmandatory areas of the site can be expected to be reclaimed as agricultural land, predominantly pasture, but including some row crops.

Information was also obtained from preliminary in-house Estech Silver City and IMC Noralyn mine reclamation plans confirming that the nonmandatory lands are to be reclaimed to nonforested uplands (pasture, citrus, or grasslands) and forested areas. For instance, IMC's N-9C nonmandatory clay settling area (IMC-N-024C), adjacent to the FPC Polk County Site, has been submitted by IMC to FDNR for nonmandatory funding consideration. The proposed land uses are 310 (grassland) and 430 (upland mixed forest).

In summary, based on this review of industry practices and plans, the baseline (future without-project) condition of nonmandatory reclamation areas of the Polk County Site, consisting almost entirely of clay settling areas, was assumed to be reclaimed agricultural land, likely a combination of mostly pasture with some row crops or citrus. The baseline condition of mandatory reclamation areas was assumed to reflect the approved (pre-1992) reclamation plans for those areas. These plans show a combination of agricultural uses, grassland, forested uplands, forested and herbaceous wetlands, and water bodies. The baseline condition (in terms of land use/vegetation) for the entire site, including both mandatory and nonmandatory areas, is shown on Figures 2.1.2-2A and 2.1.2-2B.

2.1.3 Proposed Site Delineation

Figures 2.1.3-1A and 2.1.3-1B show the Polk County Site as it is planned. It will be subdivided into five key project components as follows:

- Plant Island — 964 acres
- Cooling Ponds — 2,600 acres
- Brine Pond — 311 acres
- Solid Waste Disposal Areas — 2,179 acres
- Buffer Areas — 1,649 acres

No portion of the FPC Polk County Site is within the 100-year floodplain of any surface water body in the area.

2.1.4 References

FDNR (Florida Department of Natural Resources). 1992. Mine Reclamation Monitoring Report. Unpublished. FDNR, Bureau of Mine Reclamation. Tallahassee, Florida.

FDOT (Florida Department of Transportation), State Topographic Bureau, Thematic Mapping Section. 1985. Florida Land Use, Cover and Forms Classification System. Procedure No. 550-010-001-a, Second Edition. September.

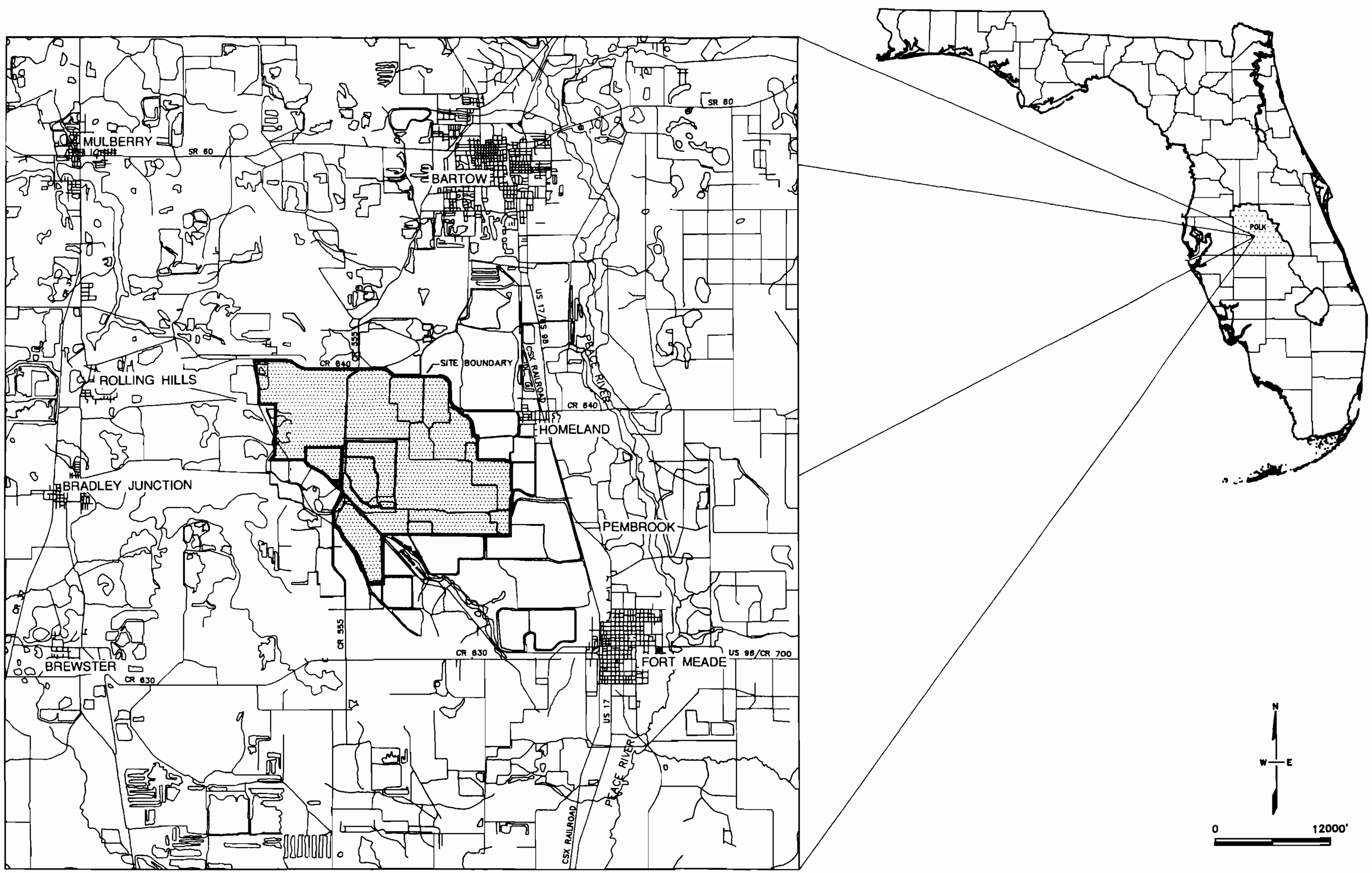
FIPR (Florida Institute of Phosphate Research). 1990. Regional Study of Land Use Planning and Reclamation. Publication No. 04-041-085. Prepared by the Central Florida Regional Planning Council. Bartow, Florida. August, 1990.

Polk County Comprehensive Plan. April, 1991.

TABLE 2.1.2-1
EXISTING APPROVED (PRE-1992) RECLAMATION PLAN
FLUCCS DESIGNATIONS FOR POLK COUNTY SITE
MANDATORY MINE LANDS

Land Use Designation	FLUCCS CODE	Acreage by Mine/Owner		
		IMC's Noralyn and Phosphoria	Estech Silver City	USAC N-9
Nonforested Uplands (Cropland and Pasture)	210/310	1,066	933	20
Forested Uplands	430	98	91	53
Waterbody	520	340	301	0
Forested Wetlands	630	68	172	0
Herbaceous Wetlands	640	539	0	0
Subtotal		2,111	1,497	73
TOTAL (All Acreages)		3,681		

Sources: FDOT, 1985
FDNR, 1992
Ebasco Environmental, 1992



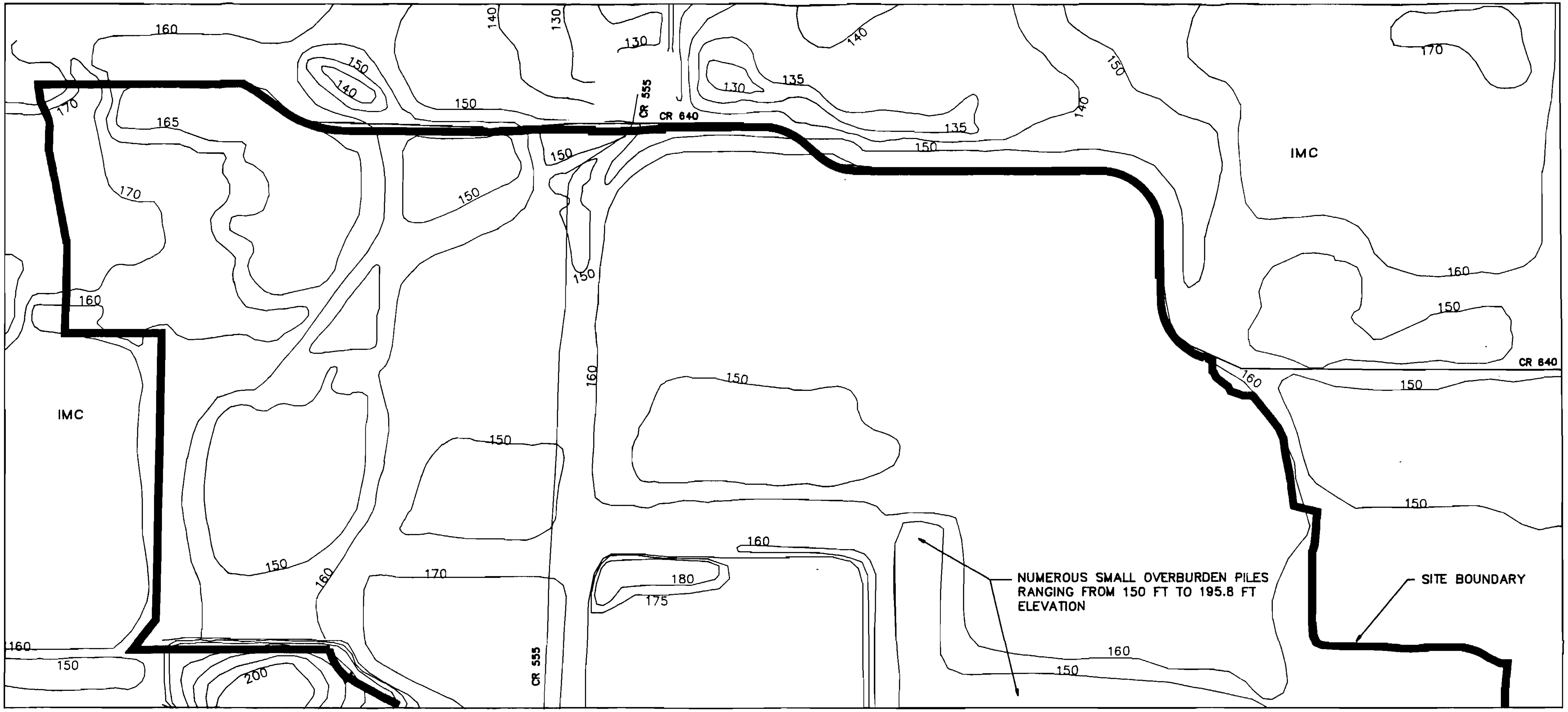
SOURCE: DAMES & MOORE, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.1-1

SITE LOCATION MAP



MATCHLINE SEE FIGURE 2.1.1-2B

LEGEND

150 — CONTOUR

SITE BOUNDARY

NOTES

FOR PROPERTY ACREAGE SEE TABLE 2.1.2-1

N W E

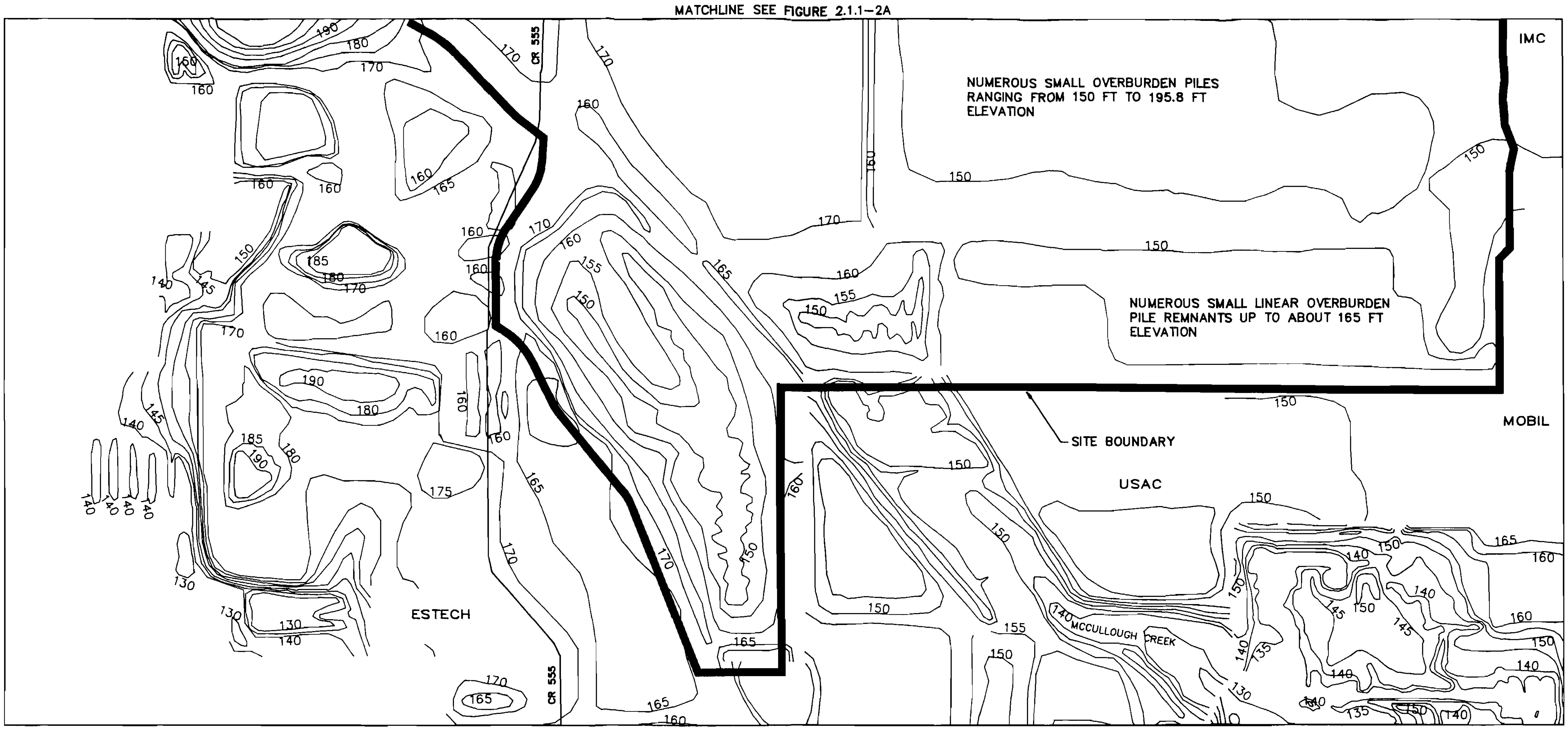
0 2000'

SOURCE: DAMES & MOORE, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.1-2A
EXISTING TOPOGRAPHY OF SITE AND ADJACENT LANDS
SHEET A



LEGEND

150 CONTOUR

SITE BOUNDARY

NOTES

FOR PROPERTY ACREAGE SEE TABLE 2.1.2–1

N W E

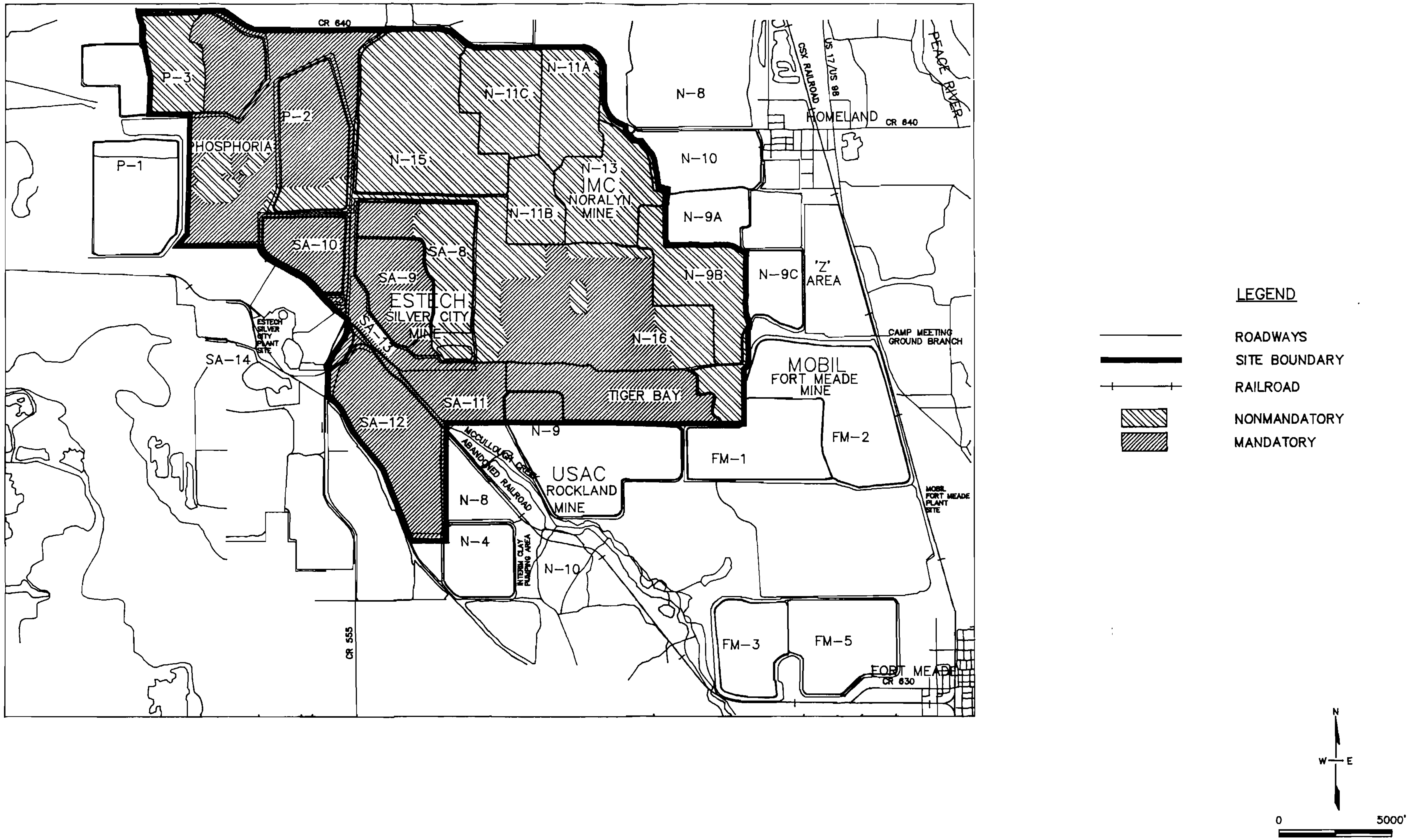
0 2000'

SOURCE: DAMES & MOORE, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.1-2B
EXISTING TOPOGRAPHY OF SITE AND ADJACENT LANDS
SHEET B



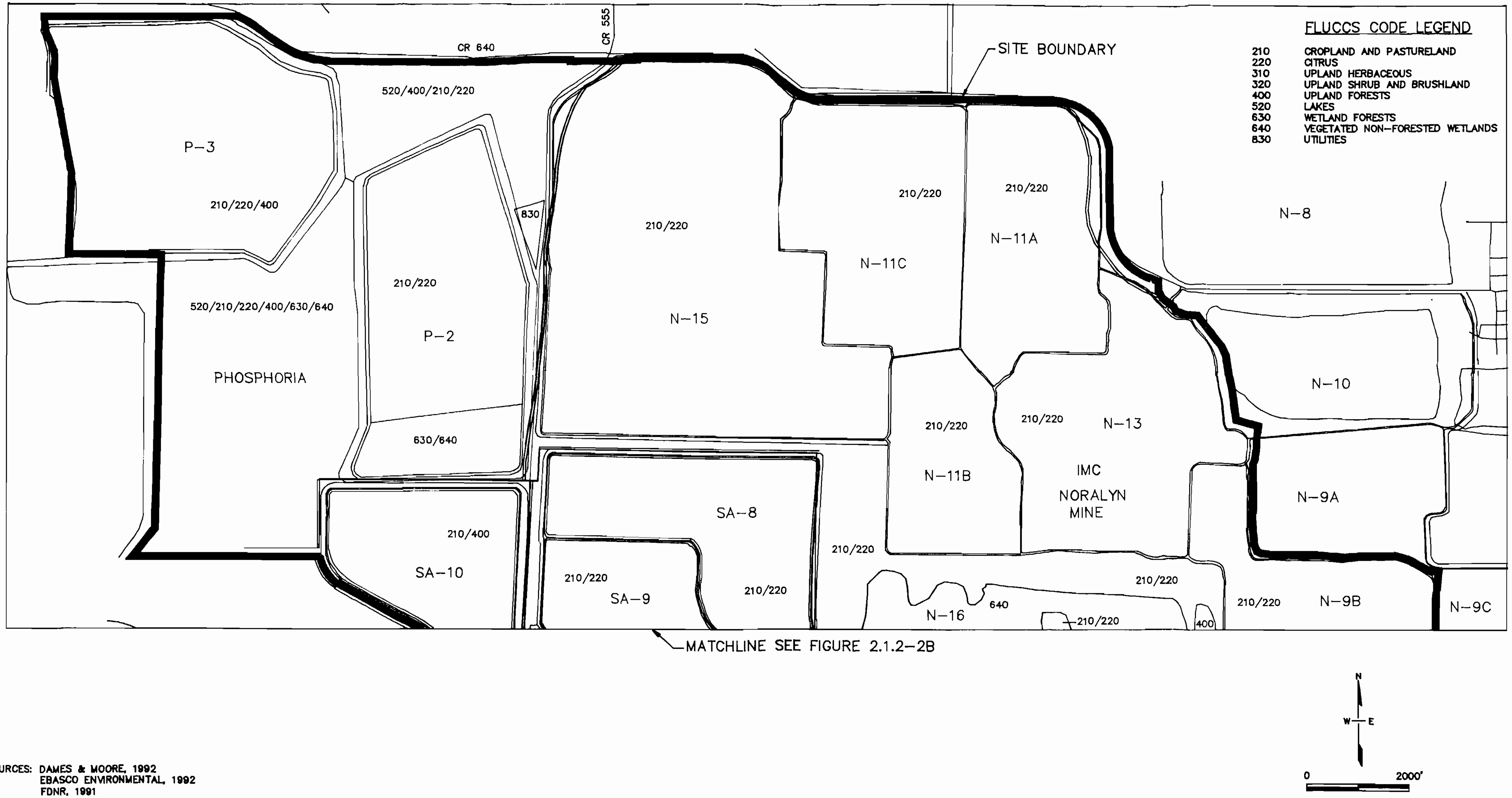
SOURCE: DAMES & MOORE, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.2-1

MANDATORY AND NONMANDATORY RECLAMATION LANDS

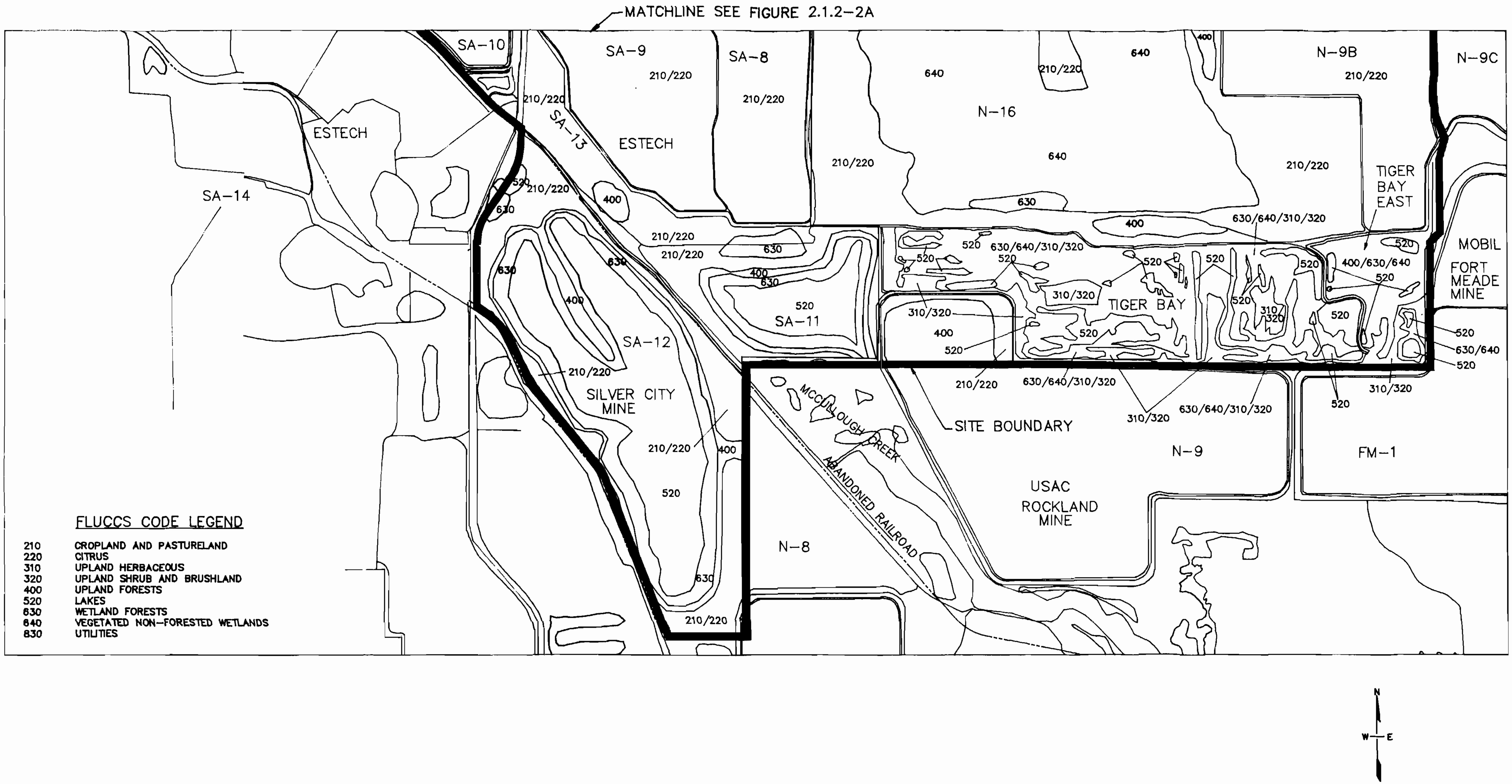


SOURCES: DAMES & MOORE, 1992
EBASCO ENVIRONMENTAL, 1992
FDNR, 1991

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.2-2A
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
SHEET A

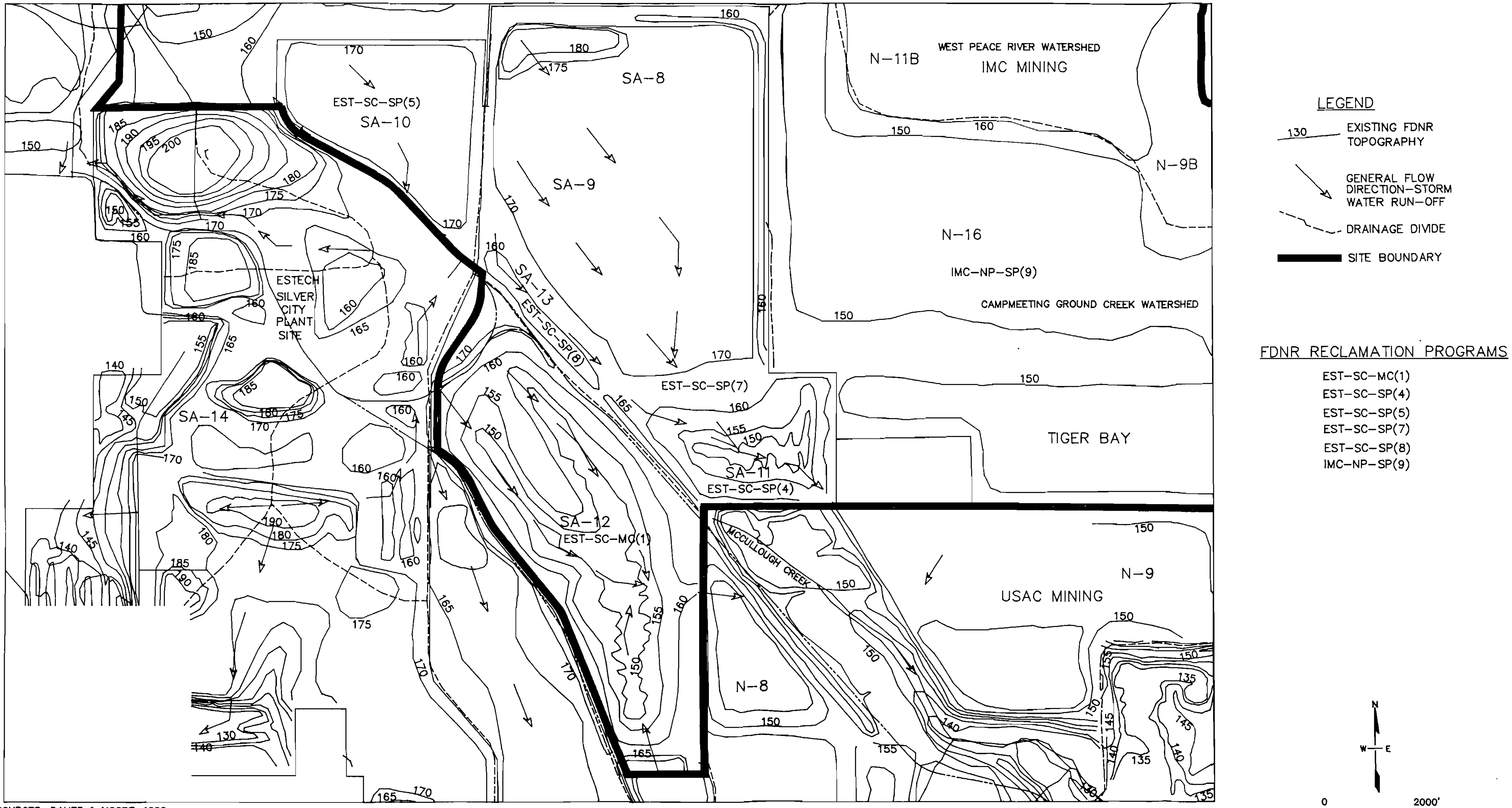


SOURCES: DAMES & MOORE, 1992
EBASCO ENVIRONMENTAL, 1992
FDNR, 1991

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.2-2B
VEGETATION/LAND USE MAP
BASELINE CONDITIONS
SHEET B

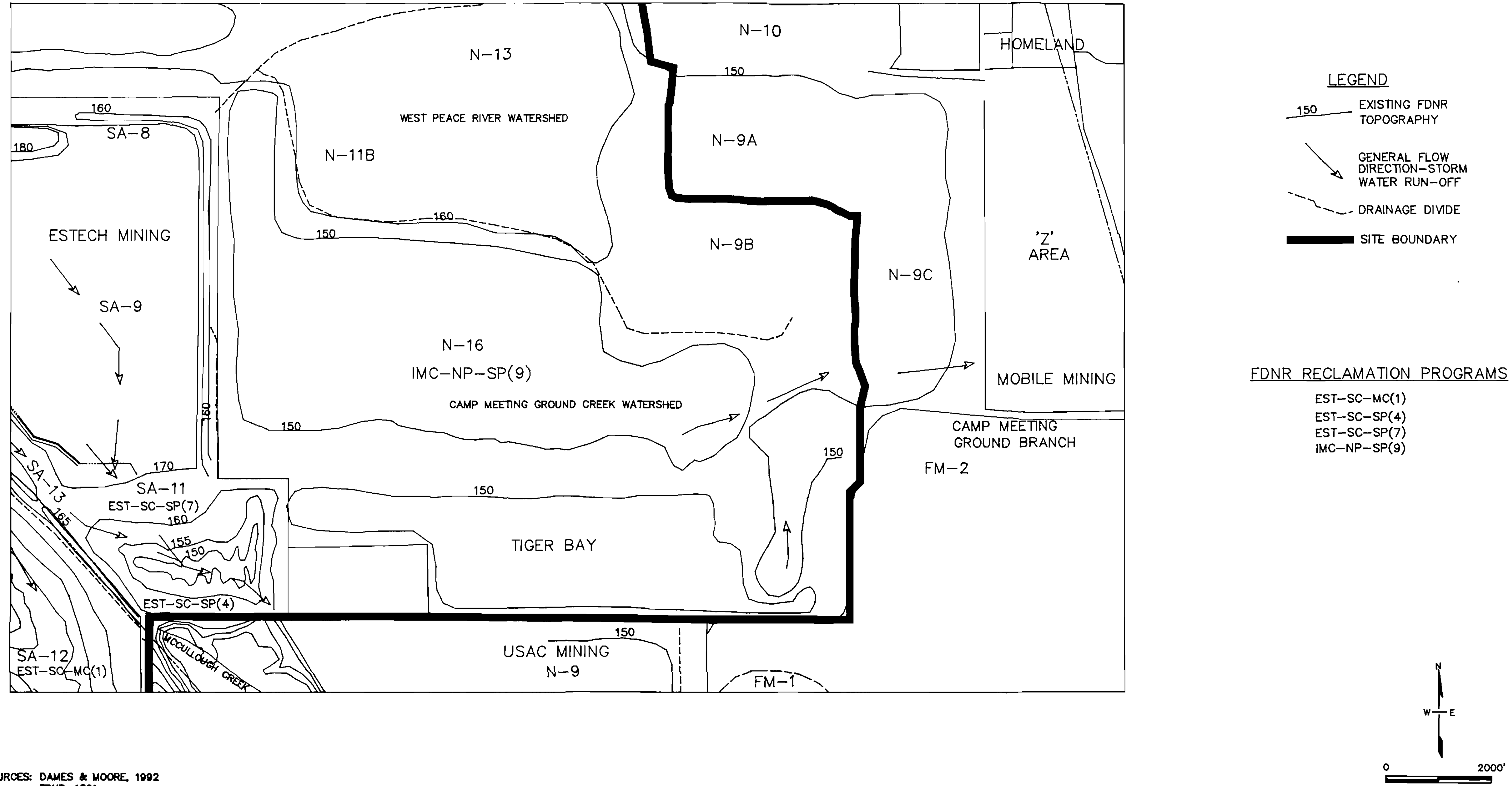


SOURCES: DAMES & MOORE, 1992
FDNR, 1991

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.2–3A
BASELINE CONDITION TOPOGRAPHY
IMC N–16 AND ESTECH (MANDATORY AREAS)
SHEET A

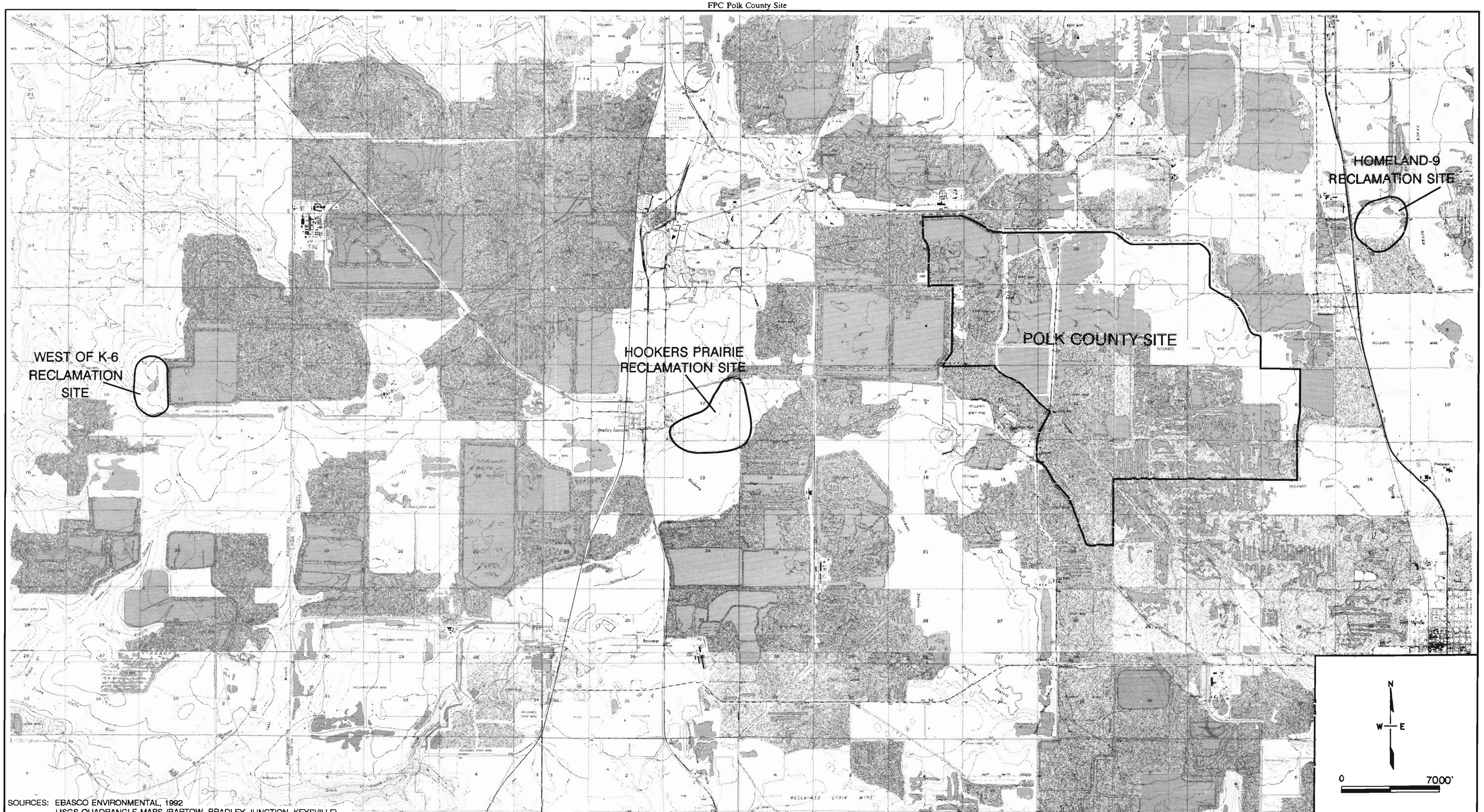


SOURCES: DAMES & MOORE, 1992
FDNR, 1991

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.2-3B
BASELINE CONDITION TOPOGRAPHY
IMC N-16 AND ESTECH (MANDATORY AREAS)
SHEET B

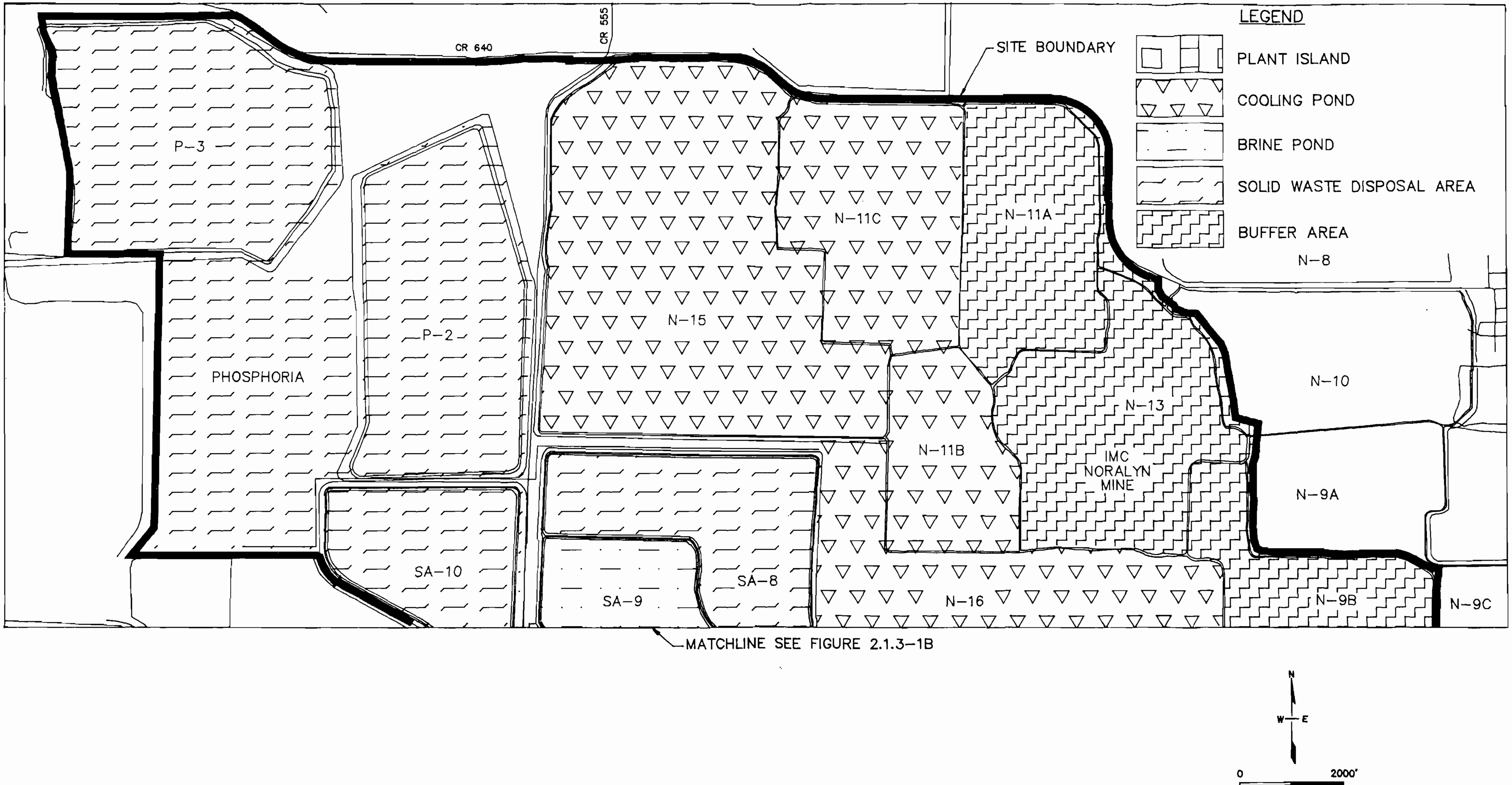


Florida Power CORPORATION

Polk County Site

FIGURE 2.1.2-4

OFF-SITE BASELINE STUDY AREAS



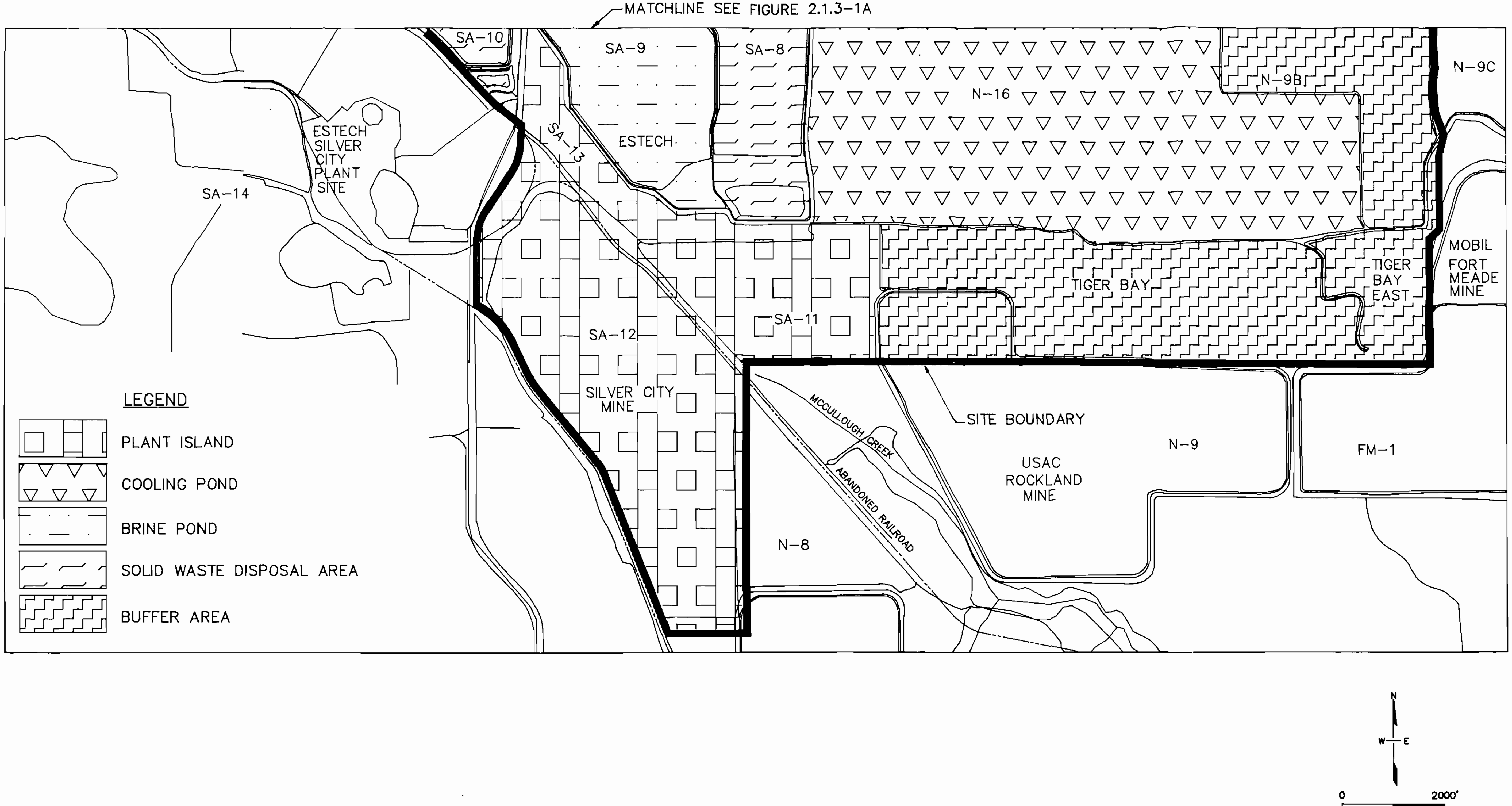
SOURCE: DAMES & MOORE, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.3-1A

GENERALIZED PROJECT SITE PLAN
SHEET A



SOURCE: DAMES & MOORE, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.1.3-1B

GENERALIZED PROJECT SITE PLAN SHEET B

2.2 SOCIOPOLITICAL ENVIRONMENT

2.2.1 Governmental Jurisdictions

The project site is located in an unincorporated area in southwest Polk County approximately 3 miles south of Bartow, 3.5 miles northwest of the City of Fort Meade, and 1 mile southwest of Homeland, an unincorporated community. As Figure 2.2.1-1 indicates, the City of Fort Meade is the only governmental jurisdiction within a five mile radius of the plant island.

The following areas are not found within 5 miles of the plant island:

- National Parks
- National Forests
- National Seashores
- National Wildlife Refuges
- National Wilderness Areas
- National Memorials or Monuments
- National Marine and Estuarine Sanctuaries
- Roadless Area Review and Evaluation Areas
- National Wild and Scenic Rivers
- Critical Habitat of Endangered Species
- State Parks
- State Forests
- Areas of Critical State Concern
- Conservation and Recreation Lands
- State Archaeological Landmarks or Landmark Zones

- Save Our Rivers Lands
- State Aquatic Preserves
- Outstanding Florida Waters
- Scenic and Wild Rivers
- Indian Reservations
- Military Lands
- Major private land-holdings for environmental protection

The Florida Game and Fresh Water Fish Commission (FGFWFC) currently leases an area known as the IMC Wildlife Management Area (WMA) on the southeast corner of CR 555 and CR 640 (Figure 2.2.1-2). This area is an active clay settling pond which is being used by IMC in its phosphate mining operations and is part of the proposed power plant site. Although the WMA is completely owned by IMC and is used as a clay settling area, the FGFWFC is allowed to use the area for a waterfowl hunting. FGFWFC's involvement with the area is limited due to its active use as part of the mining operation, which does not allow for control of water levels for wildlife management purposes. Signs are provided to inform visitors of hunting regulations, and access is controlled by FGFWFC. IMC has an agreement with FGFWFC, which uses the area with the knowledge that the use of the property for a WMA will be discontinued in the future as mining and mine reclamation progress.

Polk County owns two parks within a 5-mile radius of the plant island (Figure 2.2.1-2). The County's IMC Peace River Park, a regional park consisting of 640 acres of reclaimed phosphate land, is located approximately 3 miles northeast of the plant island, near the community of Homeland. This park is currently undeveloped but is scheduled to be developed in the near future as described in Section 2.2.7. The County also owns and maintains the Homeland Historic and Pioneer Park, a 3-acre neighborhood park located southwest of the intersection of CR 640 and SR 17.

Figures 2.2.1-3A and 2.2.1-3B show the area within a 1-mile radius of the plant island and the area within a 1-mile buffer around the plant island boundaries. There are no special areas identified within a 1-mile radius and only the area currently used by FGFWFC as the IMC WMA is within a 1-mile buffer of the plant island.

2.2.2 Zoning and Land Use Plans

In April 1991, Polk County adopted a Comprehensive Plan in accordance with the Local Government Comprehensive Plan and Land Development Regulation Act, Chapter 163, Part II, F.S. Appendix 10.3 provides further details regarding the Comprehensive Plan.

The proposed site is located in the Phosphate Mining (PM) land use category on the Polk County Future Land Use Maps (Figure 2.2.2-1). Certified electric power generation facilities are required to be located in the Phosphate Mining land use category. The Comprehensive Plan states that these facilities must be consistent with the requirements of the Plan and must be approved by the County via a conditional use permit (CUP). Locational criteria, environmental criteria, and development approval criteria, as well as buffering requirements, are specified in the Comprehensive Plan.

The proposed site is zoned Rural Conservation (RC) (Figure 2.2.2-2). Polk County's zoning regulations define electric generating facilities as Class III Essential Services and allow them as conditional uses in all zoning categories. Conditional use provisions listed in the RC category state that all Class III Essential Service facilities must be buffered from adjacent properties used for residential dwellings. The Polk County Board of County Commissioners approved a CUP for the Polk County Site on June 2, 1992. Appendix 10.2 provides further zoning and CUP detail.

Parcels adjacent to the proposed site are primarily zoned RC with two small residentially-zoned parcels located north of the site at the northeast corner of CR 555 and CR 640 and some industrially-zoned (GI) parcels located north of CR 640 near the northwest corner of the project site and directly across CR 555 from the plant island at the Estech Silver City plant site.

2.2.3 Demography and Ongoing Land Use

Two municipalities, Bartow and Fort Meade, are located within 5 miles of the project boundaries. The City of Bartow, with a population of 14,716 according to the 1990 census, is the county seat and the third largest city in Polk County. The City of Fort Meade had a 1990 population of 4,976. Unincorporated communities in southwest Polk County include Homeland, located about one mile northeast of the project boundaries; Bradley Junction, located about 5 miles west of the project boundaries; and Rolling Hills, located about 5 miles northwest of the project boundaries.

The rate of population growth in Florida and Polk County is illustrated on Figure 2.2.3-1. Florida's population increased 37.2 percent between 1960 and 1970, 43.5 percent between 1970 and 1980, and 32.7 percent from 1980 to 1990. Polk County's population growth has changed from 17.1 percent growth in the 1960s, to 40.8 percent growth in the 1970s, to 26 percent growth in the 1980s. Although Polk County's population increased 26 percent from the 1980 census to the 1990 census, most of the growth occurred in the northern part of the County. The 1990 Census shows a decline in population in most areas in the southern portion of the County, including population decreases in both Bartow and Fort Meade (Figure 2.2.3-2). Bartow's population decreased 1 percent from 14,789 in 1980 to 14,716 in 1990; while Fort Meade lost 10 percent of its population, dropping from 5,546 to 4,976. The two census tracts south and west of the site (160 and 161.98) lost population between 1980 and 1990 (Figure 2.2.3-3). Other census tracts in the area grew at a rate of 0 to 21 percent, except for the census tract which includes the majority of the proposed site, tract 159. The population in tract 159 increased almost 29 percent from 1,346 in 1980 to 1,730 in 1990. Tract 159 is a very large tract which includes Homeland, the outskirts of Bartow, and areas on either side of Fort Meade. Although the population in this tract increased by 384 persons, there was no significant increase in population in the direct vicinity of the site. A news article by the *Ledger* on the 1990 census attributed the overall population decrease in southern Polk County to the loss of jobs in the area resulting from the migration of citrus and mining jobs to areas south of Polk County (Rufty, 1991).

Polk County's Comprehensive Plan lists population data for the unincorporated area and the total County dating back to 1950. The Plan projects population in Polk County to reach 546,700 in the year 2000, with 57 percent of the population, or 311,164, living in the unincorporated area (Figure 2.2.3-4). The Comprehensive Plan projections increase to 599,400 (341,481 unincorporated) for the year 2005, and 648,400 (370,674 unincorporated) for the year 2010. These population projections were based on the Bureau of Economic and Business Research's (BEBR) high population projections that were published prior to the 1990 census. Since the 1990 census data became available, BEBR has revised its projections for Polk County. The new BEBR medium and high population projections for Polk County are shown on Figure 2.2.3-5. This figure compares BEBR's post-1990 Census projections with the population projections listed in the Polk County Comprehensive Plan. BEBR's medium projections are consistently lower than the Polk County Comprehensive Plan projections. BEBR's high projection for 1995 is lower than Polk County's projection, but BEBR's high projections exceed the Polk County projections after 1995. The population in the three census tracts surrounding the project site (tracts 159, 160, and 161) is projected to increase 12 percent from 1990 to 1995, or to increase from 13,130 to 14,759.

The proposed site is located in southwestern Polk County in an area which has been dominated by phosphate mining operations, including mines, clay settling ponds, sand tailings piles, gypsum stacks, and chemical and beneficiation plants. Most of the area within a 5-mile radius of the plant island consists of lands being actively mined, unreclaimed mining land, and lands in various stages of reclamation. Most of the reclaimed lands revert to pastureland or land-and-lakes after reclamation. Other land uses found within a 5-mile area include pastureland, citrus groves, and limited residential, commercial and industrial uses. Land uses within the 5-mile radius are mapped on Figures 2.2.3-6A and 2.2.3-6B.

Southwest Polk County is an area in transition. The phosphate industry has completed mining many of the phosphate deposits in Polk County, and the industry is moving into surrounding counties such as Hillsborough, Hardee, and Manatee. Polk County's Comprehensive Plan recognizes the changes occurring in the County. The County's Future Land Use Element states that most of the phosphate lands in Polk County will be mined out by the year 2010. The Economic Element of the Comprehensive Plan includes an objective of diversifying the County's economy by recruiting non-traditional industries and working with the phosphate industry to study the feasibility of using reclaimed and non-reclaimed phosphate lands for uses that would enhance the county's economic base. The plan specifically states that because the mined-out phosphate areas are uninhabited and have already been disturbed, they are a prime location for facilities such as electric-power generation plants. It also states that southwest Polk County has several advantages for the siting of electric-power generating facilities including the availability of reclaimed phosphate lands with few environmentally sensitive areas, a location close to the growth centers along Florida's west coast, and the availability of requisite infrastructure, such as rail facilities and an adequate transportation network. Recognizing these factors, the County's Future Land Use Element requires electric power generation facilities to be located in phosphate mining areas with at least 50 percent of the site comprised of lands previously disturbed by phosphate mining. The FPC Polk County Site consists entirely of lands which have been or will be disturbed by phosphate mining activities.

2.2.4 Easements, Title, Agency Works

CR 555 runs through the proposed project site and CR 640 borders the site on the north. Polk County requires a use permit for any facilities crossing these highways. No other easements, title, or agency works crossing approvals are known to be required, except for linear facilities which are addressed in Chapter 6 of this SCA.

2.2.5 Regional Scenic, Cultural and Natural Landmarks

The proposed plant site is located in an area which has been dominated by phosphate mining operations for decades. There are no regional scenic, cultural, or natural landmarks within 5 miles of the plant site.

2.2.6 Archaeological and Historic Sites

According to a letter from the Florida Department of State, Division of Historical Resources (DHR), dated January 6, 1992, the Florida Master Site File does not list any archaeological or historic sites on the project site. As mentioned above, the proposed site is composed of lands which have already been disturbed by phosphate mining. The DHR issued a letter January 30, 1992, stating that because of the project location and/or nature it is considered unlikely that any significant archaeological or historical sites will be affected. These letters are included in Appendix 10.5.2.

2.2.7 Socioeconomics and Public Services

2.2.7.1 Socioeconomics

EMPLOYMENT AND INCOME

Polk County's labor force was 183,067 in July 1991 (Figure 2.2.7-1). Out of this total, 161,684 were employed, resulting in an unemployment rate of 11.7 percent. This compares to a statewide unemployment rate of 7.9 percent for the same time period. Polk County's unemployment rate has consistently been higher than the state average in the last 10 years (Figure 2.2.7-2), and Polk County has been designated as a labor surplus area by the U.S. Department of Labor. (This designation means that companies in the Polk County area are eligible for preference in obtaining federal contracts.) The trend in employment in Polk County from 1986 to 1991 is shown on Figure 2.2.7-3. Employment actually decreased between 1989 and 1991.

Annual average employment for Polk County was 157,062 for 1990, according to the Florida Department of Labor and Employment Security (FDLES). Major industries in terms of employment were retail trade (26 percent), services (25 percent), manufacturing (17 percent), and government employment (federal, state and local), which accounted for 15 percent of total employment (Figure 2.2.7-4). Mining employment accounted for less than 3 percent of total employment. The average wages for these industries in 1990 were $13,467 for retail, $19,159 for services and $23,740 for manufacturing (Figure 2.2.7-5). The average wage for all government employees was $23,574. Average wages for all non-government employees in Polk County in 1990 were $19,106. The highest average wages were in the mining industry ($29,961), while the lowest were in retail.

Employment in Polk County is projected to increase to 233,052 by the year 2000, according to the FDLES's publication on Industry and Occupational Employment Projections. According to these projections, 26 percent of the employment will be in services and 24 percent will be in wholesale and retail trade (Figure 2.2.7-6). Manufacturing jobs are expected to account for 12 percent of total employment, with mining accounting for less than 2 percent. The FDLES's employment projections show increasing employment in all industries. The greatest growth in projected employment is in wholesale and retail trade and services, which are both projected to increase by 29 percent between 1989 and 2000. The least growth occurs in the mining industry.

The Polk County Comprehensive Plan's Economic Element contains regional employment projections developed by the Bureau of Economic Analysis of the U.S. Department of Commerce, commonly referred to as OBERS projections (Figure 2.2.7-7). These projections are consistent with the FDLES projections in that total employment is expected to exceed 200,000 by the year 2000, and mining employment is expected to increase through the year 2000.

Although the FDLES and OBERS projections show mining employment increasing through the year 2000, recent historical data on mining employment in Polk County shows a downward trend, from over 6,000 employees in 1981, to a low of 3,500 as of October 1991 (Figure 2.2.7-8). The projection methodology used by FDLES and OBERS does not account for changes in employment patterns, such as the shift of mining and mining-related employment from Polk County into other counties, such as Hardee and DeSoto. These projections are made at a state or regional level and then distributed to the counties within the region based on historical employment patterns. For example, FDLES's industry and occupational employment projections are based on data covering the period from 1972 through 1989. During that time period, Polk County has accounted for the majority of mining employment in central Florida. Therefore, most of the mining employment projected for the future is allocated to Polk County. However, the majority of the phosphate reserves in Polk County are mined out. Mining companies are preparing to move their mining operations into adjoining counties (Hillsborough, Manatee, Hardee, and DeSoto Counties). Therefore, the FDLES projections overstate mining employment in Polk County and understate mining employment in other counties. The downward trend in mining employment in Polk County, as shown on Figure 2.2.7-8, is expected to continue.

The per capita personal income for Polk County was $13,427 in 1988, or 81 percent of the Florida average and the national average per capita income (Figure 2.2.7-9). Polk County's nonfarm per capita income was $12,736 compared to the Florida average of $16,289 and the national average of $16,317. Per capita transfer payments (including unemployment, retirement and other payments) were $1,621 for Polk County compared to $1,705 for Florida and $1,531 nationally. The 1988 per capita income for Polk County represented a 7 percent increase over the 1987 per capita income of $12,498.

The County's Economic Element of the Comprehensive Plan lists the distribution of household incomes for 1980 and 1988 and a projection for 1993 (Figure 2.2.7-10). Households in the lowest income range, less than $15,000, made up 53 percent of total households in 1980. The percentage of households in this range decreased to 36 percent in 1988 and is projected to decrease to 34 percent by 1993. Middle income households made up 46 percent of all households in 1980, 61 percent in 1988, and are projected to make up 62 percent of all households by 1993. The highest income level, greater than $74,999, made up 1 percent of all households in 1980, 3 percent of all households in 1988, and are projected to account for 4 percent of all households by 1993. However, since this household income information has not been adjusted for inflation, the apparent increases shown on Figure 2.2.7-10 are an overly optimistic portrayal of the change in real household incomes over the time period.

HOUSING

The breakdown of housing units by type in unincorporated Polk County was listed in the County's Comprehensive Plan. In 1960, conventional single family units made up 89 percent of all housing units, mobile homes made up 7 percent, and multi-family units made up 4 percent. By 1989, conventional single family units had decreased to 58 percent of all housing units, while mobile homes increased to 33 percent of units, and multi-family units increased to 9 percent. Figure 2.2.7-11 illustrates the trend of increasing reliance on mobile homes and multi-family units for housing and shows how the number of conventional single family units has leveled off. Census data from 1990 indicate that detached single-family units have decreased to 53 percent of total units, mobile homes have decreased to 29 percent of total units and multi-family units have increased and now account for 18 percent of all units.

Polk County's Comprehensive Plan included housing cost information from the 1980 Census. In 1980, 22 percent of the County's housing stock was occupied by renters, 71 percent was occupied by owners, and the remainder was vacant. According to the 1980 Census, 47 percent of the County's families living in rented units were paying more than 25 percent of their income for rent. The median monthly rent charged in the County was $218. The average monthly cost of owner-occupied units was $303 if the home was mortgaged and $95 per month if the home was not mortgaged. The 1990 Census reported that the percentage of units occupied by renters has increased to 25 percent, while units occupied by owners dropped to 59 percent. Vacant units accounted for 16 percent of all units in the county. Housing cost data from the 1990 Census indicate that 92 percent of the rental units in the county rented for less than $500 per month, with a median monthly rent of $300. The monthly cost of home ownership was not available for 1990. However, the Census showed that the median value of owner occupied units was $61,000. The majority of these units (84 percent) had a value less than $150,000 while 34 percent of these units were valued at less than $50,000.

Figure 2.2.7-12 illustrates the trend in residential building permits issued in Polk County between 1985 and 1990 for the unincorporated area of the county and the total county. The County reached a peak of 3,765 residential permits in 1988, while permits in the unincorporated area peaked at 2,296 in 1989. Residential permits for both jurisdictions decreased between 1989 and 1990. The unincorporated area of the county has accounted for approximately 70 percent of the residential permits issued in the county during the time period shown. The municipalities of Bartow and Fort Meade issue building permits for construction within their boundaries

(Figure 2.2.7-13). Bartow has issued an average of 37 residential permits annually between 1985 and 1990 reaching a low of 28 in 1987 and a high of 48 in 1988. Fort Meade has issued an average of 16 residential permits per year with a high of 57 in 1986 and a low of 2 in 1987. Bartow issued 29 single-family building permits in 1990, while Fort Meade issued 11 single-family permits. Neither municipality issued any multi-family permits in 1990.

Temporary housing available in Polk County in 1991 included 116 hotels and motels with over 6,000 units total, as well as 47 rooming houses and 88 transient apartment buildings. Most of these facilities are located north of the site in cities and towns near Interstate Highway 4.

LOCAL GOVERNMENT REVENUES AND EXPENDITURES

Polk County's revenue sources include taxes, licenses and permits, intergovernmental revenues, charges for services, fines and forfeitures, miscellaneous revenues, and enterprise revenues. Polk County's total revenues were $311,744,893 in 1990-1991, and are projected to be $342,497,639 in fiscal year 1991-1992, according to the Polk County Budget. Taxes, intergovernmental revenues, and enterprise revenues make up 49 percent of the County's revenues. Polk County's budgeted revenues and expenditures for the fiscal year 1991-1992 are listed in Table 2.2.7-1. Per capita revenues and expenditures are shown on Figures 2.2.7-14 and 2.2.7-15.

Tax revenues contribute 24 percent of Polk County's total revenues (Figure 2.2.7-16). Tax revenues in Polk County include ad valorem taxes, resort taxes, a local option gas tax, and franchise fees and taxes. Polk County's total non-exempt assessment of property values for the fiscal year ending September 30, 1990, was $9.77 billion, according to the Local Government Financial Report Fiscal Year 1989-90. Ad valorem taxes are expected to contribute 87 percent of the County's tax revenues in 1991-1992. The local option gas tax will contribute another 11 percent of total taxes, while the resort tax, franchise taxes, and other taxes will make up the remaining 2 percent of total tax revenues. Licensing and permit revenues make up less than 1 percent of total County revenues. Licenses and permits include professional and occupational licenses, building permits, pet licenses, and other licenses and permits.

Intergovernmental revenues include state and federal grants for transportation projects, low income housing projects, and cultural/recreational projects, as well as tax and license revenues which are collected by the state and then distributed to the counties. These revenues include mobile home license revenues, sales tax revenues, revenue sharing funds, and many others. A complete list of intergovernmental revenue sources from the Polk County Budget is shown below.

Civil Defense	Mosquito Control II
Urban Mass Transportation	Other Human Services
Other Transportation	Other Cultural/Recreational
Community Development Block Grant	Other State Grants
	State Revenue Sharing
Low Income Housing	Insurance Agents Licenses
Economic Environment Grant	Mobil Home Licenses
Human Service Grant	Alcoholic Beverage Licenses
Federal Shared Revenue	Racing Tax
Judicial	Sales Tax
Public Safety	State Shared Revenue
Aquatic Weeds	Fire Fighting Supplement
Landfill Grants	Public Safety
Physical Environment	Motor Fuel Tax Rebate
Transportation	Construction Gas Tax
Economic Environment	County Gas Tax
Mosquito Control I	Other Transportation

Charges for services make up 2 percent of the County's projected revenues. These revenues include charges for recording legal instruments, zoning fees, concurrency management fees, circuit court fees, emergency service fees, ambulance fees, animal control fees, park and recreational fees, and many other fees and charges.

Fines and forfeitures make up 1 percent of the budgeted revenues. This category includes court fines, confiscated property, fines from violations of local ordinances, and other fines.

Miscellaneous revenues include interest, rents and royalties, special assessments, proceeds from the sale of surplus land and equipment, contributions and donations, and other miscellaneous revenues. These revenues make up 6 percent of total budgeted revenues for 1991-1992.

Enterprise operations in the county include internal services (fleet maintenance and a print shop), landfills, utilities, the county hospital, and Rohr Home, a nursing home operated by the County. The enterprises are set up to cover the costs of operation by charging fees for services. The landfill enterprise and the utilities enterprise are very successful and have generated revenue in excess of their expenditures. However, the internal services, the hospital, and the Rohr Home, all report expenditures greater than their revenues. Revenues from these enterprises are expected to make up 12 percent of total revenues in 1991-1992.

The Polk County Budget includes another category titled "Non-Revenues." This category contains court remittances, interfund transfers, debt proceeds, trust fund receipts, budgeted non-revenue, and other non-revenues. This category accounts for 40 percent of the County's total revenues.

Polk County's 1991-1992 Budget lists nine categories of expenditures. Public safety expenditures, including expenses for fire protection, sheriff's office, and emergency medical services, make up 20 percent of budgeted expenditures in 1991-1992 (Figure 2.2.7-17). Physical environment expenditures, which include expenditures on garbage, utilities, and water resources, were also expected to total 20 percent of total expenditures in 1990-1991. Miscellaneous expenditures are budgeted at 18 percent of all expenditures, human services (including hospital expenses, social programs, etc.) are budgeted at 15 percent of total expenditures, and general government services account for 13 percent of the budgeted expenses. The remaining 14 percent of total expenditures includes spending on transportation, the economic environment, culture and recreation, and internal services.

2.2.7.2 Public Services

PARKS AND RECREATION

Polk County's Parks and Recreation Division maintains 74 parks covering more than 2,300 acres and providing facilities for camping, fishing, water sports, ball games, and equestrian events. Two county parks are located within 5 miles of the plant island. The IMC Peace River Park is located just outside a 5-mile radius of the plant island. The IMC Peace River Park is a 640-acre regional park consisting of reclaimed phosphate lands. The park has not been developed, but Polk County has applied for a grant from the FDNR to aid in the park development. Phase I of the park development is expected to entail picnic facilities and a boardwalk in a 30-acre area along the Peace River. Construction on Phase I may start as early as the summer of 1992. The City of Bartow and the City of Fort Meade also provide recreation facilities. Bartow has 12 recreational facilities including a civic center, parks, ball fields, picnic areas, a recreation center, and a community center. Fort Meade has eight recreational facilities including parks, boat ramps, picnic areas, ball fields, and a community center. The Fort Meade Recreation Area on the Peace River provides access to the Peace River, picnic tables, pavilions, and nature trails.

EDUCATIONAL SERVICES

Several colleges and technical schools are located in Polk County, including Florida Southern College and Polk Community College. The University of South Florida is located in Tampa, 30 miles west of Polk County. There are 124 schools in the county, including 59 elementary schools, 29 secondary schools, and 36 other schools including vocational centers and exceptional student centers. Four elementary schools, a middle school, a junior high school, and a high school are located in Bartow. Fort Meade contains two elementary schools, a middle school, and a junior/senior high school. The Florida Department of Education's Statistical Report for 1989-1990 states that Polk County had a classroom teacher to student ratio of 1:16.60. The Polk County School Board's 1991-1992 total budget is $447,124,457 including general revenue, debt service, capital expenditures, and special revenues. Polk County's expenditure per student is $3,965. Local revenue makes up 25 percent of the school board's budget, with federal funds contributing 10 percent and state funds contributing the remaining 65 percent.

Polk County does not provide county-wide library services, but there are nine city-operated libraries and one private library within the county, including city-operated libraries in Bartow and Fort Meade.

The Heartland Private Industry Council provides educational job services to Polk County and the surrounding counties. The center uses federal funds to train and place unemployed persons. Services offered by the council include staffing assistance, occupational skills training, customized training, on-the-job training reimbursement to employers, targeted jobs tax credits to employers, and recruiting services for employers.

PUBLIC SAFETY

Polk County provides public safety services for the entire county. The County's Public Safety offices are located at the Bartow Airbase on Highway 17 between Bartow and Eagle Lake. These offices include the Emergency Management Division, Fire Services, and Emergency Medical Services. The County's Fire Services Division provides fire protection throughout the county through county fire stations and volunteer fire stations. There are 323 full-time firefighters in the county and 982 volunteers. There is a volunteer fire department located in Fort Meade staffed with 27 volunteers. There are two fire departments located in Bartow, the Bartow Fire Department, staffed with 25 paid personnel and 25 volunteers, and the Polk County Fire Department, staffed with 110 paid personnel and 350 volunteers. The County has a Hazardous Materials Team of 22 persons especially trained to handle chemicals and industrial incidents. This team is located at the Bartow Airbase.

The County Emergency Medical Services has ambulances located at approximately 25 locations throughout the County, including one location in Bartow and one in Fort Meade. There are eight hospitals in Polk County, with major hospitals located in Lakeland and Winter Haven. Two hospitals are located in Bartow. Bartow Memorial has 56 beds and the Polk County General Hospital in Bartow has 180 beds.

Law enforcement is provided by the Polk County Sheriff's Office located in downtown Bartow. A new command center for the Sheriff's office is under construction just south of Winter Haven. The county correctional facilities include a jail and a jail annex in Bartow. In addition to the Polk County Sheriff's Office, the Highway Patrol employs 48 full-time staff in Polk County, and the Cities of Bartow and Fort Meade each have a municipal police force.

Figure 2.2.7-18 shows the location of public service sites including law enforcement, emergency medical services, fire stations, hospitals, and schools.

UTILITY SERVICES

Central water and wastewater services are not currently available at the proposed site. The closest public water and wastewater systems are in the City of Fort Meade, approximately 4 miles southeast of the plant island. The Fort Meade Water Treatment Facility has a capacity of 1.7 million gallons per day (MGD) with current usage at 1.0 MGD or 59% of capacity. The Fort Meade wastewater treatment facility has a capacity of 1.0 MGD and a current usage of 0.49 MGD or 49 percent of capacity. According to the Fort Meade Comprehensive Plan, the wastewater facility is expected to provide sufficient capacity for the City through the year 2010. Expansion of the water treatment facility to a capacity of 2.0 MGD by the year 1995 is listed as a policy in the City's plan. Expansion of the water treatment facility is listed in the capital improvements element as a project for 1993.

SOLID WASTE SERVICES

Solid waste disposal in Polk County is handled by the County. The County operates three regional landfills which are used by the municipalities and the unincorporated areas of the County. In addition to the County's landfills, Lakeland and Fort Meade operate city-owned incinerator facilities. These incinerators are owned and operated by the individual municipality and the County does not use these facilities.

The County's North Central Landfill, located on SR 540 between Lakeland and Winter Haven serves the project site (Figure 2.2.7-19). The North Central Landfill serves 67 percent of the County's population. The landfill began operation in 1980 and consists of 120 acres, 17 acres of which have been filled. The level of service provided by this landfill was 6.3 pounds per capita per day in 1991 according to the Polk County Comprehensive Plan, and is projected to increase to 6.62 pounds per capita per day by 2010. The landfill has a capacity of 24,362,900 cubic yards (10,963,300 tons) and is expected to have excess capacity through the year 2010.

Waste collection services are provided by private companies through county-maintained contracts. The County has contracts with four collection companies: BFI Waste Systems, AAA Disposal, Florida Refuse Service, and Disposall. Florida Refuse provides collection services in the project site area.

TRANSPORTATION

EXISTING TRAFFIC CONDITIONS. Existing traffic conditions in the vicinity of the project have been quantified. Roadway and intersection volumes have been obtained along with the geometric configurations to determine the existing levels of service (LOS) in the study area for the morning and afternoon peak hours.

STUDY AREA. Roadways and intersections on which project traffic is expected to have a significant impact were included in the area of study. Since construction and operations traffic have significantly different traffic generation characteristics, two study areas have been defined. The study area for each analysis was based on the project traffic assigned to the roadways.

The study area was determined to be roadways on which the construction or operation traffic contributes 5 percent or more of the LOS C volume. In accordance with Polk County guidelines, the determination of project impact is based on peak-hour peak-direction volumes.

LEVELS OF SERVICE. The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and the perception of those conditions by motorists and passengers (TRB, 1985). A LOS definition generally describes these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

Six levels of service are defined. They are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F representing the worst. The operational conditions for these six designations can be conceptually described as follows (TRB, 1985):

- *LOS A* - Motorists are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist and passenger is excellent.

- *LOS B* - Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual motorist behavior.

- *LOS C* - The operation of individual motorists becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.

- *LOS D* - Speed and freedom to maneuver are severely restricted, and the motorist experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

- *LOS E* - All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor.

- *LOS F* - Operational conditions are forced or have broken down. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion.

These definitions are general and conceptual in nature, and they apply primarily to uninterrupted flow. Levels of service for other facilities, such as intersections, vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

Roadways in the study area all have an adopted LOS standard, from the Florida Department of Transportation (FDOT) and/or Polk County, indicating the lowest acceptable LOS for that roadway. These standards are adopted by local governments as part of their comprehensive plans and are enforced in the development review process. The adopted LOS standards for roadways in the study area are shown in Table 2.2.7-2.

The following existing conditions analysis includes the roadways and intersections from the construction traffic impact area since it is the larger of the two study areas.

ROADWAY CONFIGURATION. Roadways in the project area were evaluated to determine their existing lane configuration and LOS volumes. Polk County and FDOT have different LOS volumes adopted for the state roads within the study area. FDOT has recently adopted the 1992 Florida's Level of Service Standards and Guidelines Manual for Planning. As a part of the Comprehensive Plan, Polk County has adopted LOS volumes which are based on the 1989 Florida's Level of Service Standards and Guidelines Manual for Planning. Since Polk County cannot accept the new FDOT volumes until a plan amendment accepting the new manual has been adopted, two capacity analyses have been performed for each roadway.

Roadways were divided into segments for analysis purposes. The segments were defined with major intersections or changes in roadway geometry at each end. Table 2.2.7-2 summarizes the existing roadway configuration, area type, and government agency responsible for maintenance for each segment. Table 2.2.7-3 provides the LOS volumes used by Polk County in determining existing conditions for each road. A similar table provides the FDOT LOS volumes (Table 2.2.7-4). The LOS volumes are provided for peak hour/peak direction assessment as required by Polk County and FDOT.

ROADWAY VOLUMES. Existing volumes were obtained for the roads in the vicinity of the power plant site. Volumes were obtained from FDOT and Polk County in locations where they were available. Additional traffic counts were conducted as necessary, the results of which are provided in Appendix 10.8.1.

Daily volumes were available on several area roads. Table 2.2.7-5 shows the daily volumes on area roads, as well as the date of the count. Figure 2.2.7-20 illustrates the daily volumes on area roads.

For the determination of LOS, actual a.m. and p.m. peak hour volumes were obtained for roadway links that are in the study network by conducting turning movement volume counts at the study intersections. Volumes were converted to a peak season basis using weekly adjustment factors provided by FDOT for Polk County. For some of the roads outside of the study area, peak hour volumes were determined using generalized K and D factors. K and D factors are used to quantitatively relate peak hour and peak direction volumes to daily volumes on a roadway segment. The K factor, also called a Design Hour factor, is the ratio of the two-way design hour volume to the average annual daily traffic. The D, or Directional, factor is a measure of the peak direction of traffic relative to the total volume of peak hour traffic. The roads for which volumes were determined using generalized K and D factors were listed for reporting purposes. The existing peak season roadway conditions are listed in Table 2.2.7-6. Figures 2.2.7-21 and 2.2.7-22 illustrate the a.m. and p.m. peak hour volumes.

SR 37 from CR 630 to the beginning of the 4-lane section at Cameron Street was found to be operating at a LOS D using both the FDOT and Polk County generalized LOS tables. The adopted LOS for this roadway segment is C. For future conditions, a more detailed analysis was performed as described in Section 4.6.1.4.

No other capacity deficiencies were found to exist on area roads. A deficiency unrelated to capacity exists on CR 555. The section of CR 555 between CR 640 and Agricola Road is currently in extremely poor condition. The pavement is severely damaged and prone to flooding.

PROGRAMMED IMPROVEMENTS. FDOT has scheduled work projects which will improve the existing conditions of some roads in the study area. Using federal aid, FDOT has a project funded to widen and resurface the section of CR 555 which is in poor condition. The project is funded in fiscal year 1991-1992 under Work Program Improvement (WPI) No. 1127904.

FDOT is also currently funding a Project Development and Environmental study for SR 60A (Van Fleet Drive) from CR 555 to the Peace River (WPI No. 1118291). The project is to identify a long term solution to expected future capacity deficiencies on SR 60A and U.S. 98 in the Bartow area. The study is evaluating not only improvements to existing roads, but also the construction of new roads which would alter travel patterns through critical areas. While an alternative has not yet been selected for implementation, it is expected that the improvement will be in place prior to the construction traffic peak examined in Section 4.6.1.

INTERSECTION VOLUMES. Volumes were obtained for the eleven intersections that are in the study area for the power plant. Volumes at the five intersections in Bartow were obtained from FDOT. Volumes at the remaining intersections were collected by FPC's consultants in the latter half of 1991.

Using hourly volumes from 24-hour machine counters, it was found that the peak hour of the day occurs between 6:00 and 8:00 a.m., depending on the facility. The highest afternoon hours were found to occur between the 3:00 to 4:30 p.m. time period.

The early peak hours, with the highest hour occurring in the morning, is a result of the industrial related traffic. Data were collected between 6:00 and 8:00 a.m., and between 3:00 and 4:30 p.m. The counts were conducted in December 1991 and July 1991. Turning movement volumes are included in Appendix 10.8.1.

Existing traffic volumes were increased to peak season levels using the FDOT weekly adjustment factors for Polk County. Peak season intersection volumes are shown in Appendix 10.8.2. For this analysis, the highest hour during the a.m and p.m. periods was used.

The study intersections were analyzed to determine the existing LOS. Unsignalized intersections were evaluated to determine if the installation of a traffic signal is warranted. None of the five unsignalized intersections was found to meet traffic signal volume warrants at this time.

All of the study intersections were analyzed using the Transportation Research Board's 1985 Highway Capacity Manual (HCM) signalized intersection methodology. Use of this methodology does not indicate the need for signalization nor is its use predicated upon the installation of a traffic signal. Rather its use at both signalized and unsignalized intersections is intended to derive an overall intersection LOS indication for each.

The results of the intersection analysis are shown in Table 2.2.7-7 and graphically on Figures 2.2.7-23 and 2.2.7-24. All of the intersections are currently operating at an acceptable LOS.

RAIL TRANSPORTATION. Rail transportation in Polk County is provided by CSX Transportation, Inc., and Florida Midland Railroad. The active rail lines on Florida Midland Railroad consist of a north-south route serving locally between Frostproof and Lake Wales, an east-west route serving locally through Lake Wales, and a northeast-southwest route connecting the Bartow Airbase to the CSX route SX-810. Since the remaining active rail lines on Florida Midland Railroad are local lines and are irrelevant to the FPC power plant site, the existing condition study for rail transportation in Polk County was focused on CSX transportation routes.

There are several north-south CSX rail routes currently serving Polk County, with an east-west route (A-301) connecting all the north-south routes (Figure 2.2.7-25). Route A-301 enters Polk County from the northeast at the County line adjacent to Osceola County, runs westward mostly along US 92/17 through Haines City, Lake Alfred, East Lakeland Carters Corner, and Lakeland. It then leaves Polk County and enters Hillsborough County. This key east-west rail route also serves the Tampa area and connects with rail routes through the northern area of Florida. In addition to route A-301, east-west route SV-820 runs from Bartow westward through Mulberry to the Polk/Hillsborough County line and route SV-822/SV-825 runs from Fort Meade northwesterly through Bradley Junction, Agricola, Brewster, and Pinedale/Pierce, and then leaves Polk County at the vicinity of route SV-820.

The north-south CSX rail routes in Polk County include routes AY-306, SV-822, AR-370, AX-330, and SX-810. Route AY-306 starts from route A-301 in West Lakeland and runs southward through Mulberry and Green Bay and terminates at the FPC Polk County Site. Route SV-822 enters Polk County from Hardee County, runs northerly through Baird Station, west of Bradley Junction, Agricola/Brewster, and turns northwesterly towards Hillsborough County. Route SVH-823 connects route A-306 and route SV-822 to form a complete north-south rail route from Lakeland to the Polk/Hardee County line. Another CSX north-south rail route that runs between Lakeland and the Polk/Hardee County line is route AX-330. Route AX-330 runs along U.S. 17 from route A-301 through Lakeland, Highland City, Bartow, and Fort Meade. The portion of route AX-330 between Bartow and CR 640 is partially abandoned. The continuity of route AX-330 is maintained by the connections with route SVE-824 which runs just east of U.S. 17. Route AR-370 runs northwesterly from route A-301 to the Polk/Pasco County line, northwesterly through North Lakeland and Kathleen. Route SX-810 is the north-south rail route that runs through central Polk County between route A-301 and the Polk/Highlands County line. This rail route starts from A-301 in Auburndale, runs through Winter Haven, Eagle Lake, west of Lake Wales and Highland Park, west of Frostproof, and leaves Polk County just east of U.S. 27/98. At Eagle Lake, a local Florida Midland Railroad connects with CSX route SX-810 and runs southwesterly to Bartow Airbase.

In addition to the main east-west and north-south CSX rail routes, a few local spur lines also serve the Polk County area.

The most probable rail route for transporting coal overland to the FPC Polk County Site includes route A-301 and route AY-306. The existing conditions on the probable rail route such as number of crossings, number of trains per day, traffic volumes on crossing highways, and the maximum train travel speed limits were identified by using the FDOT Railroad Crossing Locator maps and the Rail-Highway Crossing Inventory. The resulting information is summarized in Table 2.2.7-8. As shown in Table 2.2.7-8, the total number of rail crossings on the probable rail route in Polk County is 86, including 14 private crossings. The number of trains per day ranges mostly from 11 to 24 with some crossings having less train traffic. One private crossing has 45 trains per day.

The maximum train speed falls mostly between 40 mph and 79 mph. Most of the highway crossings carry less than 5,000 vehicles per day (vpd) and the highest volume, 21,800 vpd, occurred at the crossing of U.S. 98 and CSX route A-301 in Lakeland.

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TABLE 2.2.7-1
POLK COUNTY BUDGET FOR 1991-1992

Revenues	Million $	Per Capita	Expenditures	Million $	Per Capita
Taxes	82.72	204.05	General Government	44.88	110.71
Licenses/Permits	2.31	5.70	Public Safety	69.39	171.17
Intergovernmental	42.43	104.67	Physical Environment	69.13	170.53
Charges for Services	7.87	19.41	Transportation	28.33	69.88
Fines/Forfeitures	3.43	8.46	Economic Environment	8.67	21.39
Miscellaneous	20.83	51.38	Human Services	51.45	126.92
Non-Revenues[1]	138.31	341.18	Culture/Recreation	6.01	14.83
Internal Service	2.01	4.96	Internal Services	2.15	5.30
Enterprises	42.59	105.06	Miscellaneous	62.50	154.18
Total[2]	342.50	844.87	Total[2]	342.50	844.91

(1) Non-Revenues are defined by Polk County to include court remittances, interfund transfers, trust fund receipts, debt proceeds, budgeted non-revenue, and other non-revenue.

(2) Differences due to rounding.

Sources: Polk County Office of Management and Budget, 1991
Moore/Bowers, 1992

TABLE 2.2.7-2
EXISTING ROADWAY CONFIGURATION

Roadway Segment	No. of Lanes	Type	Agency	Polk LOS Standard[1]	FDOT LOS Standard[2]
State Road 37:					
Carter Rd to SR 60	4 Divided	Urban	FDOT	D	D
SR 60 to Cameron St	4 Divided	Urban	FDOT	D	D
Cameron Stt to CR 640	2 Undivided	Rural	FDOT	C	C
CR 640 to CR 630	2 Undivided	Rural	FDOT	C	C
CR 630 to CR 674	2 Undivided	Rural	FDOT	C	C
County Road 555:					
SR 60 to CR 640	2 Undivided	Rural	Polk	D	N/A
CR 640 to Plant Entrance	2 Undivided	Rural	Polk	D	N/A
Plant Entrance to CR 630	2 Undivided	Rural	Polk	D	N/A
U.S. 98:					
CR 540A to Manor Dr	4 Divided	Rural	FDOT	D	B
Manor Dr to SR 60A	6 Divided	Urban	FDOT	D	C
U.S. 17:					
CR 630 to S. 9th Street	4 Divided	Urban	FDOT	D	C
S. 9th Street to Sand Mountain Rd	4 Divided	Rural	FDOT	D	B
U.S. 17/98:					
SR 60 to CR 640	4 Divided	Rural	FDOT	C	B
CR 640 to CR 630	4 Divided	Rural	FDOT	C	B

TABLE 2.2.7-2

EXISTING ROADWAY CONFIGURATION

Roadway Segment	No. of Lanes	Type	Agency	Polk LOS Standard[1]	FDOT LOS Standard[2]
State Road 60:					
County Road 676 to State Road 37	4 Divided	Urban	FDOT	D	D
State Road 37 to County Road 555	4 Divided	Rural	FDOT	C	B
County Road 555 to State Road 60A	4 Divided	Urban	FDOT	D	C
State Road 60A:					
State Road 60 to U.S. 98	4 Divided	Urban	FDOT	D	C
U.S. 98 to Wilson Avenue	4 Divided	Urban	FDOT	D	C
Wilson Avenue to Van Fleet Drive	4 Divided	Urban	FDOT	D	C
County Road 640:					
Hillsborough County to State Road 37	2 Undivided	Rural	Polk	D	N/A
State Road 37 to County Road 555	2 Undivided	Rural	Polk	D	N/A
County Road 555 to U.S. 17/98	2 Undivided	Rural	Polk	D	N/A
U.S. 17/98 to Pool Branch Road	2 Undivided	Rural	Polk	D	N/A
County Road 630:					
State Road 37 to County Road 555	2 Undivided	Rural	Polk	D	N/A
County Road 555 to U.S. 17/98	2 Undivided	Rural	Polk	D	N/A

Note: N/A = Not Applicable

(1) Polk County Comprehensive Plan adopted 1989 FDOT standards.

(2) FDOT, 1992. Florida's Level of Service Standards and Guidelines for Planning, 1992.

Source: Kimley-Horn, 1992

TABLE 2.2.7-3
POLK COUNTY LEVEL OF SERVICE VOLUMES
PEAK HOUR/PEAK DIRECTION

Roadway Segment	A	B	C	D	E
SR 37:					
Carter Rd to SR 60	1,620	1,730	1,790	1,890	1,990
SR 60 to Cameron St	1,080	1,610	1,680	1,760	1,850
Cameron St to CR 640	170	330	540	870	1,400
CR 640 to CR 630	170	330	540	870	1,400
CR 630 to CR 674	170	330	540	870	1,400
CR 555:					
SR 60 to CR 640	170	330	540	870	1,400
CR 640 to Plant Entrance	170	330	540	870	1,400
Plant Entrance to CR 630	170	330	540	870	1,400
U.S. 98:					
CR 540A to Manor Dr	1,620	1,730	1,790	1,890	1,990
Manor Dr to SR 60A	--	--	1,660	2,510	2,720
U.S. 17:					
CR 630 to S. 9th St	--	--	1,090	1,640	1,800
S. 9th St to Sand Mountain Rd	1,160	1,690	2,280	2,810	3,520

TABLE 2.2.7-3
POLK COUNTY LEVEL OF SERVICE VOLUMES
PEAK HOUR/PEAK DIRECTION

Roadway Segment	A	B	C	D	E
U.S. 17/98:					
SR 60 to CR 640	1,160	1,690	2,280	2,810	3,520
CR 640 to CR 630	1,160	1,690	2,280	2,810	3,520
SR 60:					
CR 676 to SR 37	1,160	1,690	2,280	2,810	3,520
SR 37 to CR 555	1,160	1,690	2,280	2,810	3,520
CR 555 to SR 60A	1,160	1,690	2,280	2,810	3,520
SR 60A:					
SR 60 to U.S. 98*	1,080	1,610	1,680	1,760	1,850
U.S. 98 to Wilson Ave	1,080	1,610	1,680	1,760	1,850
Wilson Ave to Van Fleet Dr	1,080	1,610	1,680	1,760	1,850
CR 640:					
Hillsborough County to SR 37	170	330	540	870	1,400
SR 37 to CR 555	170	330	540	870	1,400
CR 555 to U.S. 17/98	170	330	540	870	1,400
U.S. 17/98 to Pool Branch Rd	170	330	540	870	1,400
CR 630:					
SR 37 to CR 555	170	330	540	870	1,400
CR 555 to U.S. 17/98	170	330	540	870	1,400

Note: *Based on 4 Lane Service Volume
Source: Kimley-Horn, 1992; Polk County

TABLE 2.2.7-4
FDOT LEVEL OF SERVICE VOLUMES
PEAK HOUR/PEAK DIRECTION

Roadway Segment	A	B	C	D	E
SR 37:					
Carter Rd to SR 60	--	1,340	1,650	1,770	1,770
SR 60 to Cameron St	--	1,340	1,650	1,770	1,770
Cameron St to CR 640	140	280	460	740	1,190
CR 640 to CR 630	140	280	460	740	1,190
CR 630 to CR 674	140	280	460	740	1,190
U.S. 98:					
CR 540A to Manor Dr	1,110	1,660	2,190	2,680	3,080
Manor Dr to SR 60A	--	1,920	2,330	2,510	2,510
U.S. 17:					
CR 630 to S. 9th St	--	1,250	1,540	1,660	1,670
S. 9th St to Sand Mountain Rd	1,110	1,660	2,190	2,680	3,080
U.S. 17/98:					
SR 60 to CR 640	1,110	1,660	2,190	2,680	3,080
CR 640 to CR 630	1,110	1,660	2,190	2,680	3,080
SR 60:					
CR 676 to SR 37	570	1,450	1,900	2,210	2,600
SR 37 to CR 555	1,110	1,660	2,190	2,680	3,080
CR 555 to SR 60A	--	1,250	1,540	1,660	1,670
SR 60A:					
SR 60 to U.S. 98	--	1,250	1,540	1,660	1,670
U.S. 98 to Wilson Ave	--	1,250	1,540	1,660	1,670
Wilson Ave to Van Fleet Dr	--	1,250	1,540	1,660	1,670

Source: Kimley-Horn, 1992; FDOT, 1992.

TABLE 2.2.7-5
DAILY ROADWAY VOLUMES

Roadway Segment*	Daily Volume	Date of Count	Source
SR 37:			
Carter Rd to SR 60	14,404	2-21-90	FDOT
SR 60 to Cameron St	12,027	2-21-90	FDOT
Cameron St to CR 640	7,963	2-21-90	FDOT
CR 640 to CR 630	3,620	5-3-89	FDOT
CR 630 to CR 674	3,907	3-29-89	FDOT
CR 555:			
SR 60 to CR 640	4,400	1991 AADT	FDOT
CR 640 to Plant Entrance	1,667	7/91	KHA
Plant Entrance to CR 630	1,666	7/91	KHA
U.S. 98:			
CR 540A to Manor Dr	28,400	1991 AADT	FDOT
Manor Dr to SR 60A	27,400	1991 AADT	FDOT
U.S. 17:			
CR 630 to S.E. 9th Street	8,950	4-10-89	FDOT
U.S. 17/98:			
SR 60 to CR 640	9,174	4-10-89	FDOT
CR 640 to CR 630	13,770	2-21-90	FDOT
State Road 60:			
CR 676 to SR 37	21,422	2-21-90	FDOT
SR 37 to CR 555	18,000	1991 AADT	FDOT
CR 555 to SR 60A	19,800	1991 AADT	FDOT
SR 60A:			
SR 60 to U.S. 98	14,600	1991 AADT	FDOT
U.S. 98 to Wilson Ave	24,100	1991 AADT	FDOT
CR 640:			
Hillsborough County to SR 37	N/A	N/A	N/A
SR 37 to CR 555	3,737	1989	PC
CR 555 to U.S. 17/98	2,448	1989	PC
U.S. 17/98 to Pool Branch Rd	N/A	N/A	N/A
CR 630:			
SR 37 to CR 555	2,455	1989	PC
CR 555 to U.S. 17/98	N/A	N/A	N/A

* See Figure 2.2.7-20 for locations

Sources:
N/A = Not Available
AADT = Average Annual Daily Traffic
FDOT = Florida Department of Transportation
KHA = Kimley-Horn & Associates
PC = Polk County Engineering Department

TABLE 2.2.7-6
EXISTING PEAK SEASON ROADWAY CONDITIONS

Roadway Segment[1]	A.M. Peak Hour				P.M. Peak Hour			
	Northbound/ Eastbound	Southbound/ Westbound	Polk LOS	FDOT LOS	Northbound/ Eastbound	Southbound/ Westbound	Polk LOS	FDOT LOS
SR 37:								
Carter Rd to SR 60	491	934	A	B	1,255	661	A	B
SR 60 to Cameron St	360	592	A	B	973	354	A	B
Cameron St to CR 640	201	661	D	D	572	192	D	D
CR 640 to CR 630	546	163	D	D	458	142	C	C
CR 630 to CR 674[2]	214	168	B	B	168	214	B	B
CR 555:								
SR 60 to CR 640	140	309	B	N/A	287	90	B	N/A
CR 640 to Plant Entrance	42	204	B	N/A	170	31	A	N/A
Plant Entrance to CR 630	46	147	A	N/A	120	40	A	N/A
U.S. 98:								
CR 540A to Manor Dr	931	1,670	B	C	1,844	1,241	D	C
Manor Dr to SR 60A	1,046	1,677	D	B	1,946	1,357	D	C
U.S. 17:								
CR 630 to S.E. 9th Street	416	392	C	B	494	544	C	B
U.S. 17/98:								
SR 60 to CR 640	458	337	A	A	489	477	A	A
CR 640 to CR 630	513	445	A	A	546	506	A	A

TABLE 2.2.7-6
EXISTING PEAK SEASON ROADWAY CONDITIONS

Roadway Segment[1]	A.M. Peak Hour				P.M. Peak Hour			
	Northbound/ Eastbound	Southbound/ Westbound	Polk LOS	FDOT LOS	Northbound/ Eastbound	Southbound/ Westbound	Polk LOS	FDOT LOS
SR 60:								
CR 676 to SR 37	864	692	A	B	722	1,085	A	B
SR 37 to CR 555	944	669	A	A	780	935	A	A
CR 555 to SR 60A	798	621	A	B	996	928	A	B
SR 60A:								
SR 60 to U.S. 98	587	486	B	B	834	664	C	B
U.S. 98 to Wilson Ave	999	1,035	A	B	1,114	1,217	B	B
Wilson Ave to Van Fleet Dr	990	1,131	B	B	1,228	1,244	B	B
CR 640:								
Hillsborough County to SR 37	240	291	B	N/A	243	201	B	N/A
SR 37 to CR 555	108	201	B	N/A	161	122	A	N/A
CR 555 to U.S. 17/98	76	128	A	N/A	131	99	A	N/A
U.S. 17/98 to Pool Branch Rd	69	116	A	N/A	111	68	A	N/A
CR 630:								
SR 37 to CR 555	64	247	B	N/A	167	50	A	N/A
CR 555 to U.S. 17/98	125	210	B	N/A	240	162	B	N/A

Notes: [1] See Figures 2.2.7-21 and 2.2.7-22 for locations.
[2] Volumes estimated from generalized K and D factors.
N/A = Not Available

Source: Kimley-Horn, 1992.

TABLE 2.2.7-7
EXISTING INTERSECTION CONDITIONS

Intersection*	Count Source	A.M. LOS	P.M. LOS
SR 37 and SR 60	KHA	C	C
SR 37 and CR 640	KHA	A	B
CR 555 and SR 60	KHA/FDOT	B	B
CR 555 and CR 640	KHA	A	B
CR 555 and CR 630	FDOT	A	A
SR 60 and SR 60A	FDOT	A	C
U.S. 98 and Manor Dr	FDOT	C	C
U.S. 98 and SR 60A	FDOT	D	D
SR 60A and Wilson Ave	FDOT	B	B
U.S. 17/98 and CR 640	KHA	A	A
U.S. 17/98 and CR 630	KHA	C	C

Note: *See Figures 2.2.7-23 and 2.2.7-24 for location.

Sources: KHA = Kimley-Horn & Associates, 1991
FDOT = Florida Department of Transportation, calibrated December 1991 by Kimley-Horn & Associates

TABLE 2.2.7-8
EXISTING CONDITIONS ON PROBABLE RAIL ROUTE
FOR FPC COAL TRANSPORTATION IN POLK COUNTY

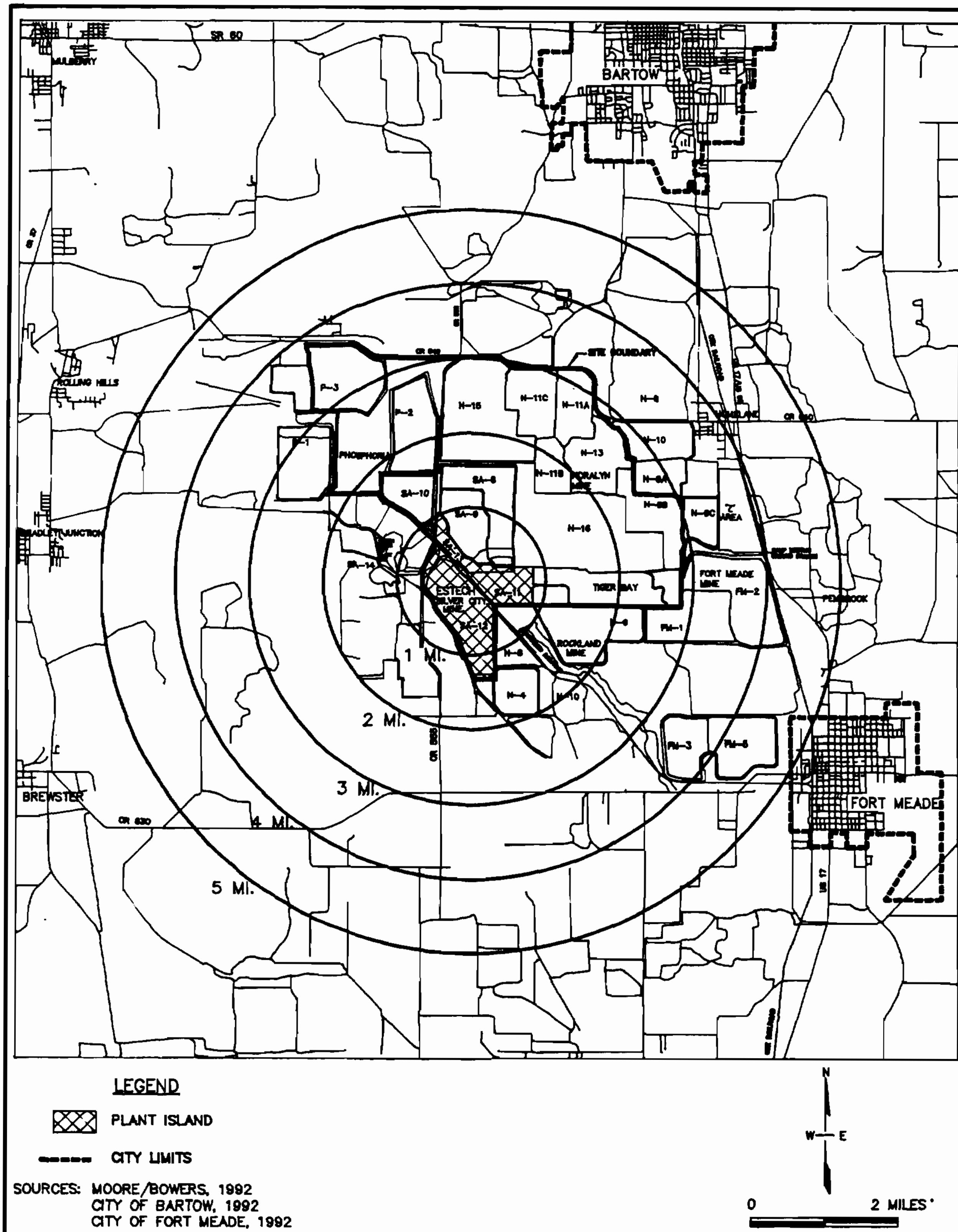
Total Number of Private Crossings	14
Total Number of Public Crossings	72
Total Number of Active Crossings	86

Number of Trains per Day		Maximum Train Speed	
No. of Trains	No. of Crossings	Maximum Speed	No. of Crossings
Less than 10	6	Less than 20	5
11	21	40	29
13	21	45	13
18	1	50	12
20	12	65	1
22	8	70	7
24	16	79	19
45	1	Avg Max Speed	Total
Total	86	52	86
Avg No. Trains	16		

Volumes on Crossing Highways at Public Crossings	
Daily Volumes	Number of Crossings
Less than 500	6
501 to 5,000	44
5,001 to 10,000	7
10,001 to 15,000	8
15,001 to 20,000	6
20,001 and up	1
Total	72
Average Volume	5,000

Note: Probable rail route includes route A-301 and route AY-306.

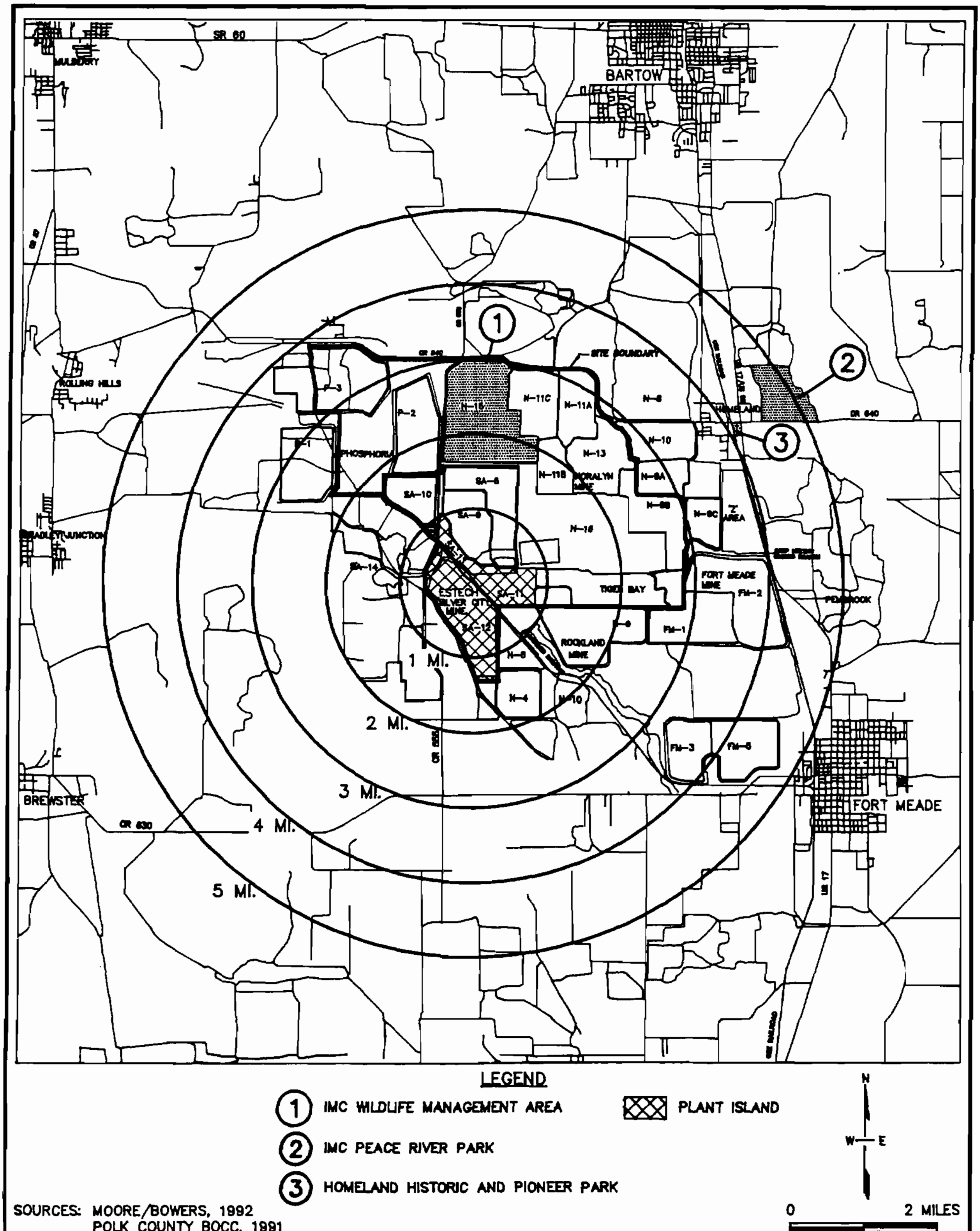
Sources: Kimley-Horn, 1992
FDOT, 1980s. Railroad Crossing Location Maps.
FDOT, 1990. Rail-Highway Crossing Inventory.



Florida Power CORPORATION

Polk County Site

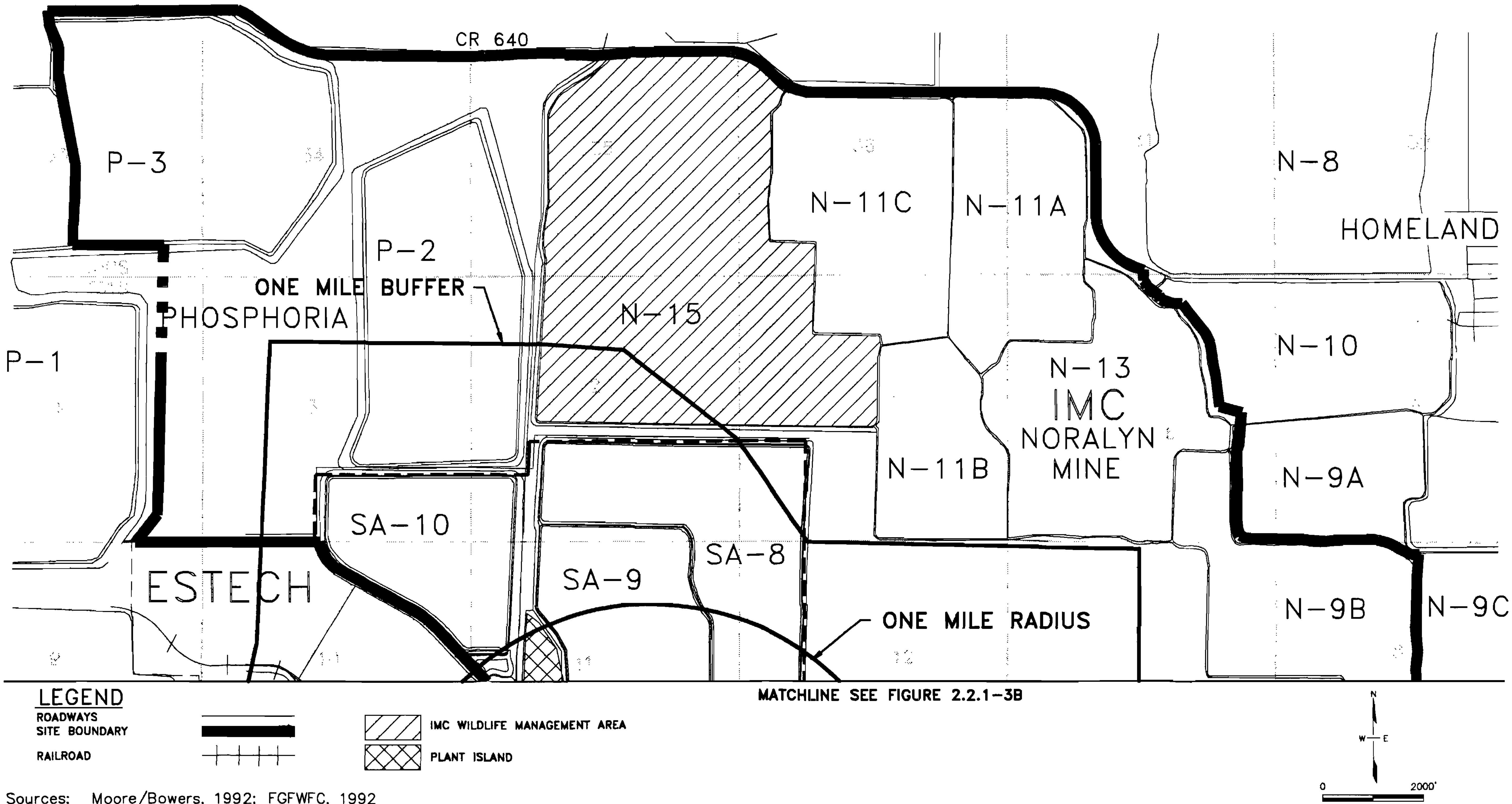
FIGURE 2.2.1-1
GOVERNMENTAL JURISDICTIONS WITHIN FIVE MILES OF THE PLANT ISLAND



Florida Power CORPORATION

Polk County Site

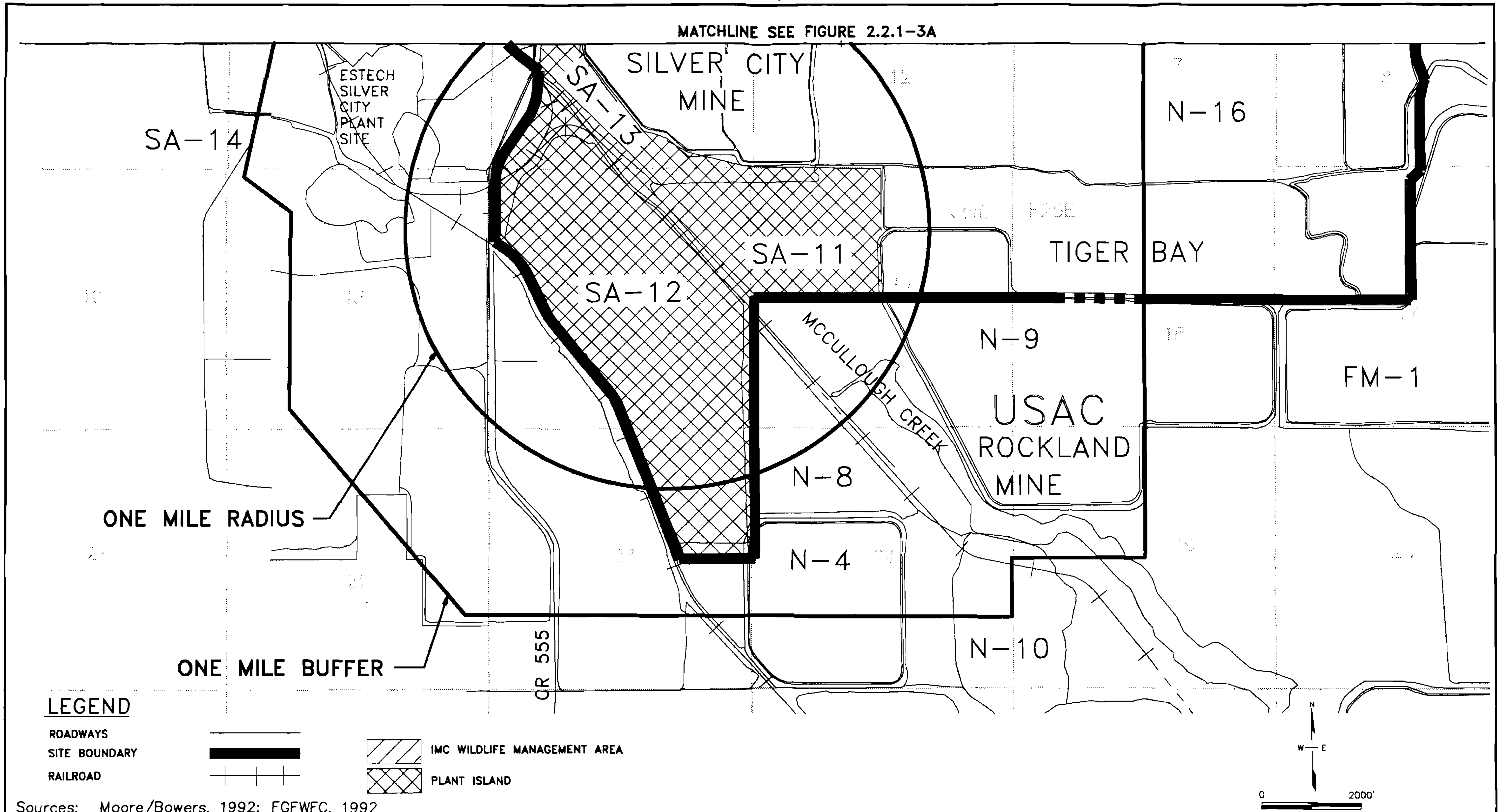
FIGURE 2.2.1-2
PARKS AND RECREATION AREAS WITHIN FIVE MILES OF THE PLANT ISLAND



Florida Power CORPORATION

Polk County Site

FIGURE 2.2.1-3A
PARKS AND RECREATION AREAS WITHIN ONE MILE OF THE PLANT ISLAND
SHEET A

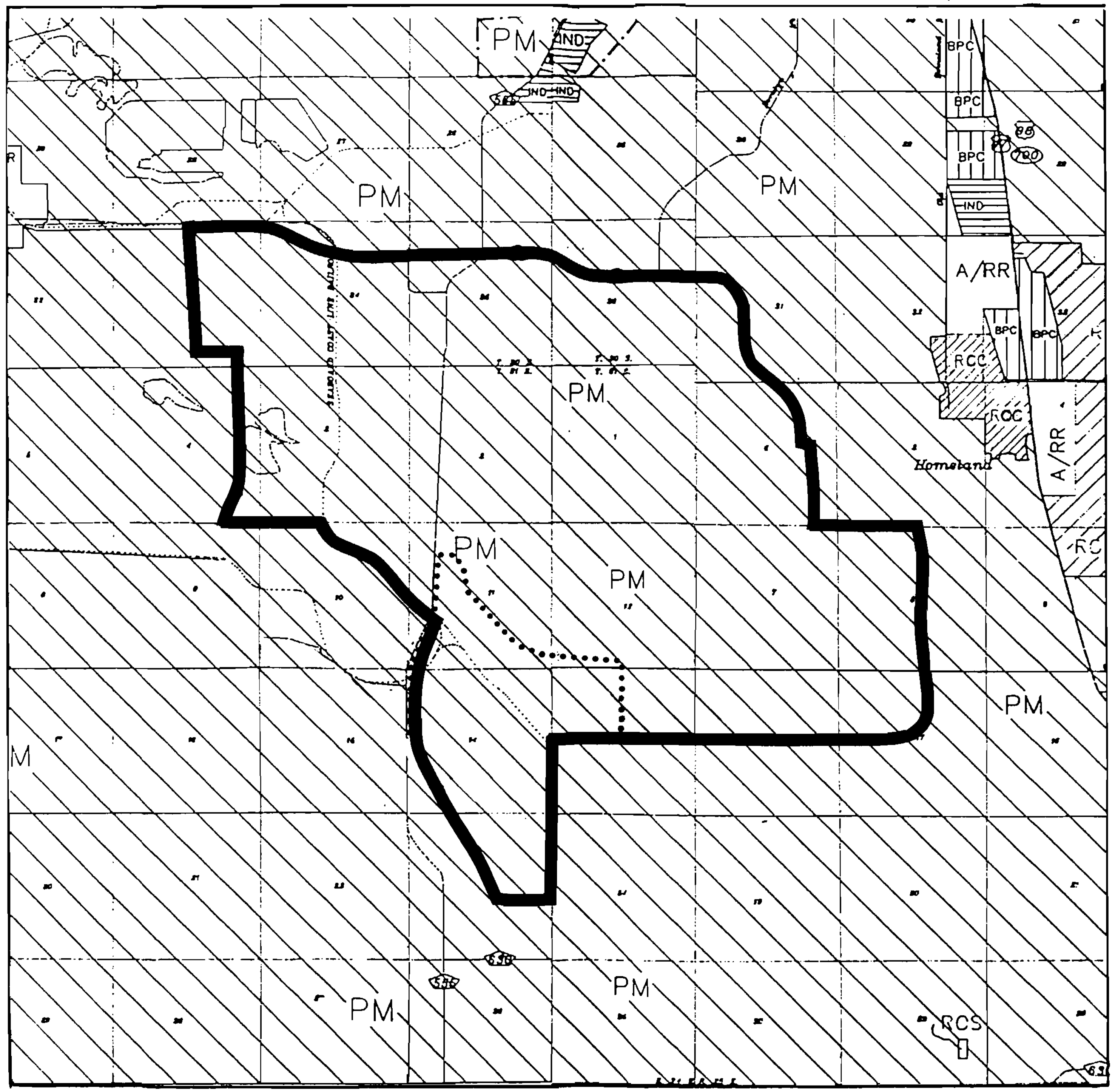


Sources: Moore/Bowers, 1992; FGFWFC, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.1-3B
PARKS AND RECREATION AREAS WITHIN ONE MILE OF THE PLANT ISLAND
SHEET B



LEGEND

A/RR AGRICULTURE/RESIDENTIAL-RURAL
BPC BUSINESS-PARK CENTER
CE COMMERCIAL ENCLAVE
IND INDUSTRIAL
LCC LINEAR COMMERCIAL CENTER
PM PHOSPHATE MINING
RCC RURAL-CLUSTER CENTER
RL RESIDENTIAL-LOW DENSITY
ROS RECREATION AND OPEN SPACE

SITE BOUNDARY
PLANT ISLAND

N W E

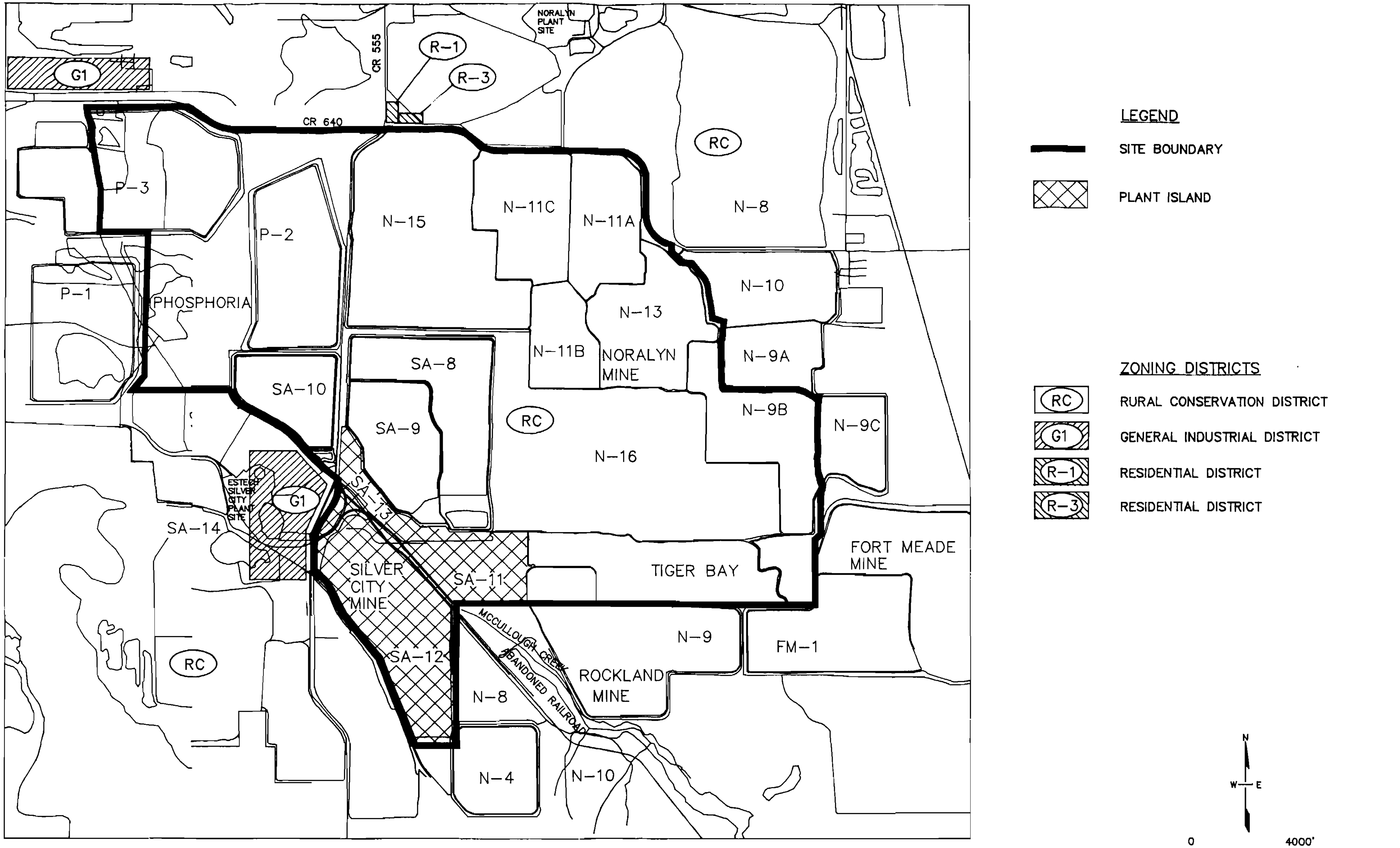
0 1 MILE

Sources: Moore/Bowers, 1992; Polk County Comprehensive Plan Map Series, 1990

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.2-1
POLK COUNTY FUTURE LAND USE DESIGNATIONS



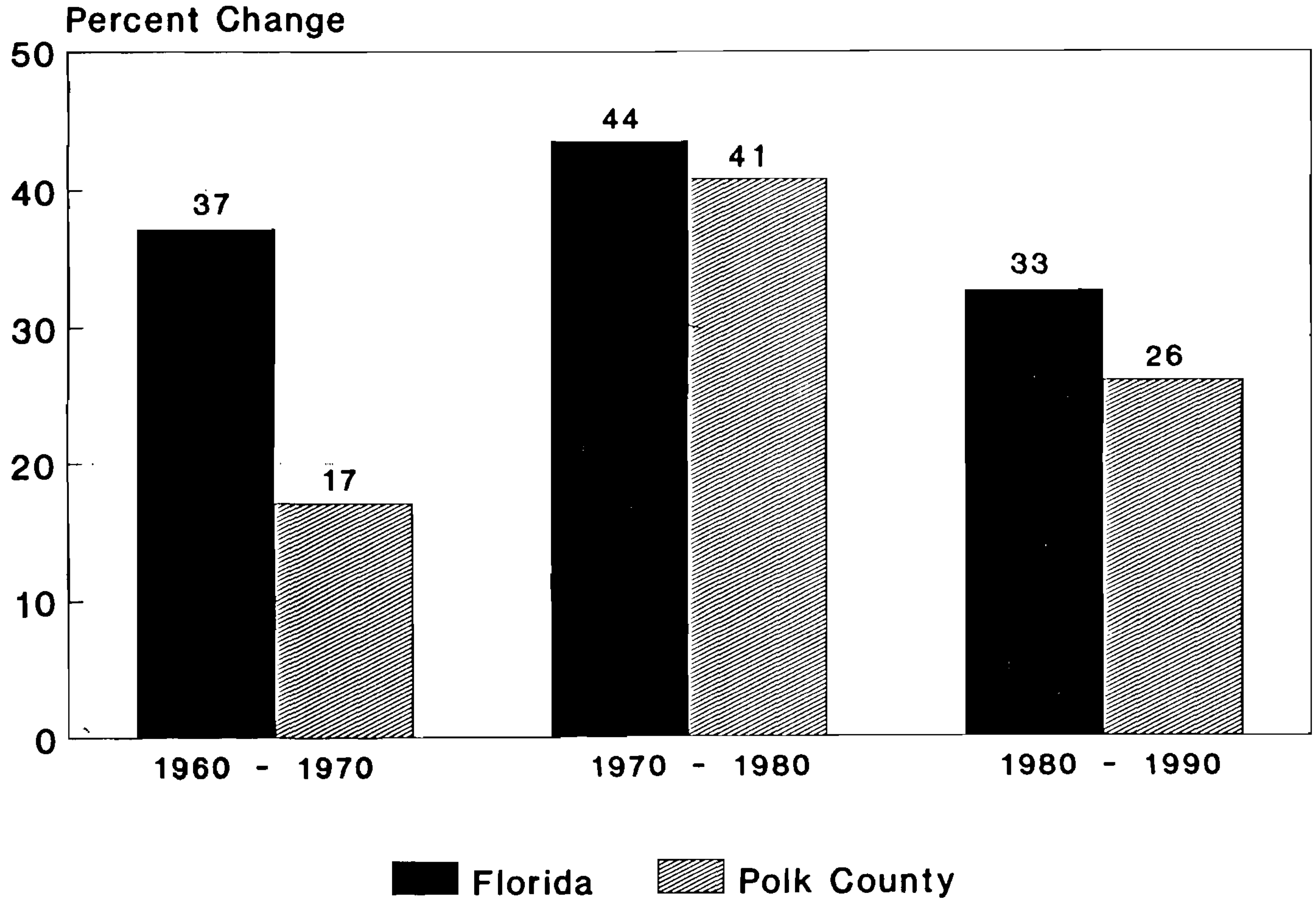
SOURCES: POLK COUNTY ZONING DEPARTMENT, 1991
MOORE/BOWERS, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.2-2

POLK COUNTY SITE ZONING

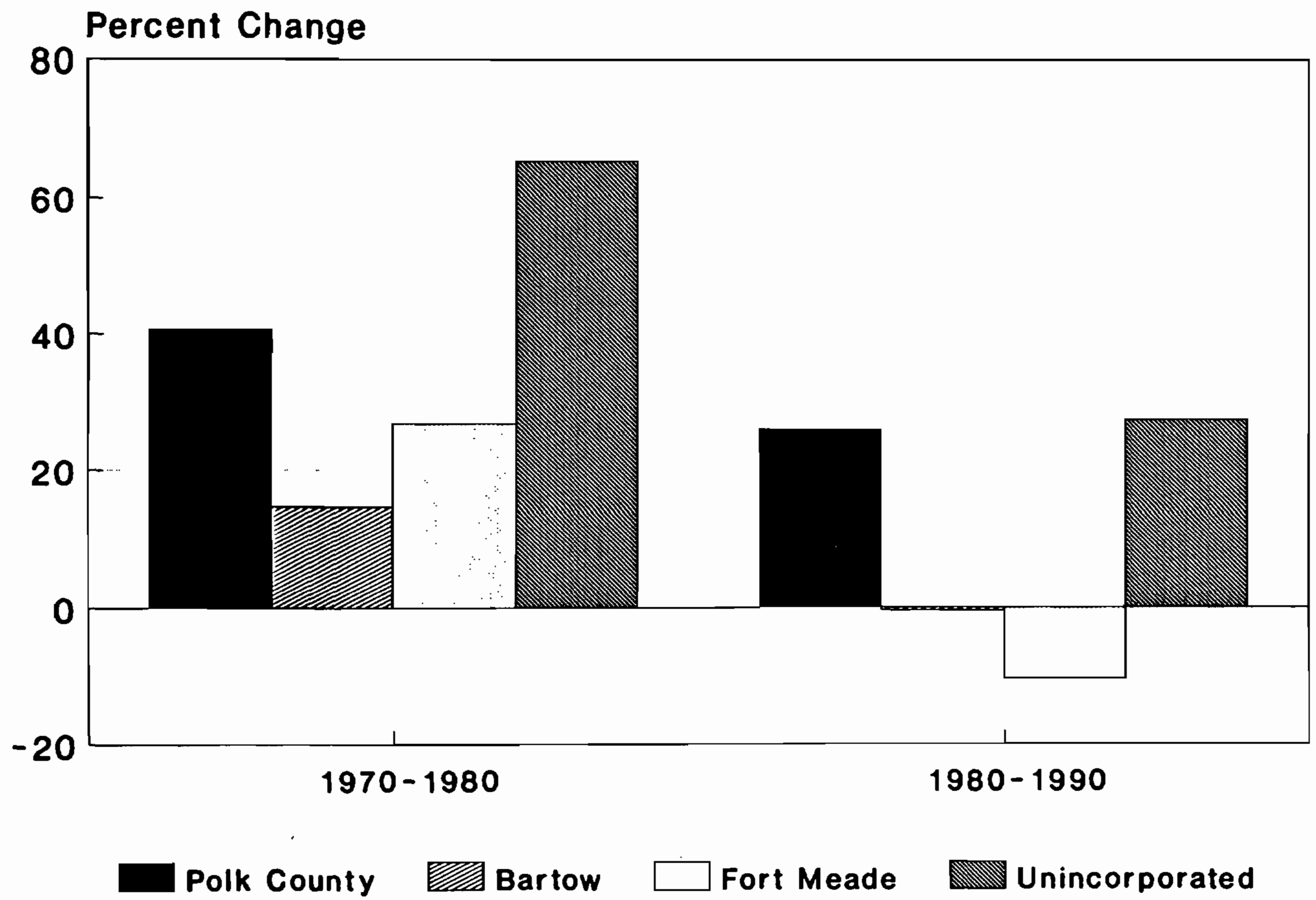


Source: BEBR, Florida Population: Census Summary 1990, 1991

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.3-1
POPULATION GROWTH 1960 - 1990
FLORIDA AND POLK COUNTY

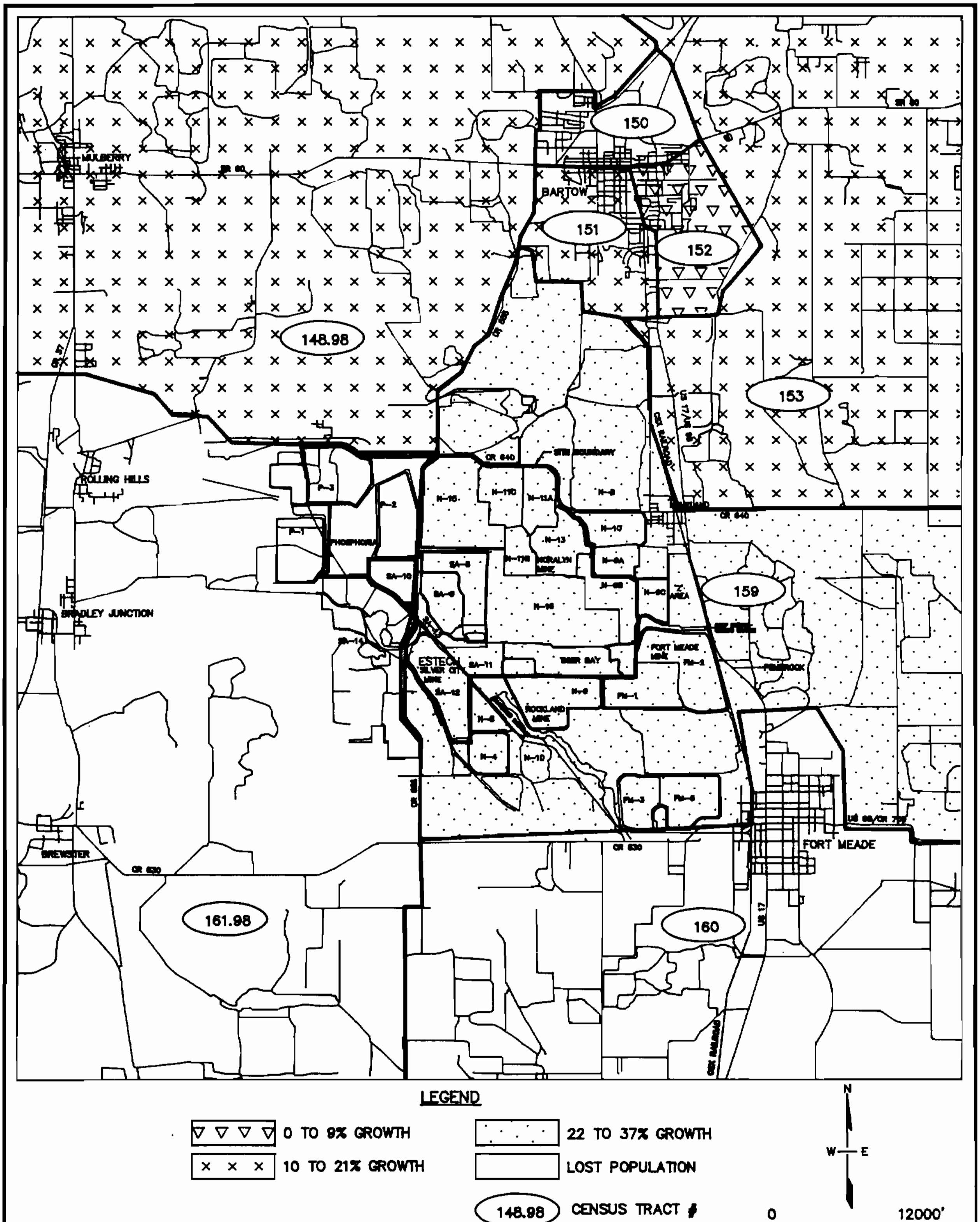


Source: BEBR, Florida Population: Census Summary 1990, 1991

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.3-2
PERCENT CHANGE IN POPULATION IN POLK COUNTY
1970 - 1980 AND 1980 - 1990



SOURCE: THE LEDGER, OCT. 27, 1991

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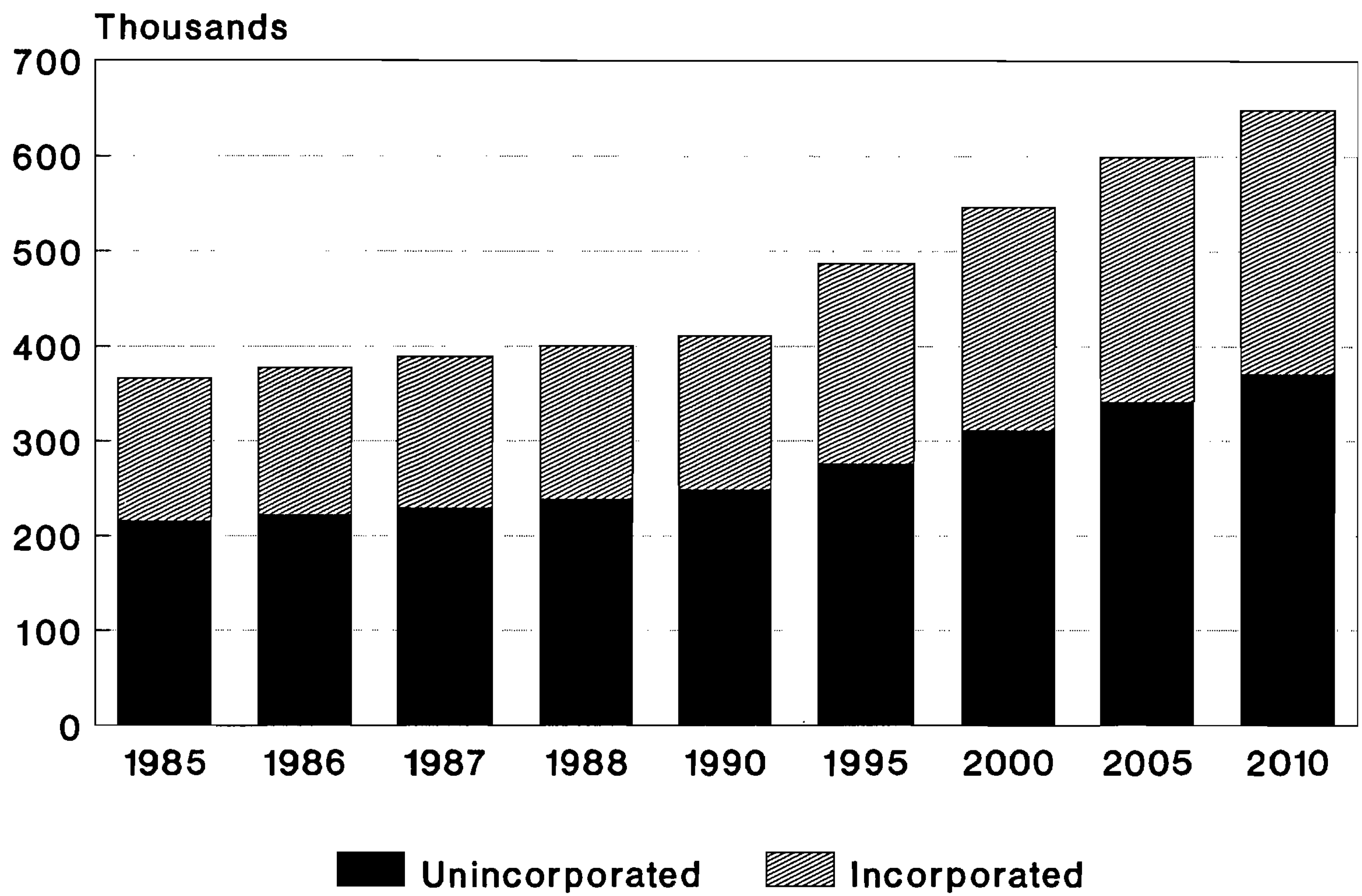
Polk County Site

FIGURE 2.2.3-3

POPULATION GROWTH BY CENSUS TRACT



Source: Polk County Comprehensive Plan, 1991

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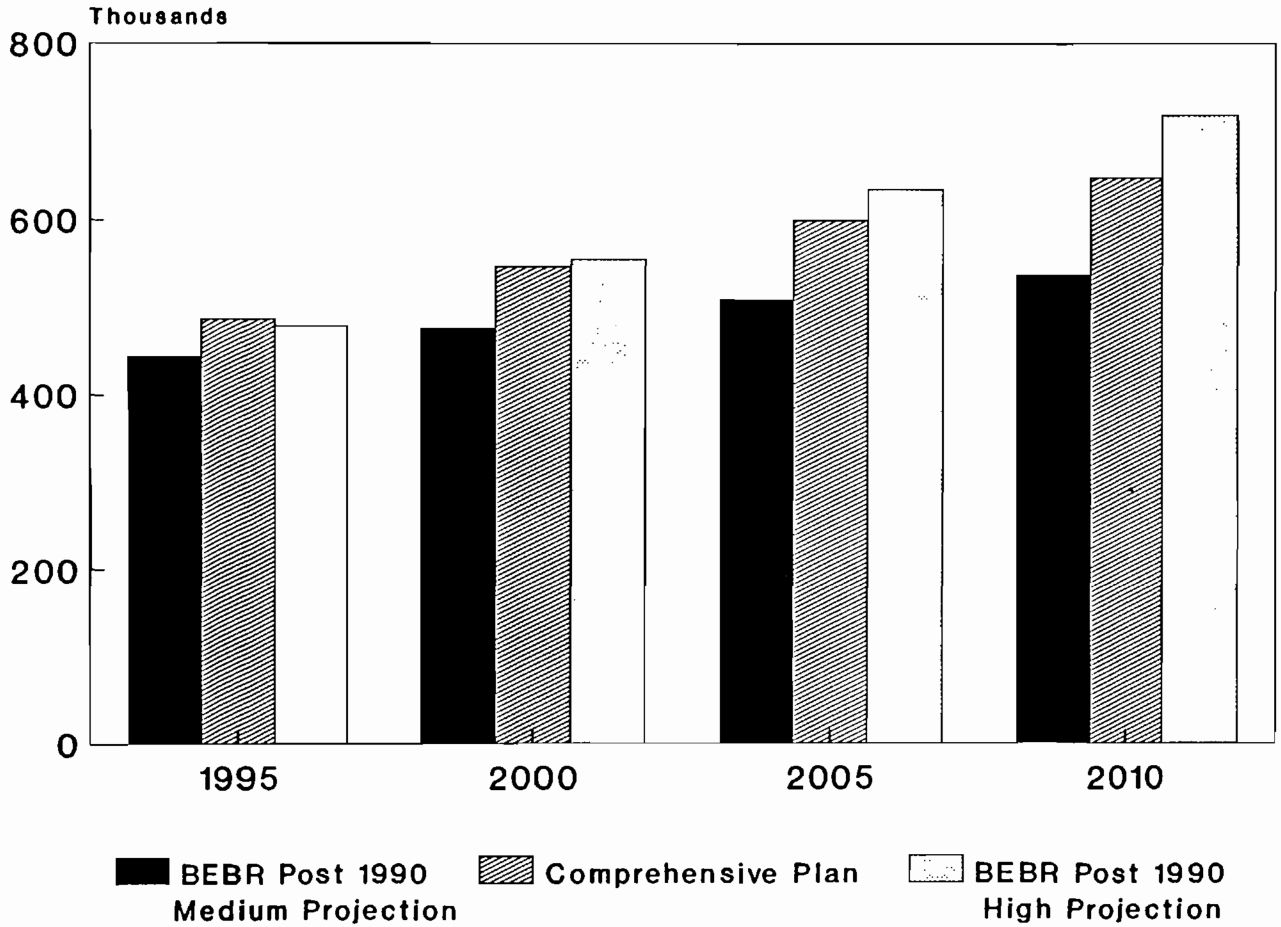
FIGURE 2.2.3-4
POLK COUNTY POPULATION ESTIMATES AND PROJECTIONS



Sources: Polk County Comprehensive Plan, 1991
BEBR, Florida Statistical Abstract 1991, 1992

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FIGURE 2.2.3-5
BEBR REVISED POPULATION PROJECTIONS VERSUS COMPREHENSIVE PLAN PROJECTIONS

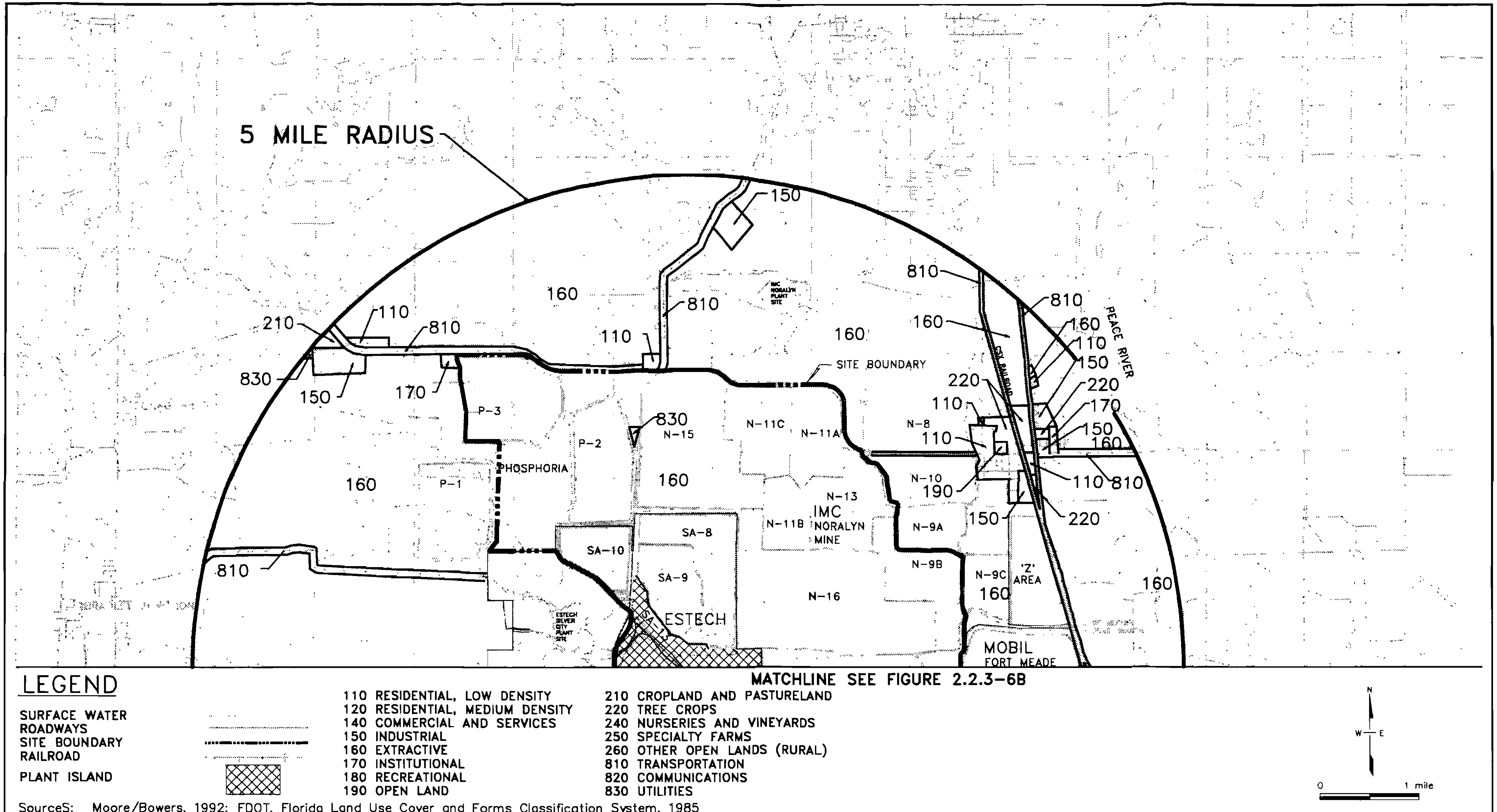

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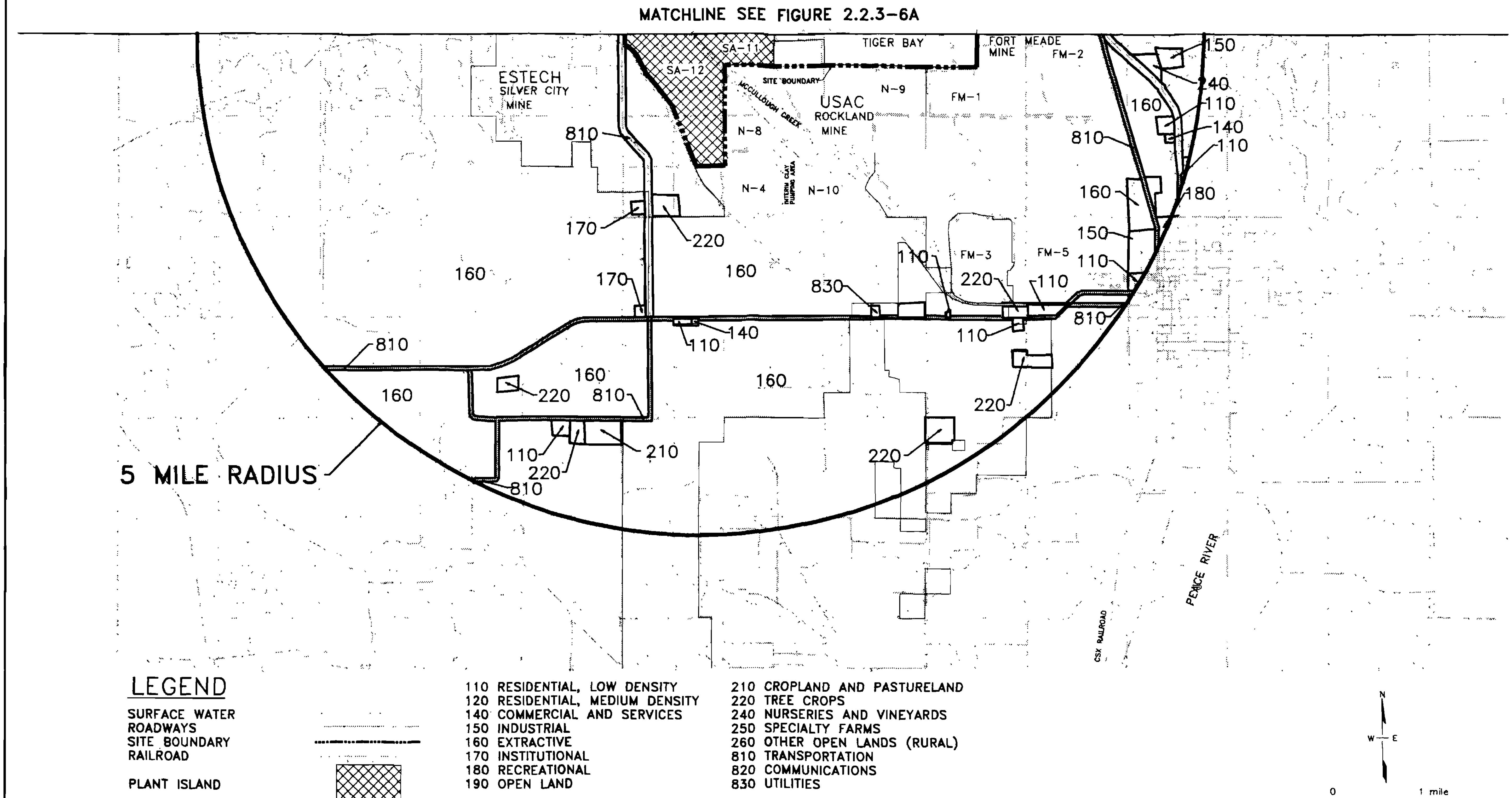
FIGURE 2.2.3-6A
EXISTING LAND USE WITHIN 5 MILES OF THE PLANT ISLAND
SHEET A



Sources: Moore/Bowers, 1992; FDOT, Florida Land Use Cover and Forms Classification System, 1985

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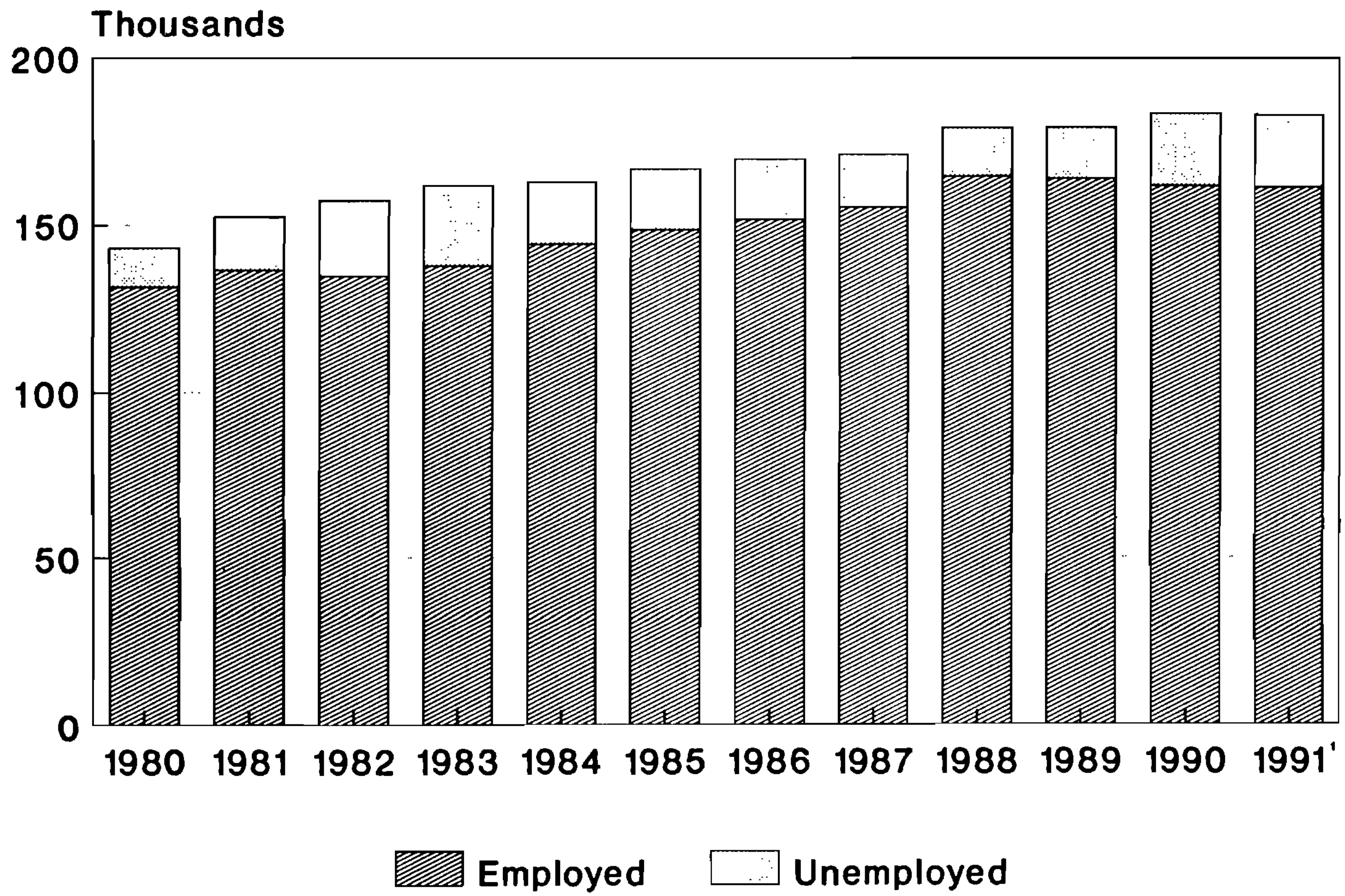
Polk County Site

FIGURE 2.2.3–6B
EXISTING LAND USE WITHIN 5 MILES OF THE PLANT ISLAND
SHEET B



Note: Labor Force as of July 1991

Source: Florida Department of Labor & Employment Security, 1992

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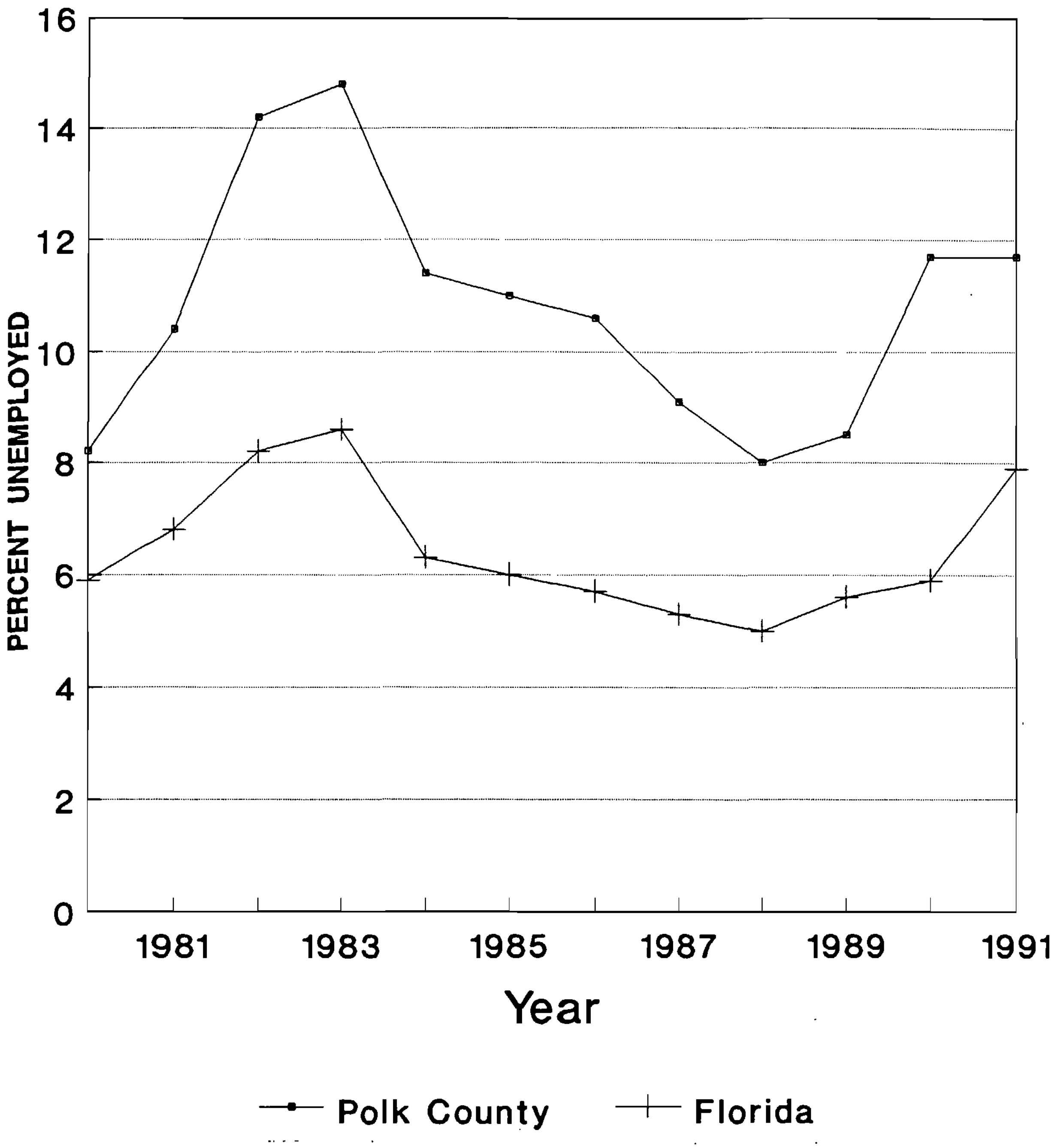
Polk County Site

FIGURE 2.2.7-1
POLK COUNTY CIVILIAN LABOR FORCE EMPLOYMENT AND UNEMPLOYMENT 1980 THROUGH 1991



Source: Florida Department of Labor & Employment Security, 1991

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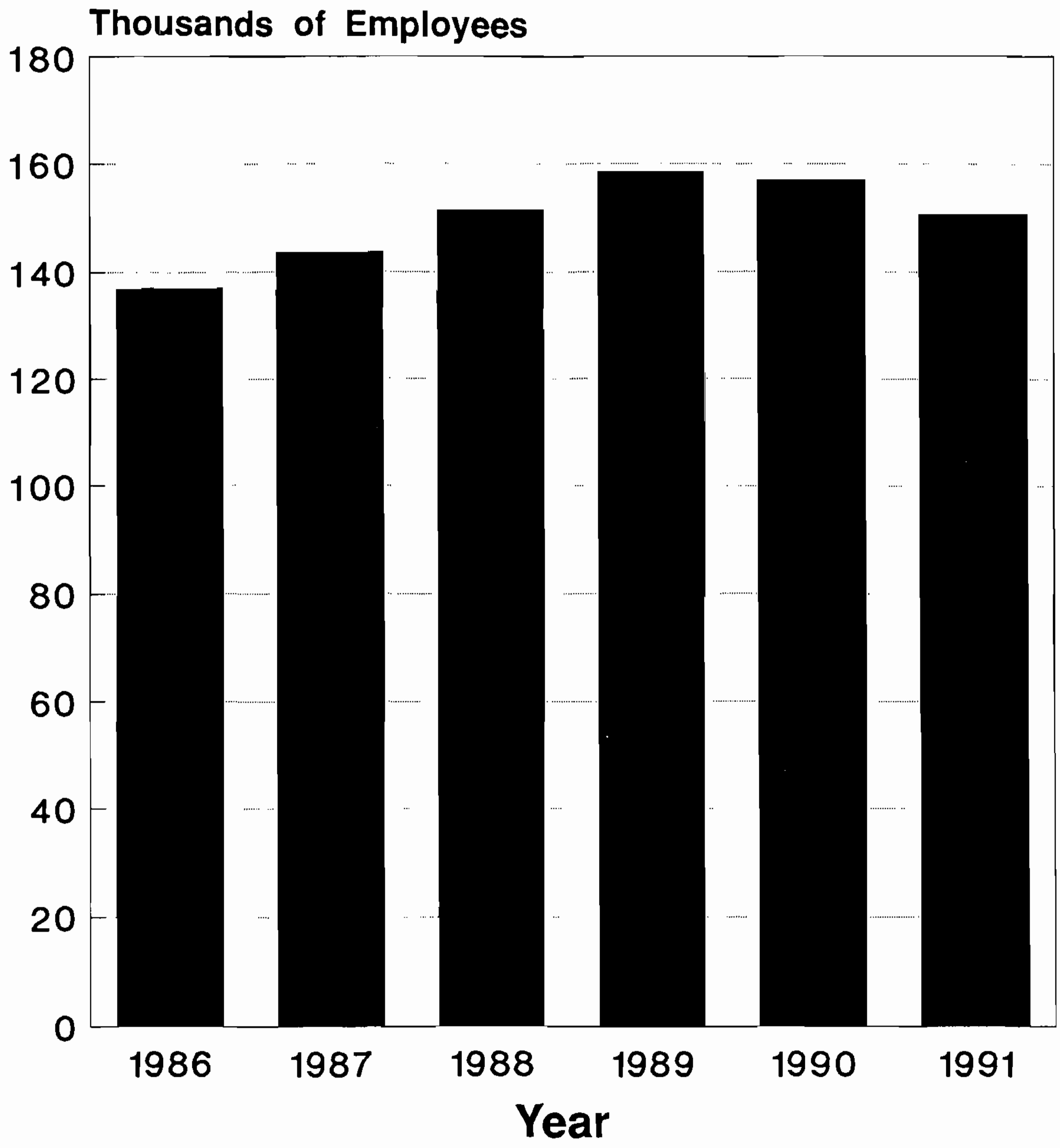
FIGURE 2.2.7-2
UNEMPLOYMENT RATES
POLK COUNTY AND FLORIDA
1980 THROUGH 1991



Source: FDLES, ES-202 Reports, various years

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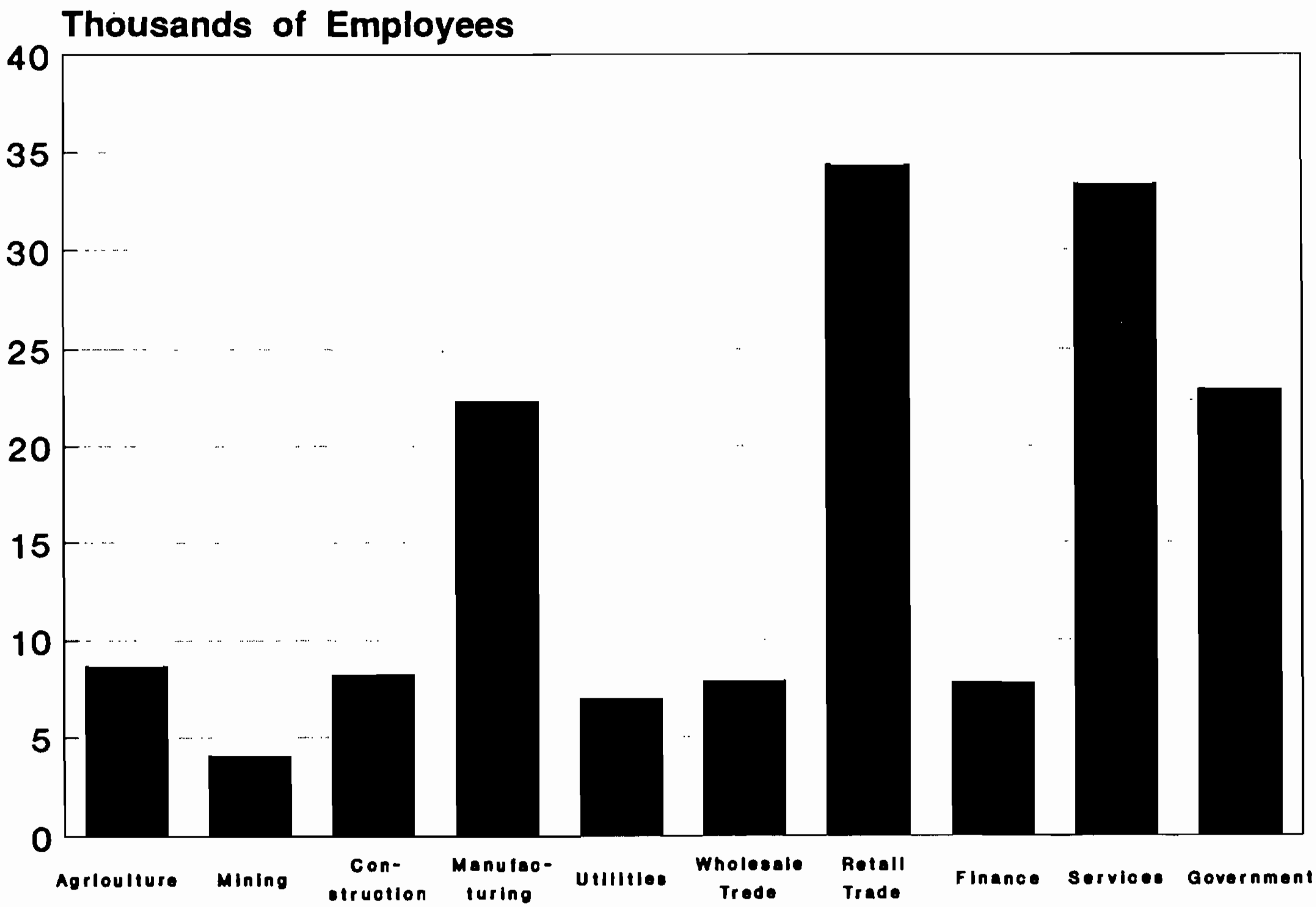
FIGURE 2.2.7-3
POLK COUNTY EMPLOYMENT ESTIMATES
1986 THROUGH 1991



Source: FDLES, 1991

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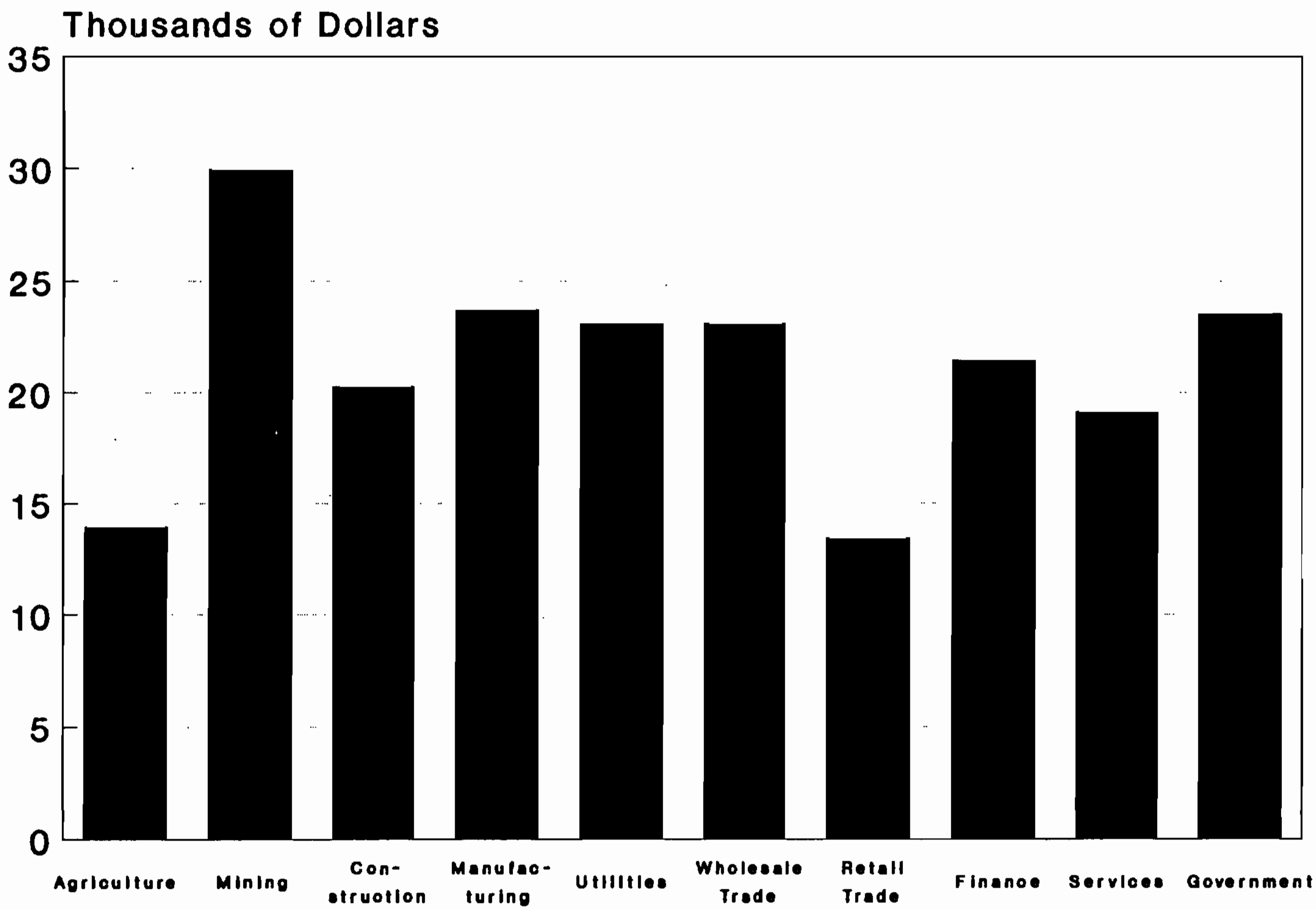
FIGURE 2.2.7-4
POLK COUNTY EMPLOYMENT BY INDUSTRY
1990



Source: FDLES, 1991

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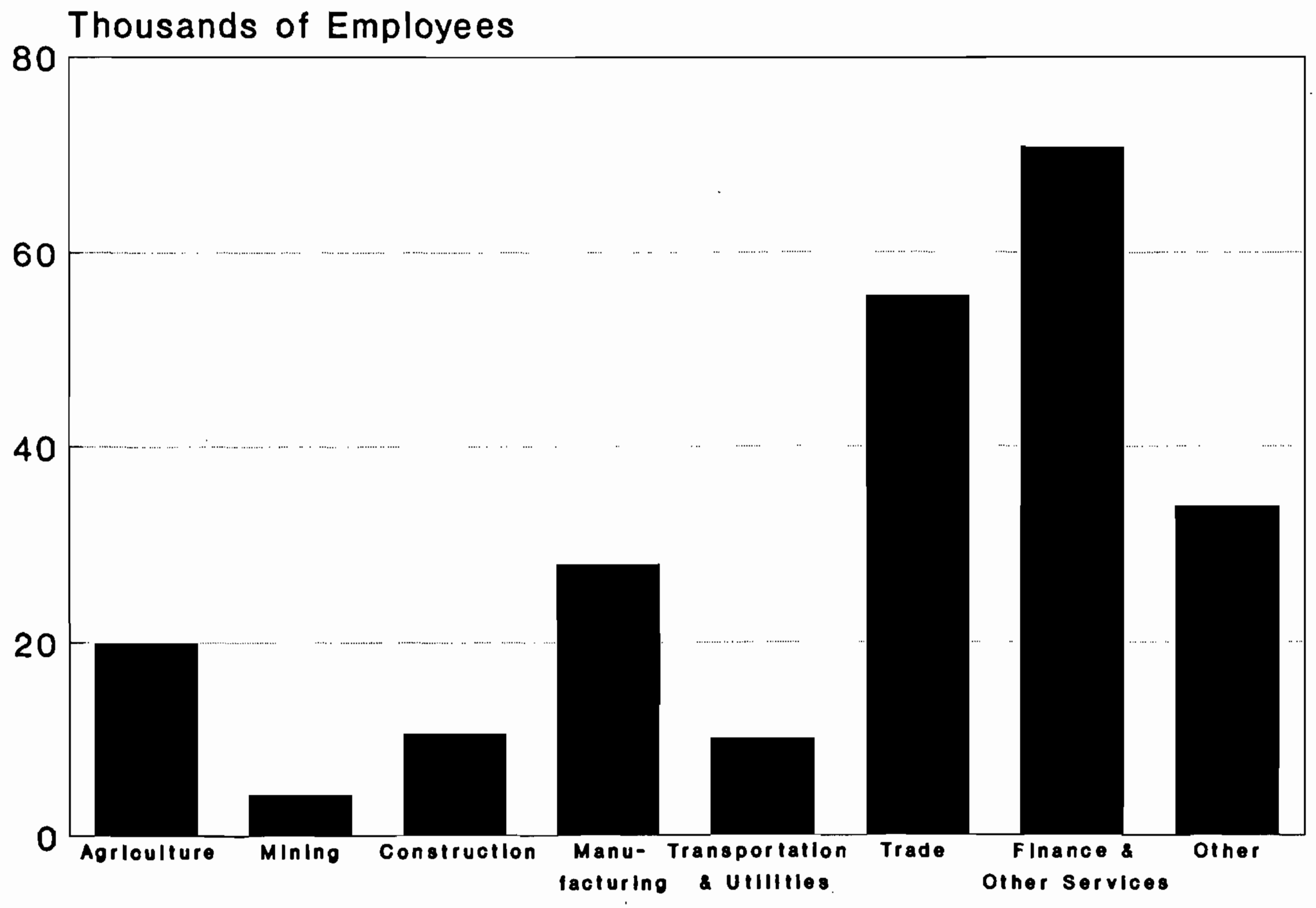
Polk County Site

FIGURE 2.2.7-5
AVERAGE WAGE BY INDUSTRY
POLK COUNTY 1990



Source: FDLES, 1992

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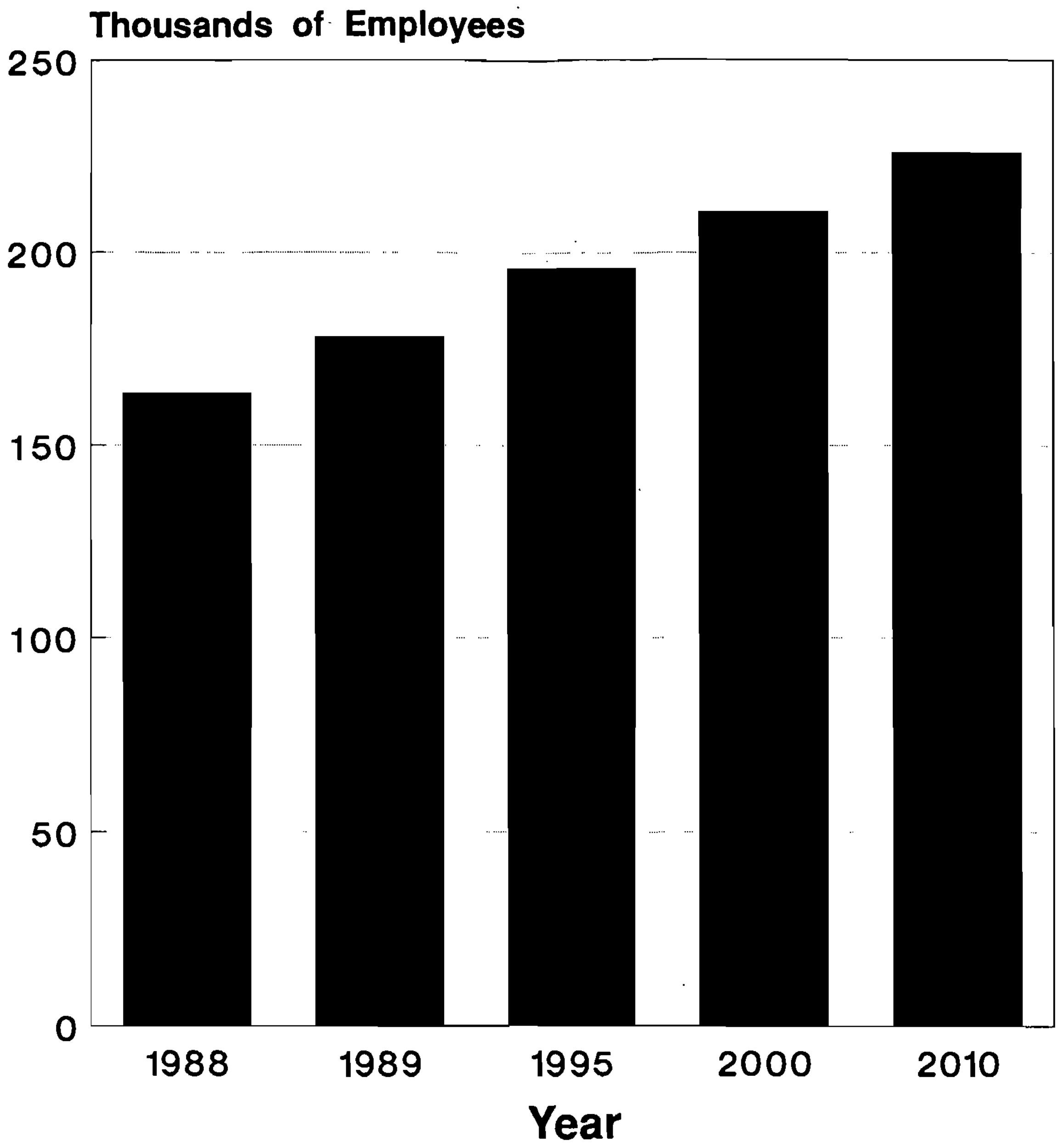
FIGURE 2.2.7-6

POLK COUNTY EMPLOYMENT PROJECTIONS FOR YEAR 2000



Source: Polk County Comprehensive Plan, Economic Element, April 1991

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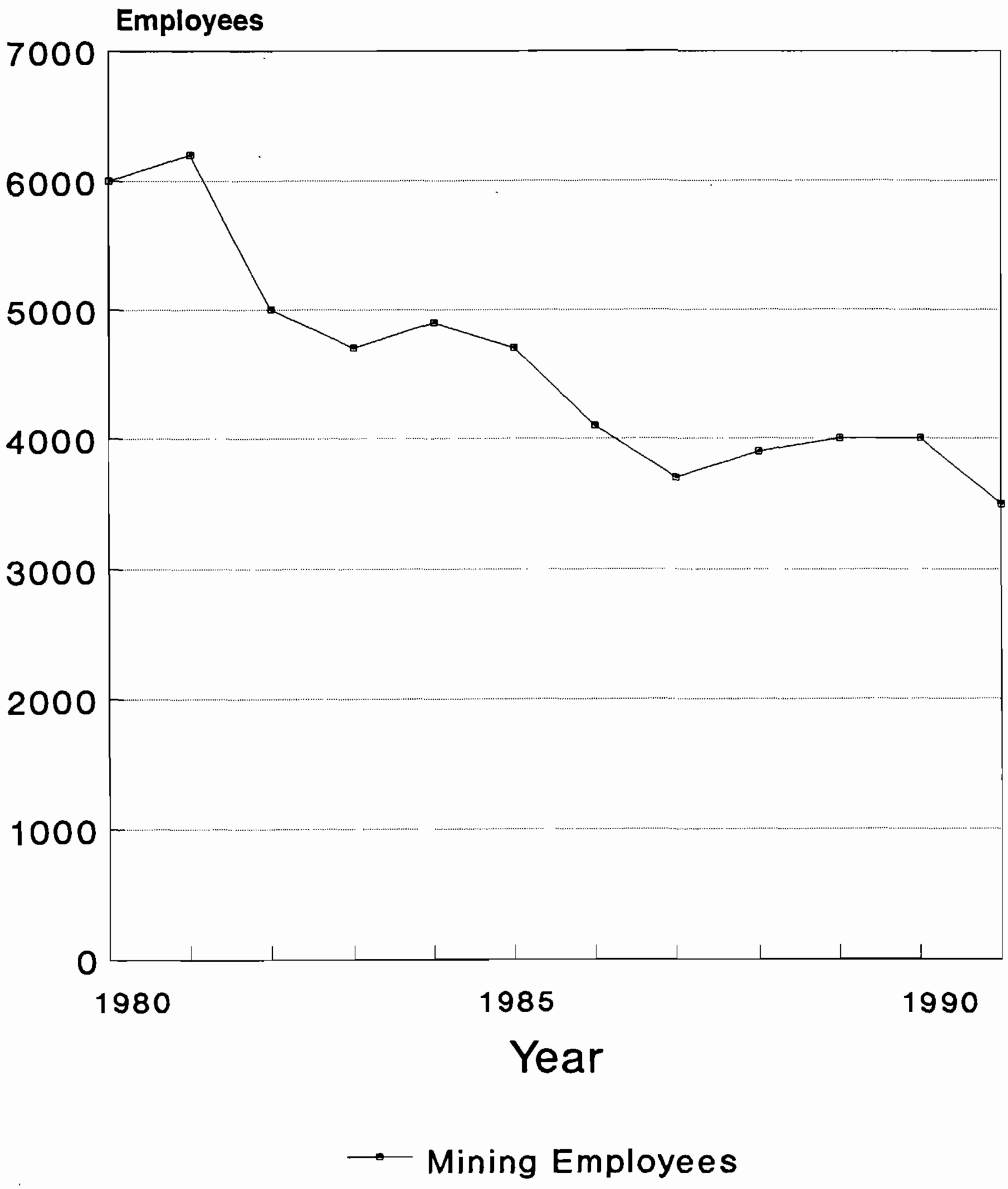
FIGURE 2.2.7-7
EMPLOYMENT ESTIMATES AND PROJECTIONS - POLK COUNTY 1988 THROUGH 2010



Source: FDLES, 1991

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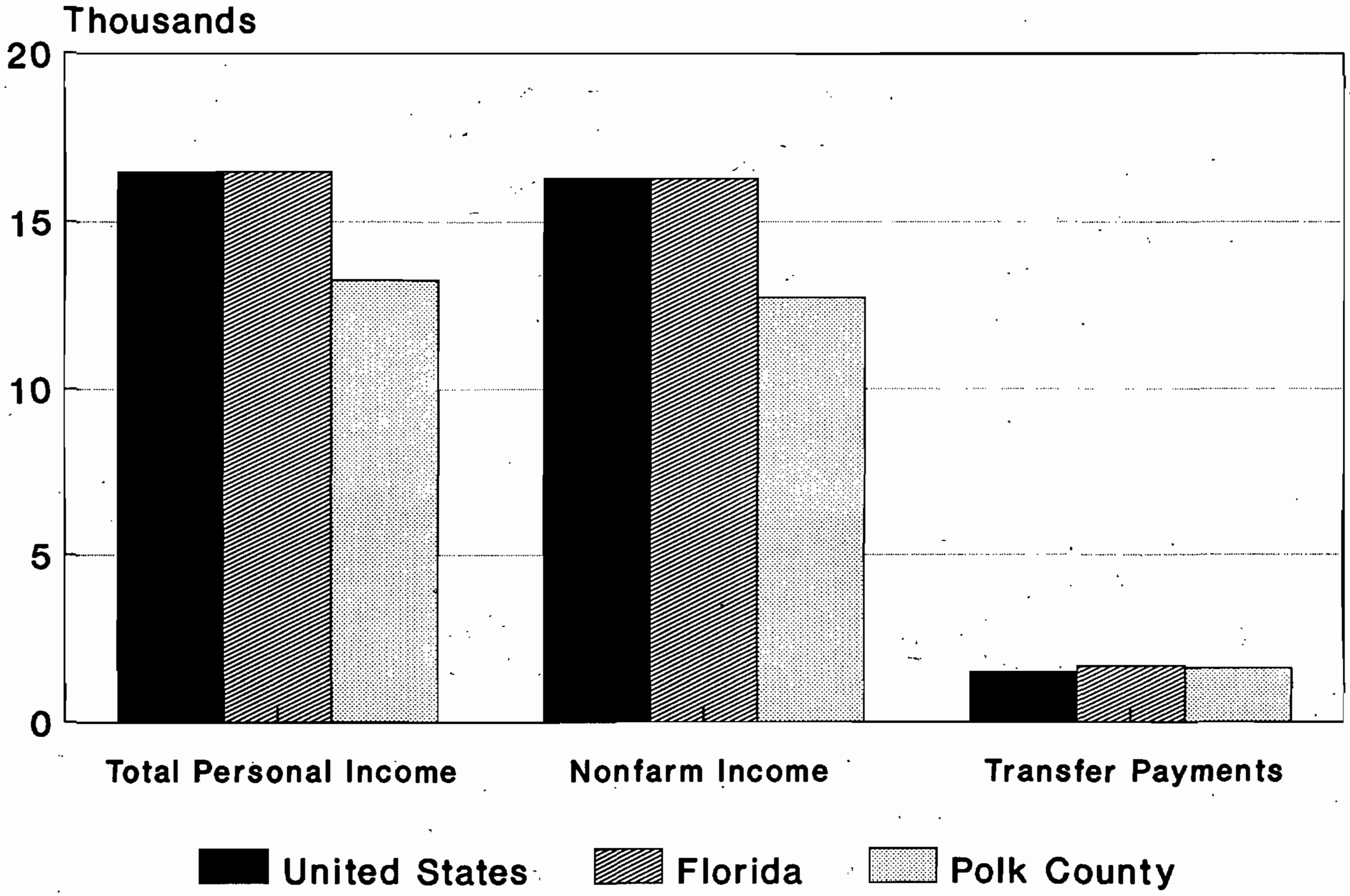
Polk County Site

FIGURE 2.2.7-8
POLK COUNTY MINING EMPLOYMENT
1980 THROUGH 1991



Source: BEBR, Statistical Abstract 1991, 1992

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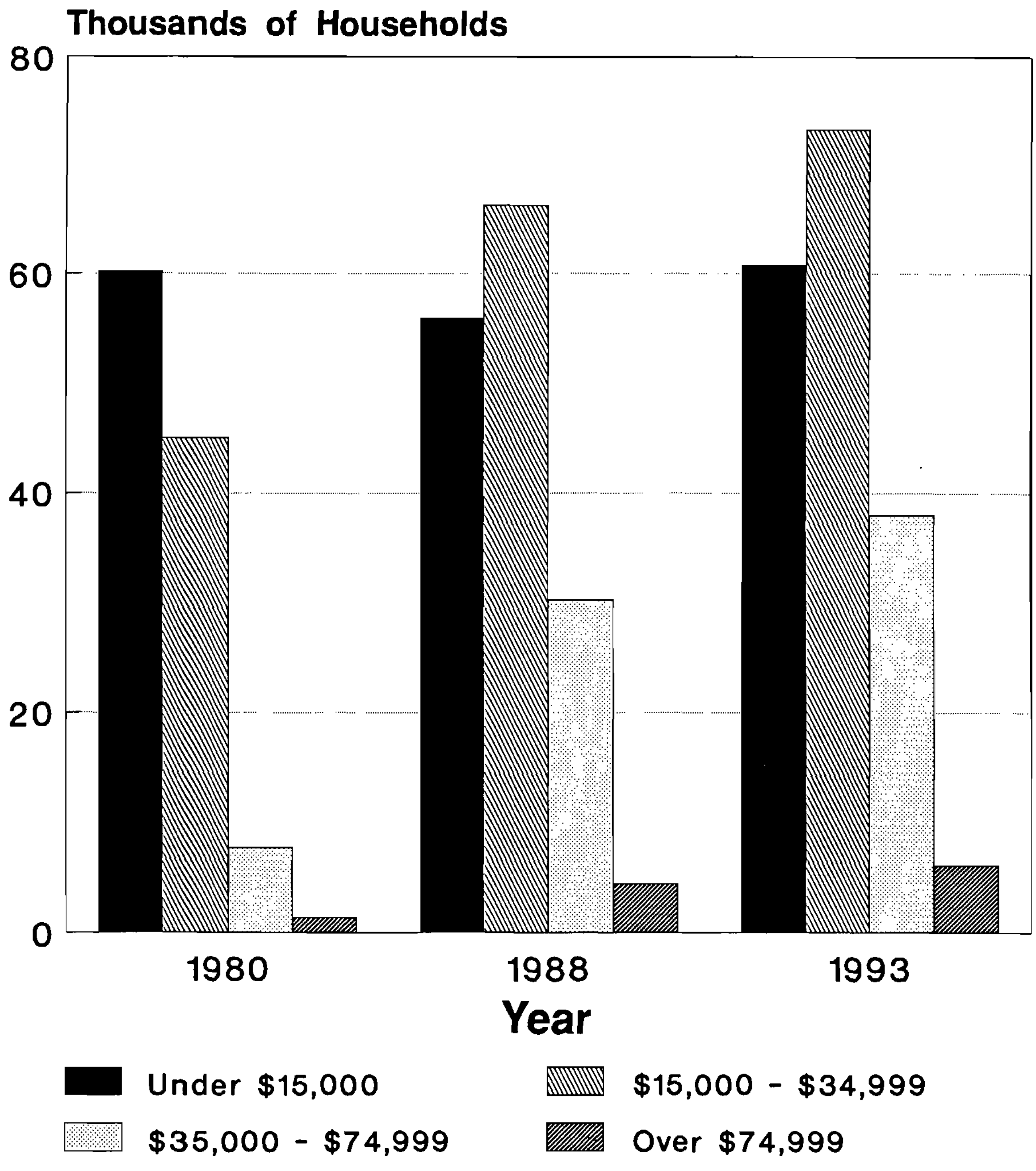
Polk County Site

FIGURE 2.2.7-9
1988 PER CAPITA INCOME BY TYPE OF INCOME



Source: Polk County Comprehensive Plan, Sub-Appendix B-A, Economic Base Study, April 1989

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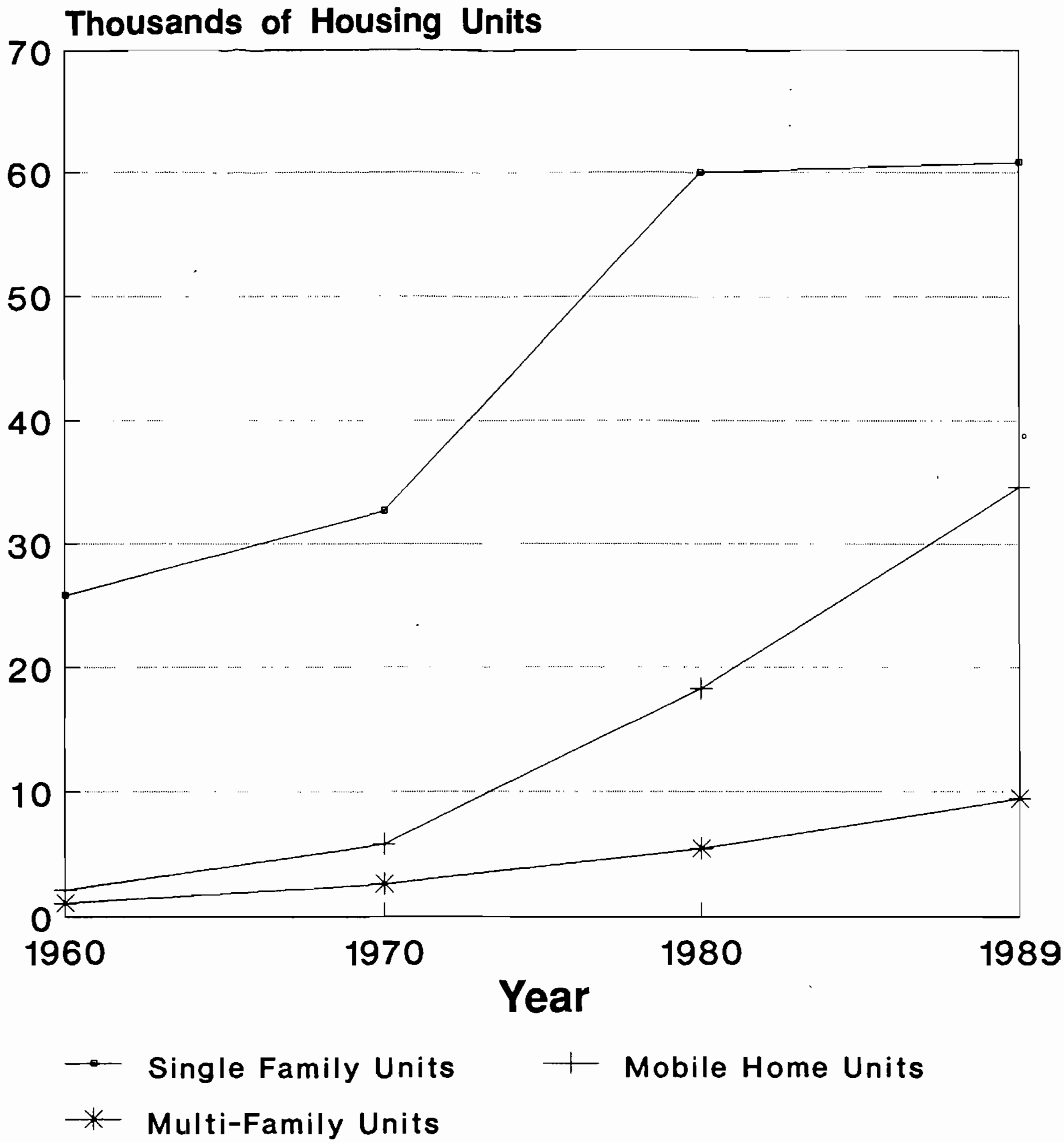
Polk County Site

FIGURE 2.2.7-10
DISTRIBUTION OF HOUSEHOLD INCOMES IN POLK COUNTY



Source: Polk County Comprehensive Plan,
Housing Element Support Documentation, 1990

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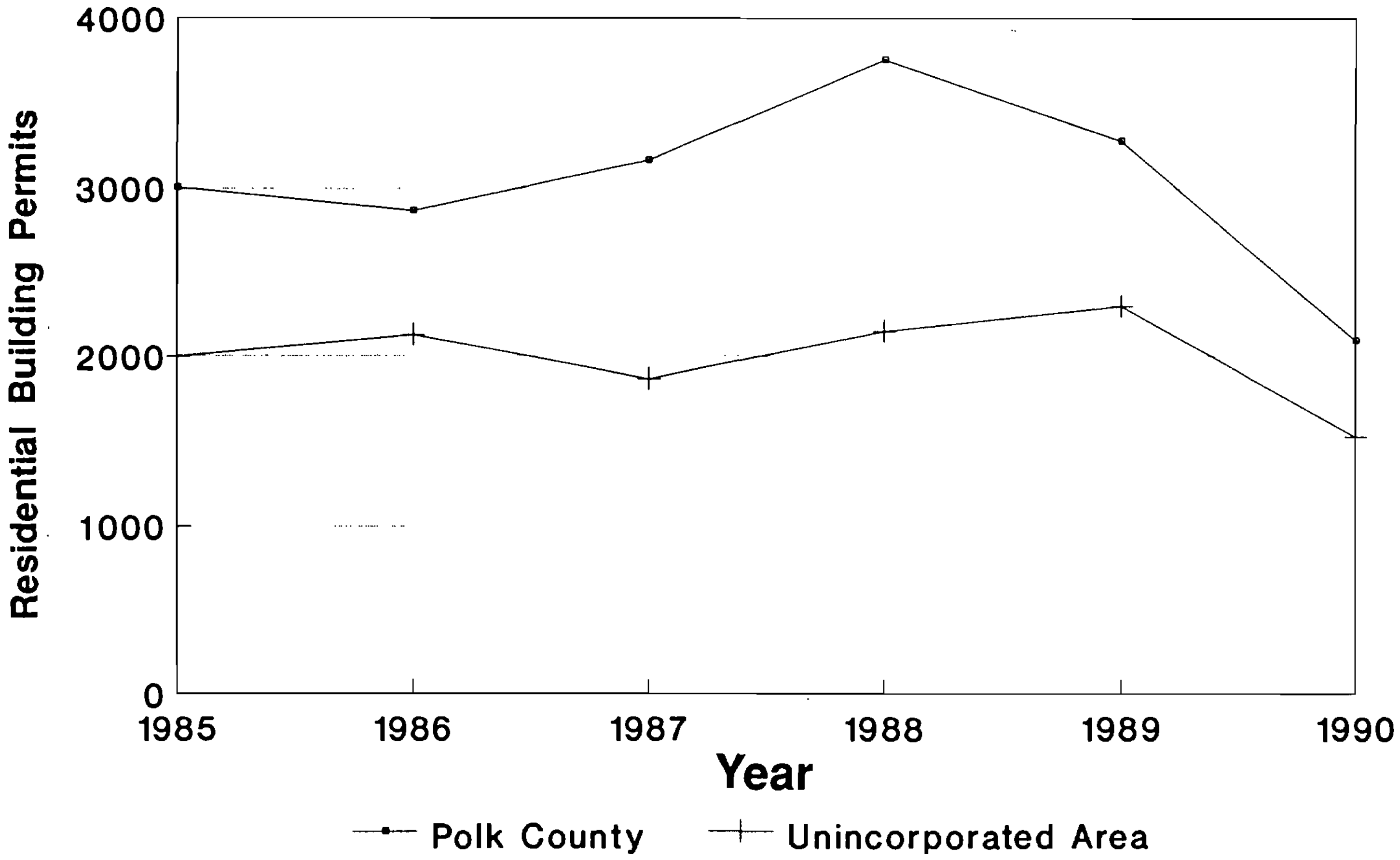
FIGURE 2.2.7-11
TREND IN HOUSING UNITS IN UNINCORPORATED POLK COUNTY 1960 THROUGH 1989



Source: Florida County Perspectives, 1990 Edition
BEBR, Florida Statistical Abstracts, various years

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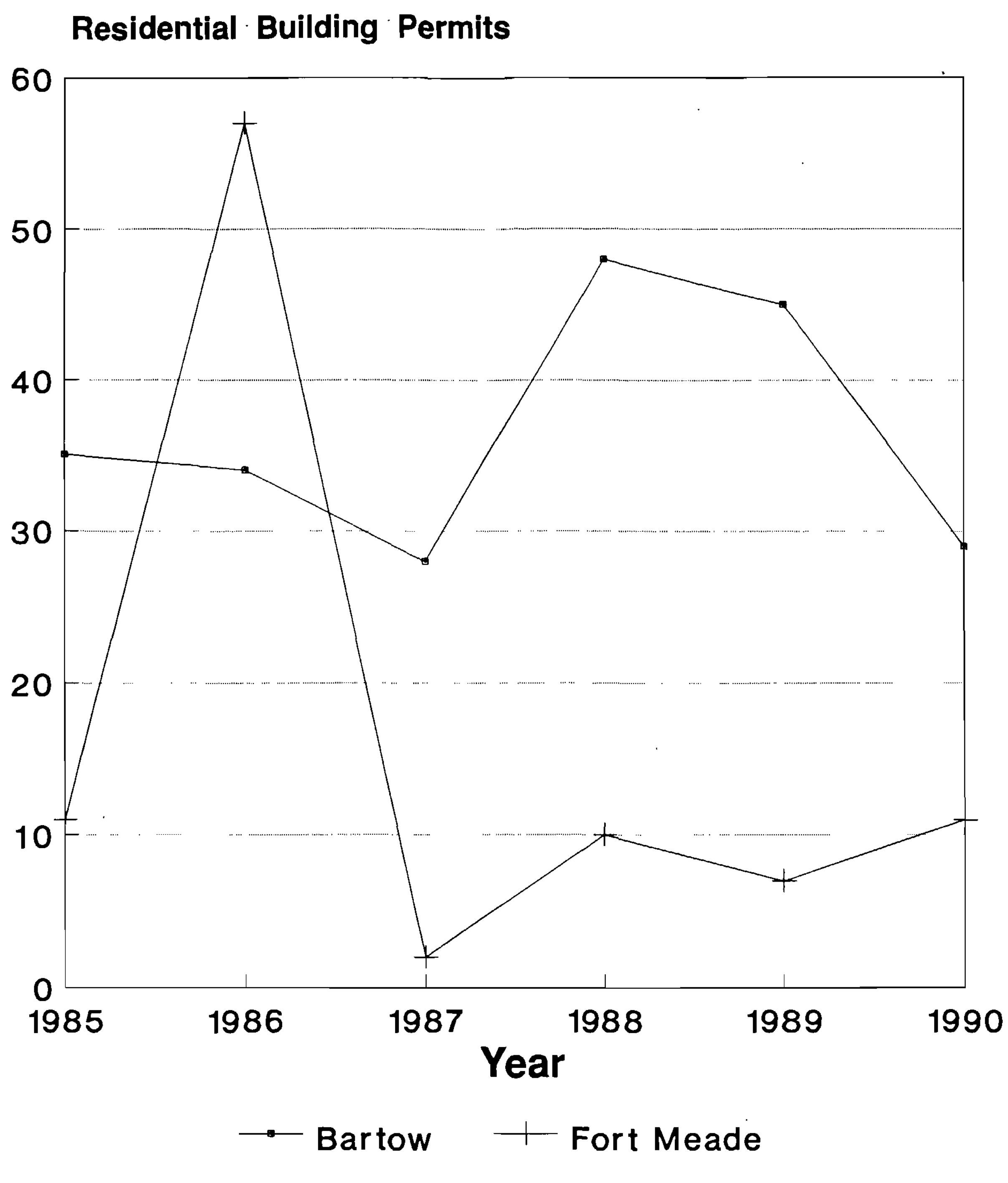
FIGURE 2.2.7-12
RESIDENTIAL BUILDING PERMITS IN POLK COUNTY 1985 THROUGH 1990



Source: Florida County Perspectives, 1990 Edition
BEBR, Florida Statistical Abstracts, various years

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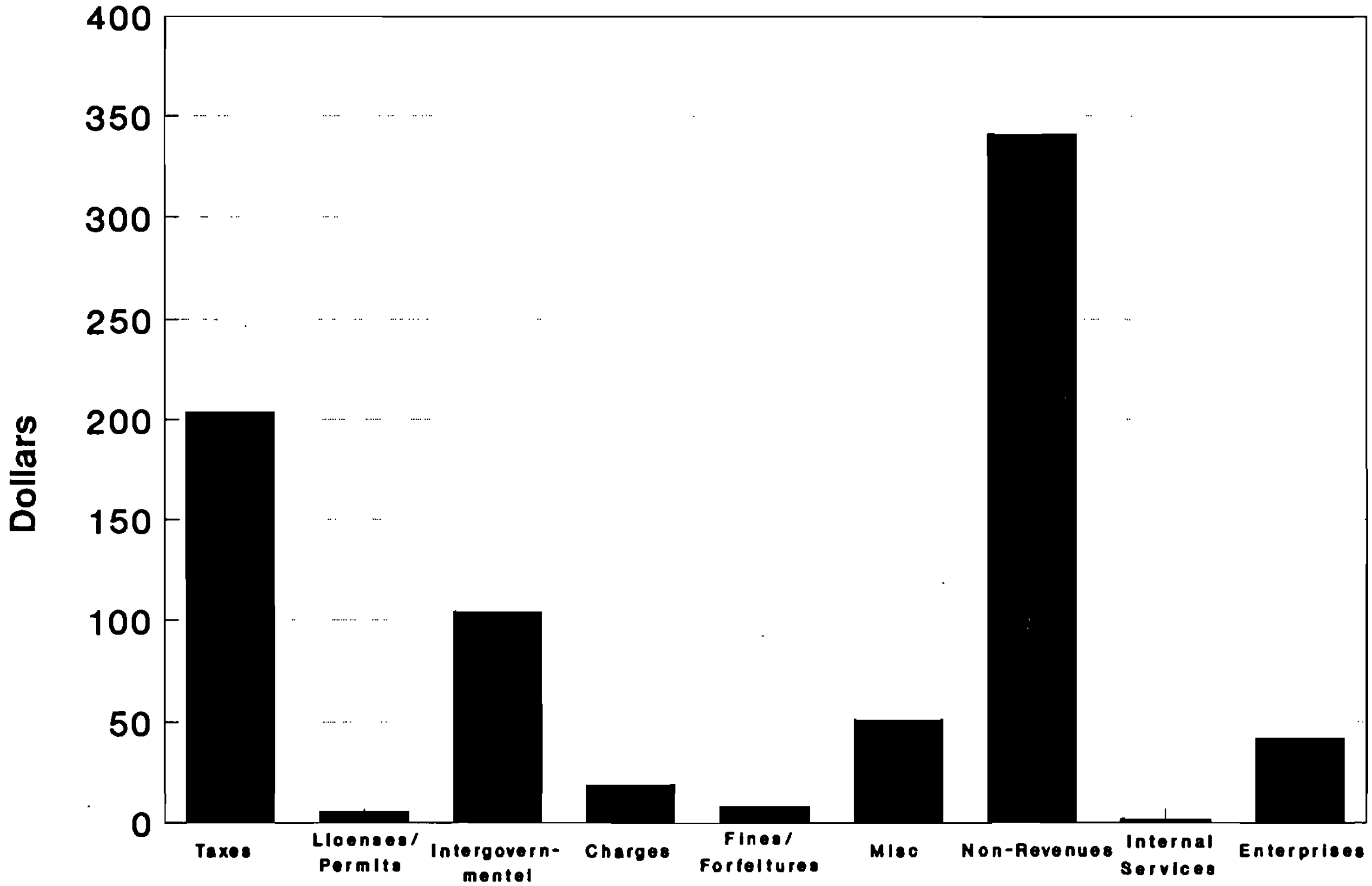
Polk County Site

FIGURE 2.2.7-13
RESIDENTIAL BUILDING PERMITS IN BARTOW AND FORT MEADE 1985 THROUGH 1990

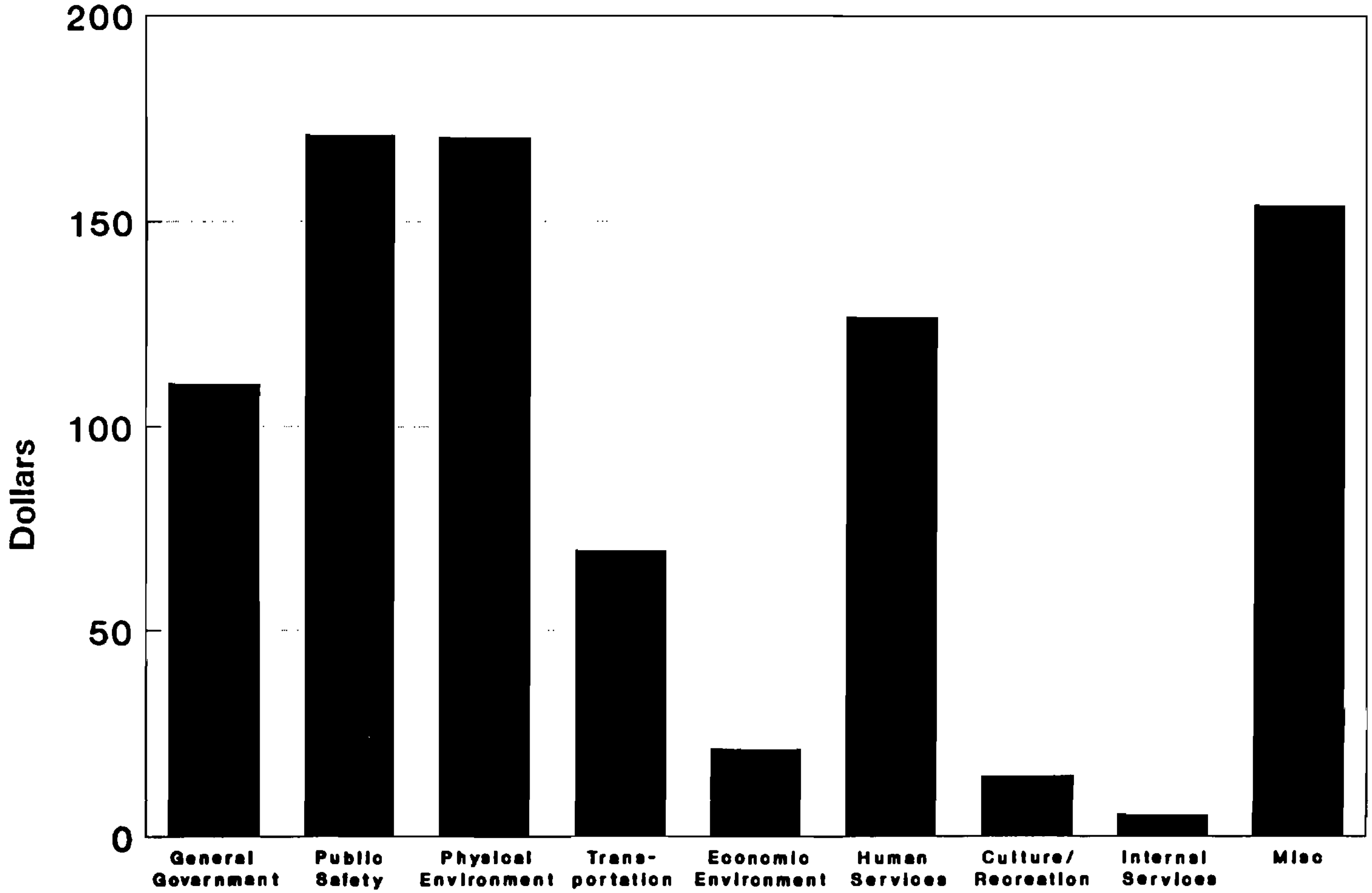


Source: Polk County Office of Management & Budget, 1992

Florida Power Corporation

Polk County Site

FIGURE 2.2.7-14
POLK COUNTY PER CAPITA REVENUES
1991 THROUGH 1992



Source: Polk County Office of Management & Budget, 1992

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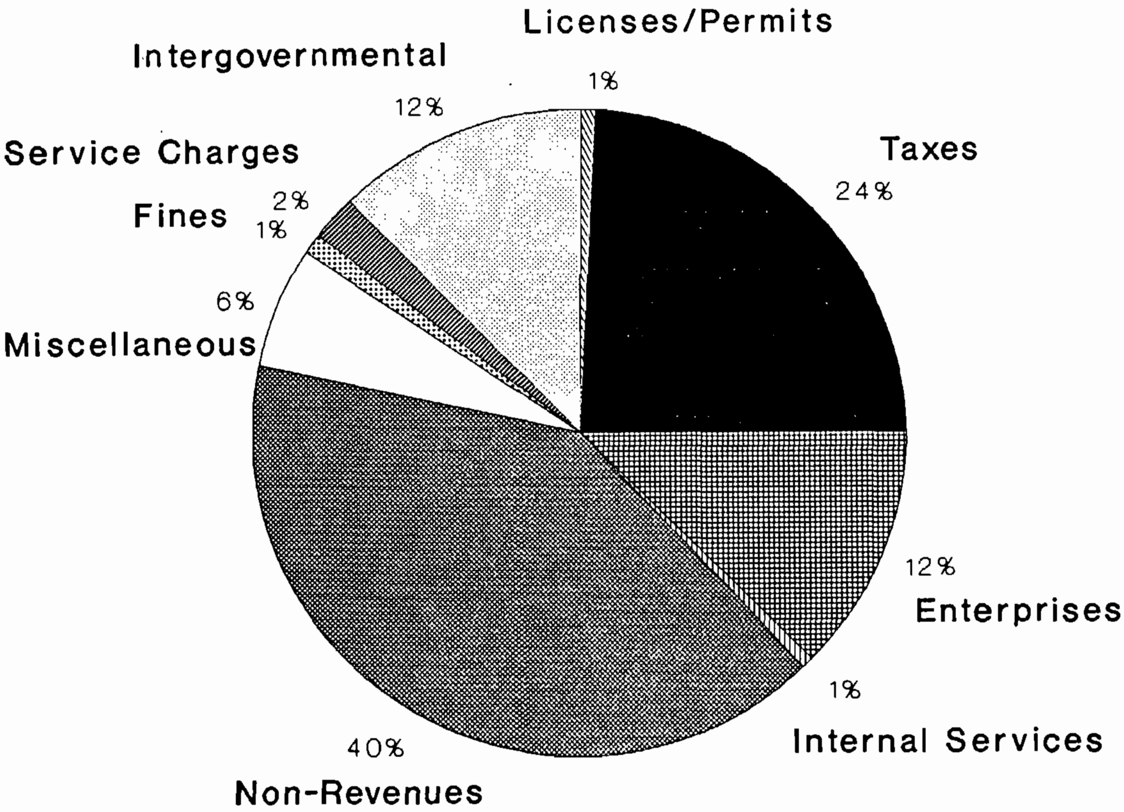
Polk County Site

FIGURE 2.2.7-15

POLK COUNTY PER CAPITA EXPENDITURES 1991 THROUGH 1992



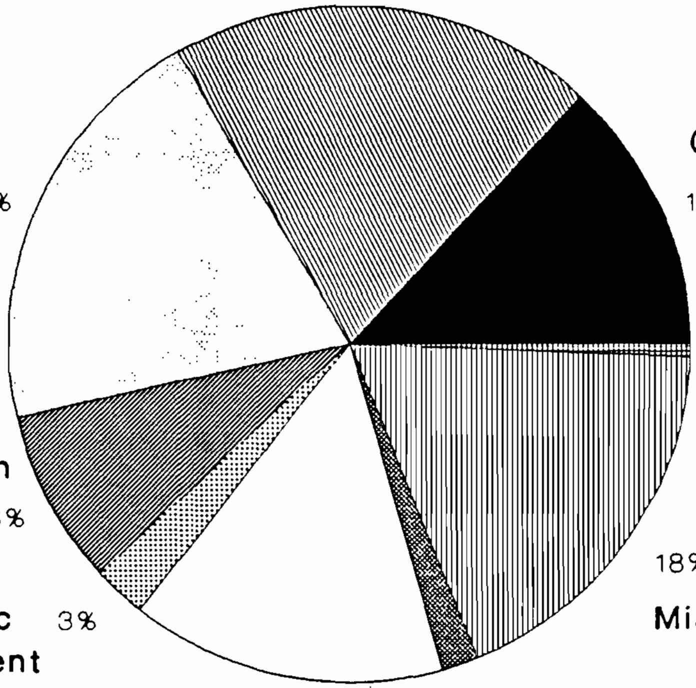
Source: Polk County Office of Management & Budget, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.7-16

MAKE-UP OF POLK COUNTY REVENUES



Source: Polk County Office of Management & Budget, 1992

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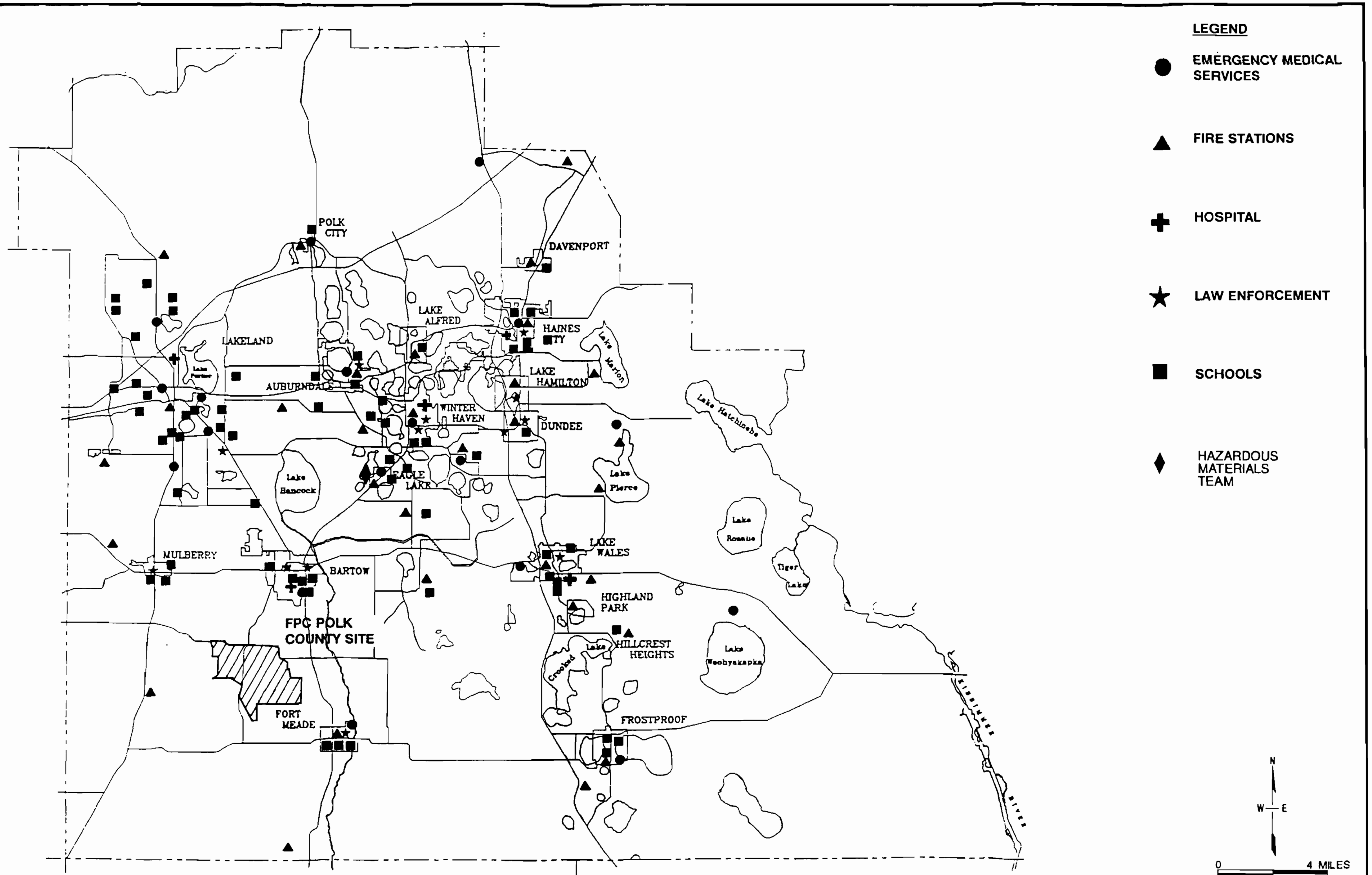
FIGURE 2.2.7-17
MAKE-UP OF POLK COUNTY EXPENDITURES



Source: Polk County Comprehensive Plan, 1991

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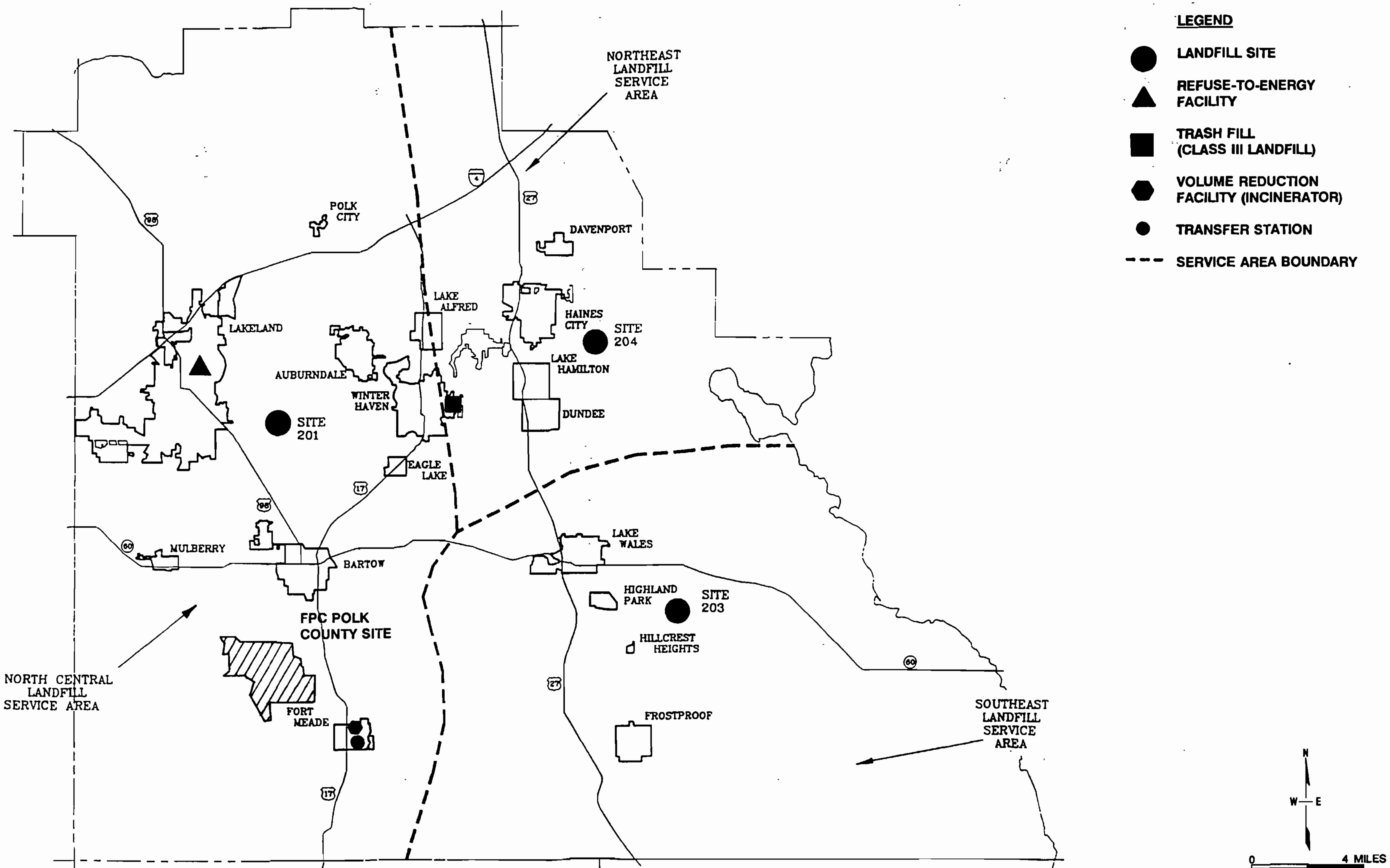
Polk County Site

FIGURE 2.2.7-18

LOCATIONS OF PUBLIC SERVICES



Source: Polk County Comprehensive Plan, 1991

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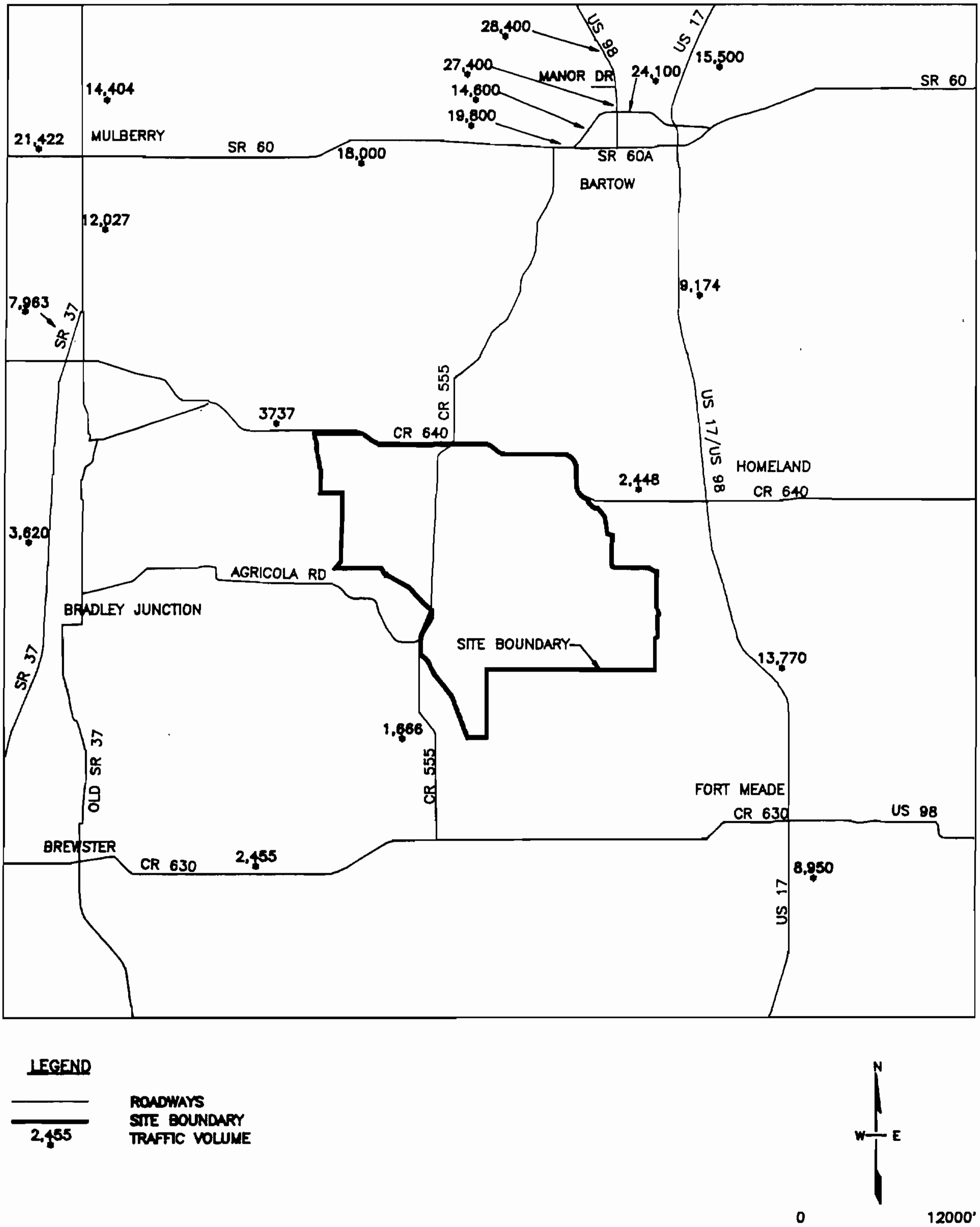
Polk County Site

FIGURE 2.2.7-19

SOLID WASTE FACILITIES AND SERVICE AREA BOUNDARIES



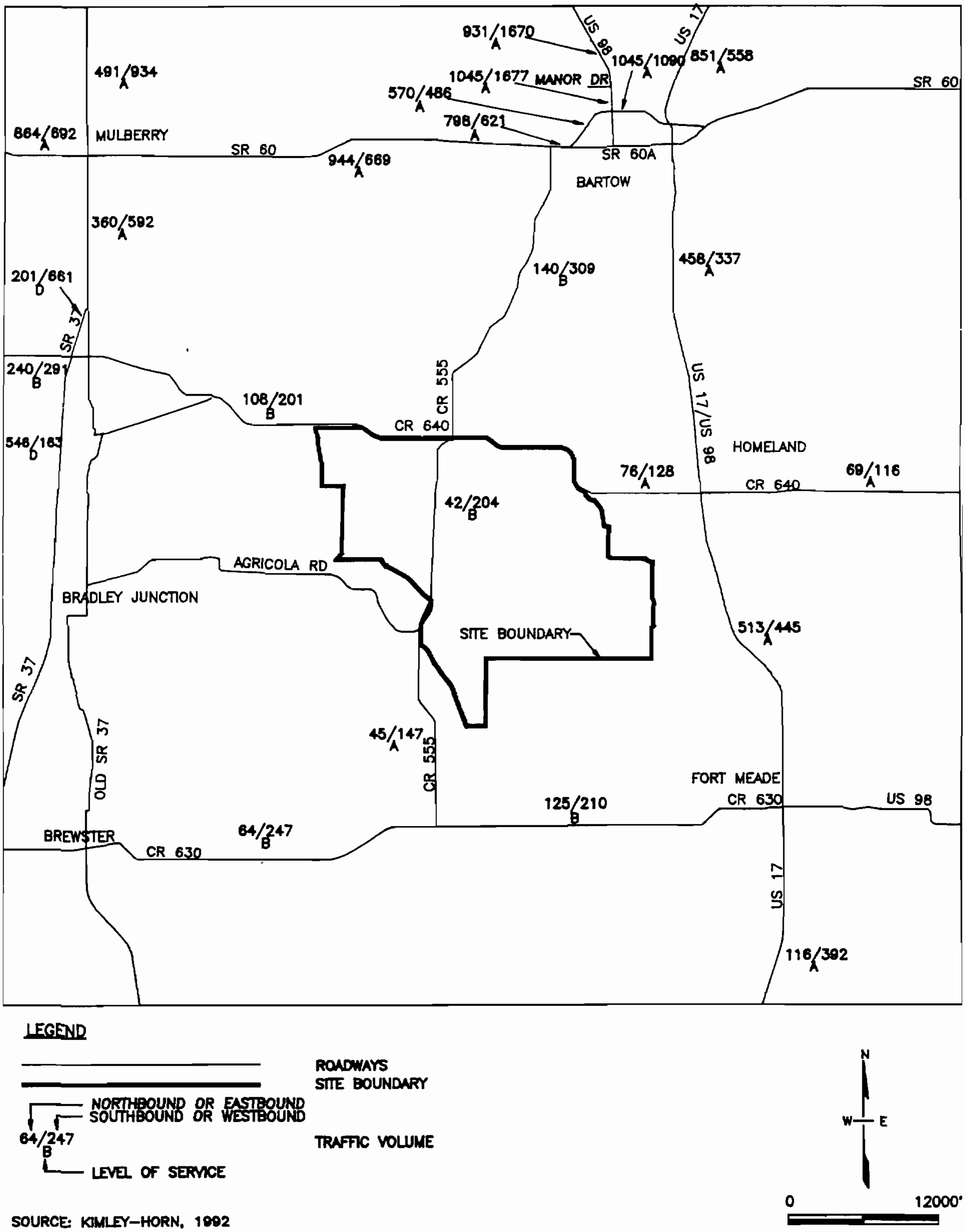
SOURCE: KIMLEY-HORN, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.7-20

EXISTING DAILY TRAFFIC VOLUMES



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Polk County Site

FIGURE 2.2.7-21

EXISTING PEAK SEASON A.M. PEAK HOUR TRAFFIC VOLUMES

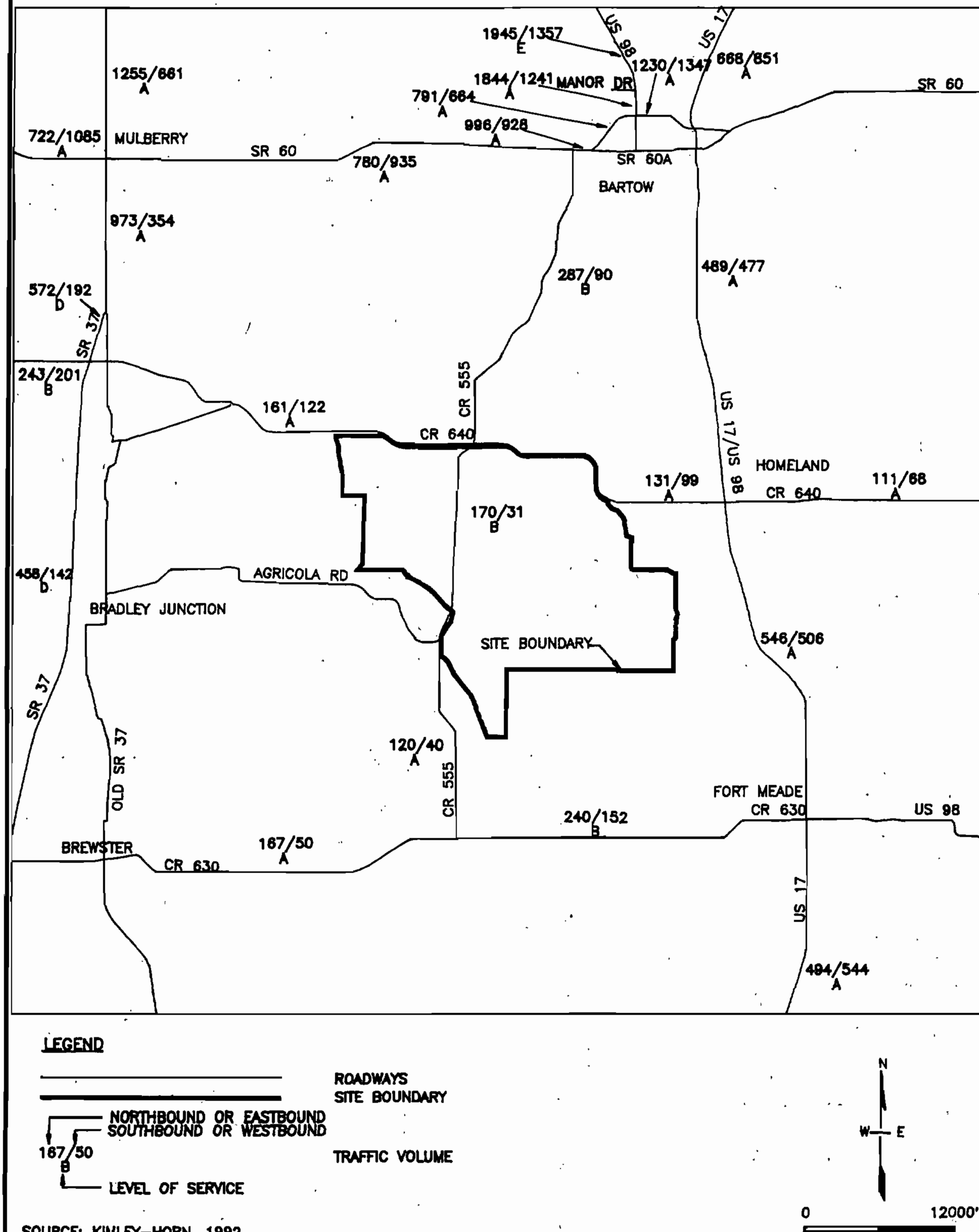

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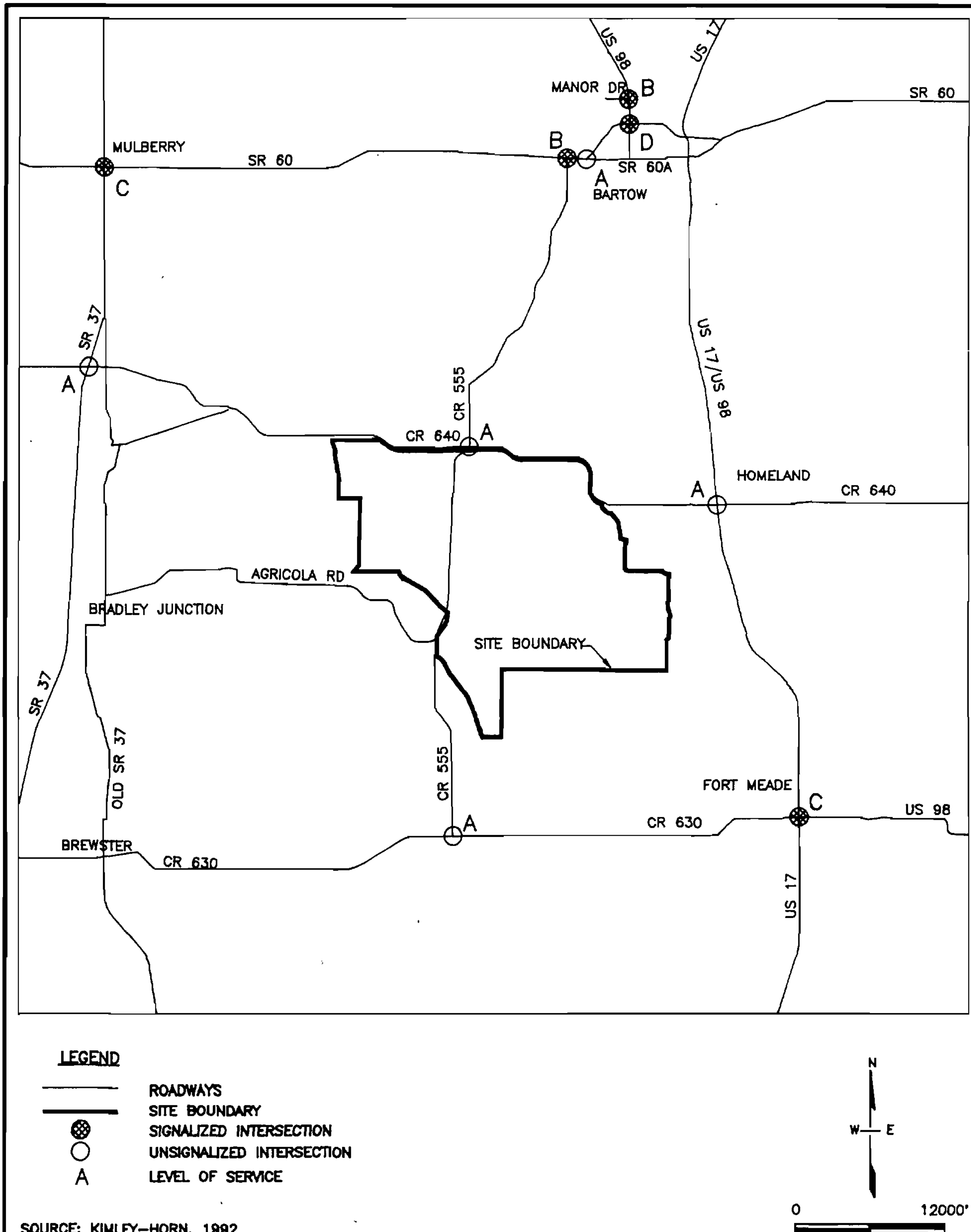
FIGURE 2.2.7-22

EXISTING PEAK SEASON P.M. PEAK HOUR TRAFFIC VOLUMES



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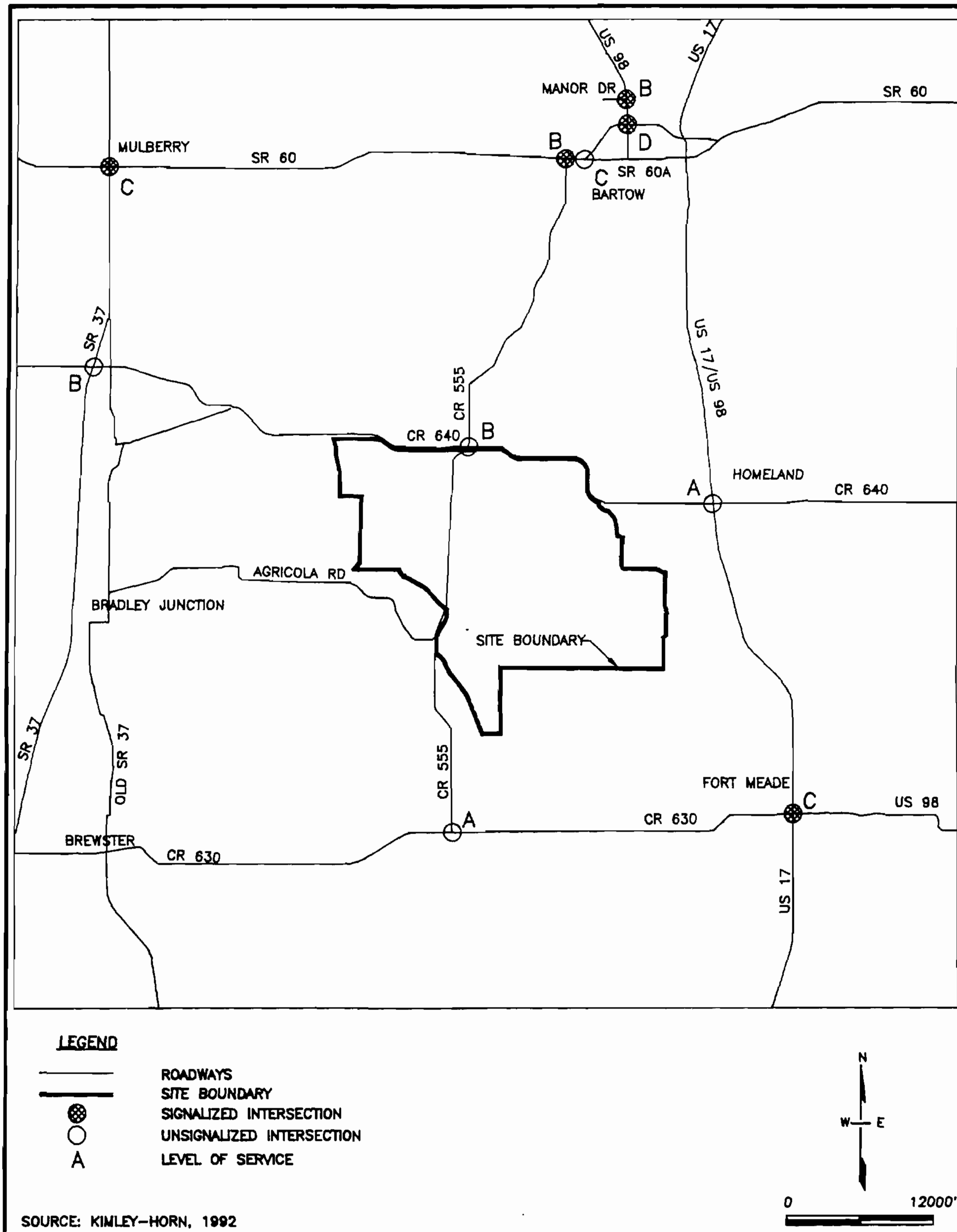
Polk County Site

FIGURE 2.2.7-23

EXISTING PEAK SEASON A.M. PEAK HOUR INTERSECTION CONDITIONS



SOURCE: KIMLEY-HORN, 1992

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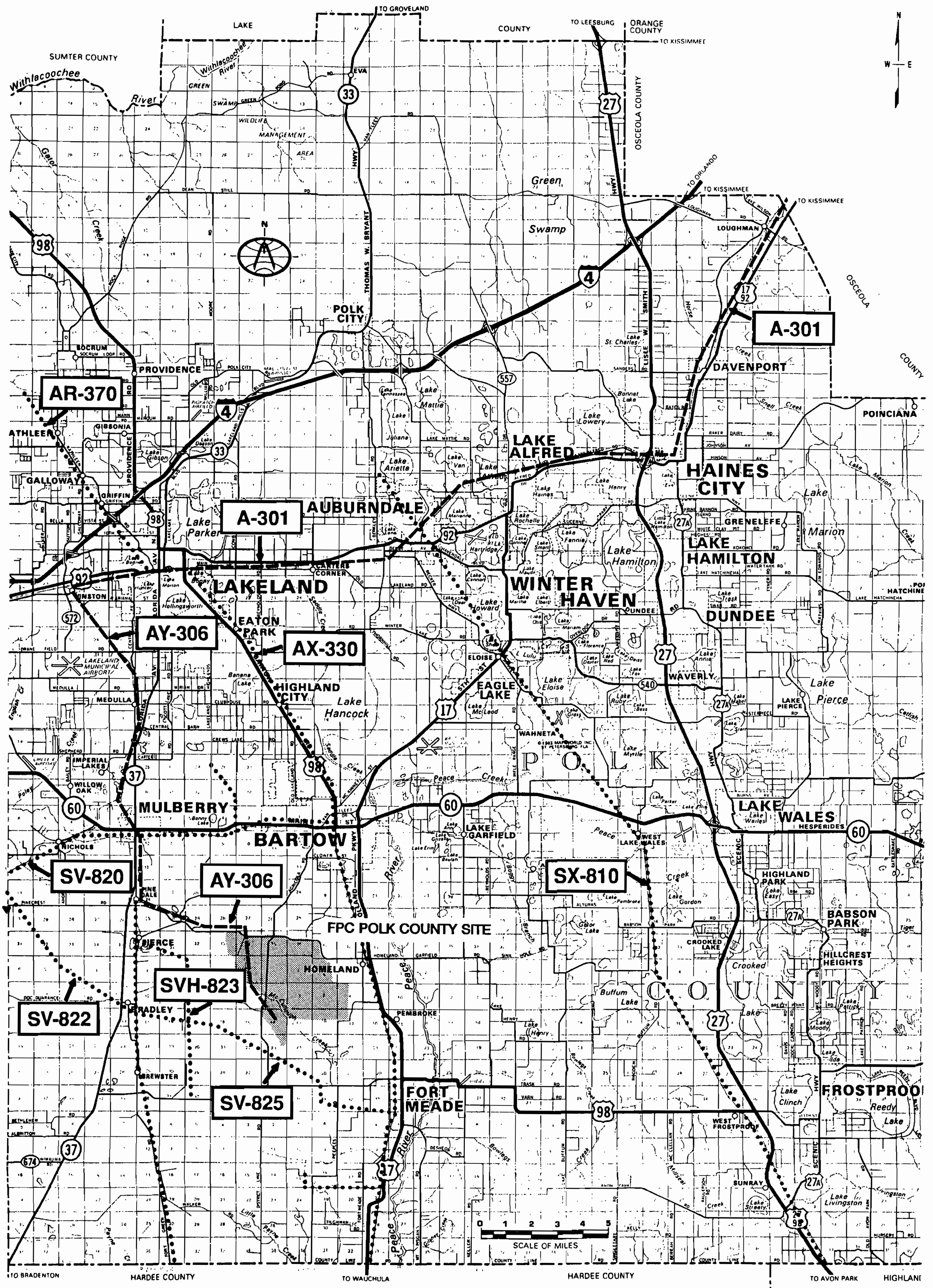
Polk County Site

FIGURE 2.2.7-24

EXISTING PEAK SEASON P.M. PEAK HOUR INTERSECTION CONDITIONS



AX-330 ROUTE NUMBER

— — — — PROBABLE RAIL ROUTE FOR FPC SITE

• • • • • • OTHER CSX RAIL ROUTES IN POLK COUNTY

SOURCES: RAND McNALLY, 1986; MOORE/BOWERS, 1992; FDOT, 1987-1988.

Florida Power CORPORATION

Polk County Site

FIGURE 2.2.7-25

RAIL TRANSPORTATION IN POLK COUNTY

2.3.7 Meteorology and Ambient Air Quality

2.3.7.1 Meteorology

REGIONAL CLIMATE

The climate in central Florida is classified as subtropical with maritime influences from both the Atlantic Ocean and the Gulf of Mexico. Summers are long, warm, and relatively humid, while winters are mild because of the latitude and the warming influence of the Gulf Stream. Coastal locations average slightly warmer in winter and cooler in summer than do the inland areas. The summer heat is tempered by sea breezes along the coasts and by frequent afternoon or early evening thunderstorms in all areas. Thunderstorms, which on the average, occur on about one-half of the days in the summer, frequently are accompanied by a temperature drop of as much as 10 to 20 degrees. They cause high winds, heavy rain, occasional hail, and frequent lightning. Tornadoes that reach the surface are a rare occurrence in this part of the state, and very destructive tornadoes are almost nonexistent. Tornadoes are most likely to occur during seasonal changes when cool, dry air and warm, moist air clash.

Hurricanes are tropical cyclones in which winds reach speeds of 74 mph or more and blow in a large spiral around a relatively calm center. Near the center (eye), hurricane winds may gust to more than 200 mph, and the storm dominates the ocean surface and lower atmosphere over tens of thousands of square miles. The fastest non-gust wind speed (fastest mile of wind) recorded at Tampa was 84 mph, and the fastest 5-minute average was 75 mph. These both occurred with the passage of the Labor Day hurricane of September 3 to 5, 1935 (NOAA, 1977).

Gentle breezes occur almost daily in all areas. Because most of the large-scale wind patterns affecting Florida have passed over water surfaces, hot drying winds seldom occur. High local winds of short duration occur occasionally in connection with thunderstorms in summer and with cold fronts moving across the state in other seasons.

The humidity in Florida is generally high. Inland areas with greater temperature extremes experience slightly lower relative humidity, especially during times of hot weather. On the average, variations in relative humidity from one place to another are small; humidities range from about 50 to 65 percent during the afternoon hours to about 85 to 95 percent during the night and early morning hours.

Heavy fogs are usually confined to the night and early morning hours in the late fall, winter, and early spring months. On the average, they occur on about 19 days a year at Lakeland, based on a 24-year period of record (NOAA, 1977a). These fogs usually dissipate or thin soon after sunrise; heavy daytime fog is seldom observed in Florida.

Temperature and precipitation data representative of the site are available for Bartow, 8 miles north of the site, and Wauchula, 17 miles south of the site. Additional climatological data for the site area is available from the weather service offices at Tampa (47 miles northwest), Orlando (62 miles northeast), and Lakeland (21 miles north-northwest). Based on discussions with and recommendations from FDER, observations from the "first order" National Weather Service (NWS) station at Tampa are being used as representative surface and upper air wind data for the site.

The following temperature statistics are based on data collected at Bartow and Wauchula for the period-of-record 1951 through 1980. These data are summarized in Table 2.3.7-1. For normal daily mean minimum temperatures, January exhibits the lowest value of approximately 49°F. January also exhibits the lowest normal mean monthly temperature, 61°F. The highest normal daily maximum temperature (92°) occurs in July and August. Highest and lowest record temperatures of 103°F and 18°F were recorded at Bartow in June 1977 and December 1962, respectively.

Based on the same 30-year record (Gale Research, 1985), normal annual rainfall is approximately 53 inches. The monthly statistics (Table 2.3.7-2) show the start of the rainy season in May or June and its end in September. Most of the summer rainfall is derived from local showers or thunderstorms. The highest normal monthly rainfall is approximately 8.5 inches and occurs in July. November and December are the driest months, with an average of approximately 2 inches of precipitation. The maximum rainfall in one day was 6.32 inches and occurred in October 1975 (Wauchula). Record monthly precipitation occurred in July 1960, when 17.6 inches of rain were recorded (Bartow).

Wind data selected to represent the site were obtained from the Tampa International Airport, the nearest meteorological station for which comprehensive wind data are readily available. March has the highest mean monthly wind speed of 9.7 mph (Gale Research, 1985). The lowest mean monthly wind speed of 7.2 mph is usually encountered in August. An easterly prevailing wind direction is evident during most of the year. The annual average wind speed is 7.7 mph. The predominant wind direction during the 1982 to 1986 time period was from the east-northeast, which occurred approximately 12 percent of the time. Wind directions from the east, northeast, and east-southeast each occurred more than 8 percent of the time. A wind rose for Tampa is presented on Figure 2.3.7-1.

DISPERSION METEOROLOGY

STABILITY. Atmospheric stability in conjunction with general wind patterns and mixing height determines the potential of the atmosphere to disperse airborne pollutants. Atmospheric stability conditions are typically categorized as unstable, neutral, or stable. An unstable atmosphere is one in which rapid diffusion takes place in both the horizontal and vertical directions. In terms of temperature change with height, an unstable atmosphere is characterized by a sharp decrease in temperature with height. Neutral conditions, which are characterized by moderate decreases of temperature with height, are common in the atmosphere and are associated with moderate diffusion rates. A stable atmosphere is characterized by a slight decrease (less than 1°C per 100 meters), or even an increase in temperature with height, and greatly reduced diffusion rates in comparison with unstable or neutral atmospheric conditions.

The stability classifications presented in this section are based on the Turner (1970) classification scheme, which assigns a stability on the basis of surface wind speed, cloud cover, and solar insolation. Appendix 10.5.6.1 contains a summary of the joint frequency of occurrence of wind speed and wind direction categories classified according to stability class based on meteorological data for Tampa International Airport for the period 1982 to 1986. This is referred to as STAR (STability ARay) program data.

MIXING HEIGHT. An important parameter which describes the regional dispersion capability of the atmosphere is mixing height. Mixing height is simply the vertical extent of the surface layer within which relatively vigorous mixing of pollutants takes place. Holzworth (1972) has compiled statistical summaries for mixing height at various locations throughout the United States based on twice daily radiosonde measurements. The abundance of moisture from the ocean around southern Florida creates high humidities and low-level cloudiness that absorb heat and generally prevent the mixing height from subsiding below 500 meters. Because mixing heights are dependent upon surface temperatures, afternoon levels reach above 1,400 meters under intense solar insolation. Lesser diurnal mixing height fluctuations occur at coastal stations in Florida, as compared to inland locations, due primarily to moderating effects of the ocean.

Table 2.3.7-3 presents the seasonal and annual average mixing heights for the period 1960 to 1964 as observed at Tampa International Airport. The Tampa upper air station has been considered regionally representative of the site by FDER in previous applications. Holzworth's comparison of morning and afternoon mixing heights based on data for 62 locations throughout the United States is shown on Figures 2.3.7-2 and 2.3.7-3. These data indicate that the site area experiences mixing heights that are typical of or higher than large areas of the eastern half of the United States. Thus, the site area experiences better than average dispersion conditions.

ON-SITE HOURLY METEOROLOGICAL MONITORING DATA ANALYSIS AND SUMMARY

A 1-year, on-site monitoring program is being conducted for meteorological and air quality parameters. Data from the first four months of the program are presented here; the remaining 8 months of data will be provided in an addendum. The monitoring program is described in Appendix 2.3.7.3.

WIND SPEED (10 METERS). The 10-meter wind speed data collected during the period of October 15, 1991, through February 14, 1992, are presented in Appendix 10.5.6.2. There were a total of 2,943 observations reported during this period, which represents a data recovery rate of 99.9 percent. The average wind speed during this period was 6.4 mph (2.9 m/sec). The maximum hourly average wind speed was 21.0 mph (9.4 m/sec). The average wind speed recorded at Tampa for this period was 7.8 mph (3.5 m/sec).

WIND DIRECTION (10 METERS). The 10-meter wind direction data collected during the period of October 15, 1991, through February 14, 1992, are presented in Appendix 10.5.6.2. There were a total of 2,943 hourly averages reported for a data recovery rate of 99.9 percent. The prevailing winds during this period were from the northeast, north-northeast, and north, as shown on Figure 2.3.7-4, which is a wind rose for the 4-month period. Wind direction data for this same 4-month period recorded at the Tampa NWS Station indicated prevailing winds from the east-northeast, as shown on Figure 2.3.7-5. This comparison of site and Tampa wind data for the same 4-month period indicates that while there was a stronger northerly component at the site, conditions were generally similar.

2.3.7.2 Ambient Air Quality

REGIONAL AIR QUALITY

The Polk County Site is located in an area that FDER currently classifies as attainment for all criteria pollutants (Section 17-2.420, F.A.C). It is designated as Class II from a Prevention of Significant Deterioration (PSD) standpoint. The nearest Class I area is the Chassahowitzka Wilderness Area, located approximately 109 km to the northwest.

Ambient air monitoring data are available which can be used to characterize the existing conditions in the vicinity of the site. A map depicting the locations of the existing ambient air quality monitoring sites is presented as Figure 2.3.7-6. The FDER data from these monitors for 1990 are summarized in Table 2.3.7-4. FDER collected ambient total suspended particulate (TSP) data during 1990 at several locations in the vicinity. However, the TSP standards have now been replaced with standards for particulate matter less than or equal to 10 micrometers aerodynamic diameter (PM_{10}). The nearest FDER PM_{10} data are from the Tampa metropolitan area and are not very representative of Polk County. However, the TSP data for Polk County indicate that existing PM_{10} concentrations would also be well below National and Florida Ambient Air Quality Standards (AAQS).

Concentrations of SO_2 have been measured by FDER at Lakeland and Nichols. FDER data from 1990 show existing SO_2 concentrations at that nearby location to be well below the AAQS. Ambient data for nitrogen oxides (NO_x), carbon monoxide (CO), ozone (O_3) and lead (Pb) have been collected by FDER only in the Tampa and Sarasota metropolitan areas. Given the rural nature of the site, existing concentrations of these pollutants, which are usually associated more closely with urban environments (since they are emitted primarily by mobile sources), should be well below the applicable standards.

A 1-year monitoring program was conducted recently by Tampa Electric Company at two sites in western Polk County, approximately 12 miles to the southwest of the FPC Polk County Site monitoring location. A summary of data from these stations, which operated from April 1, 1991 through March 31, 1992 is presented in Table 2.3.7-5.

ON-SITE HOURLY AMBIENT AIR QUALITY MONITORING DATA ANALYSIS AND SUMMARY

The 1-year on-site air quality monitoring station is currently in operation. Air quality data from the first 4 months of operation are presented below; the remaining 8 months of data will be provided in an addendum. The monitoring program is described in Appendix 2.3.7.3.

SULFUR DIOXIDE (SO_2). A tabulation of the hourly SO_2 concentrations measured at the on-site station during the period of October 15, 1991, through February 14, 1992, are presented in Appendix 10.5.6.3 and summarized in Table 2.3.7-6. A total of 2,650 hourly averages were reported for a data recovery of 89.8 percent. A graphic presentation of the hourly data collected over the 4-month period is shown on Figure 2.3.7-7.

As indicated in Table 2.3.7-6, SO_2 concentrations recorded for all averaging periods are well below the allowable National and Florida AAQS.

OZONE (O_3). A tabulation of the hourly O_3 concentrations measured on-site during the period of October 15, 1991, through February 14, 1992, are presented in Appendix 10.5.6.3 and summarized in Table 2.3.7-6. A total of 2,873 hourly averages were reported for a data recovery of 97.3 percent. These hourly data are presented on Figure 2.3.7-8.

As indicated in Table 2.3.7-6, the recorded values were well within the allowable NAAQS and FAAQS.

PARTICULATE MATTER (PM_{10}). Sampling for PM_{10} was performed on a once every sixth day basis. The monitoring results are summarized in Table 2.3.7-6 and presented in Appendix 10.5.6.4. The data indicate that background PM_{10} concentrations are well below the National and Florida AAQS. Valid samples were recovered from the primary sampler for a data recovery of 100.0 percent. Data from the 21 sampling periods are depicted on Figure 2.3.7-9.

BACKGROUND AIR QUALITY CONCENTRATIONS

Background air quality concentrations to be utilized in the modelling analysis are compiled from two sources - data collected on-site and data from the 1990 FDER state air quality data base. The on-site data were used for SO_2, O_3, and PM_{10}. The data from the FDER data base were used for CO, NO_2, and Pb. The FDER data base from the Tampa area were reviewed, and the sites with the highest concentrations for CO, NO_2, and Pb were selected as the background concentrations. This approach will provide a conservative worst-case scenario, since these are urban monitoring locations and actual concentrations in Polk County are undoubtedly less.

A summary of the background concentrations to be used in modelling air quality impacts are presented in Table 2.3.7-7.

2.3.7.3 Ambient Monitoring Program Description

An air quality/meteorological monitoring program is required to satisfy the Florida SCA Guidelines [Section 17-1.211(1), F.A.C.], as well as the U.S. Environmental Protection Agency (EPA) Ambient Monitoring Guidelines for PSD (EPA, 1987). Based on the worst-case emissions data which were available in the summer of 1991 and preliminary modelling results for the existing and proposed sources, as presented in the Air Quality Monitoring Plan (FPC, 1991), and in agreement with the Ambient Monitoring Section of FDER, the following parameters are being monitored for the following reasons:

- O_3 - because volatile organic compound (VOC) emissions may exceed 100 tons/year
- SO_2 - because maximum predicted impacts were above the significant monitoring concentration (13 $\mu g/m^3$, 24-hr average) based on preliminary modeling
- PM_{10} - because existing source particulate impacts are close to the significant monitoring concentrations (10 $\mu g/m^3$, 24-hr average), and the project could include coal piles and by-product storage areas
- Wind speed
- Wind direction

The monitoring site selected is located south of Homeland and west of Highway 17. The location is approximately 100 feet south and 300 feet east of the southern end of paving on Old Fort Meade Road in an open field at an elevation of approximately 150 ft (MSL). Figure 2.3.7-10 illustrates the monitoring site location. Approximate Universal Transverse Mercator (UTM) coordinates for the monitoring site are 418.70 km east and 3076.35 km north (UTM Zone 17). EPA siting criteria for pollutants of interest are satisfied by the use of this location.

The SO_2 analyzer is a Monitor Labs Model 8850 fluorescent method analyzer with an EPA equivalence designation number EQSA-0779-039. This analyzer is calibrated using an Environics Model 100 calibrator. The O_3 analyzer is a Dasibi 1003-Ah UV photometry analyzer with an EPA equivalence designation number EQOA 05-77-019, which is calibrated using a Dasibi 1008-PC transfer standard calibrator. The PM_{10} samplers used are General Metal Works Model GUV-15H with a reference designation number RFPS 1287-063. The PM_{10} samplers are operated every 6 days in accordance with the FDER schedule. Data from the continuous analyzers are recorded on strip chart recorders and hourly averages are calculated by an ESC 8000 AQM data logger.

The meteorological tower is a 10-meter Climatronics triangular tower with a Climatronics F460 wind measuring system consisting of a precision 3-cup anemometer and a wind vane. Each sensor has a starting threshold of 0.5 mph and an accuracy of one percent over the range of 0 to 100 mph (wind speed) and 3 degrees over the range of 0 to 540 degrees (wind direction). The equipment shelter consists of a trailer which is 4.3 meters (14 feet) long, 2.4 meters (8 feet) wide, and 3.1 meters (10 feet) high. A stable temperature within the shelter is maintained by electric heaters and air conditioners. The temperature is verified by a maximum/minimum thermometer mounted inside the shelter and by continuous temperature monitoring by the data logger.

The station has been operated in accordance with a site-specific Standard Operating and Quality Assurance Procedures (SOQAP) manual (FPC, 1991a), previously submitted to and approved by FDER. The operating status of the equipment is tracked with station logs, equipment calibrations, computer data collection, and strip chart records. Other quality assurance procedures are performed in accordance with the specific SOQAP manual, which also describes internal quality control procedures, as well as data precision and accuracy calculation procedures. The quality assurance portion of the manual is specifically designed to meet the requirements of Appendix B of Part 58, Title 40 of the Code of Federal Regulations.

A systems audit and the first three quarterly performance audits of the air quality analyzers have been conducted by FDER. A PM_{10} audit conducted as part of EPA's National Performance Audit Program has been completed, with audits of the SO_2 and O_3 systems scheduled under this program. Three of the four quarterly data reports (FPC, 1992, 1992a, and 1992b) have been submitted to FDER.

2.3.7.4 References

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TABLE 2.3.7-1
DIURNAL AND MONTHLY TEMPERATURE MEANS AND EXTREMES REPRESENTATIVE OF THE POLK COUNTY SITE

Month	BARTOW					WAUCHULA				
	Daily Maximum	Daily Minimum	Monthly Mean	Record High	Record Low	Daily Maximum	Daily Minimum	Monthly Mean	Record High	Record Low
January	73.1	48.7	60.9	87	22	74.0	49.0	61.5	88	21
February	74.7	49.7	62.2	91	23	75.4	49.5	62.5	93	26
March	80.1	54.8	67.5	93	23	80.4	54.4	67.4	94	23
April	85.0	59.7	72.3	96	39	85.1	58.4	71.8	97	36
May	89.5	65.3	77.4	101	49	89.4	64.1	76.8	101	46
June	91.5	69.8	80.7	103	59	91.2	69.0	80.1	99	56
July	92.6	71.5	82.1	101	64	92.0	70.9	81.5	98	57
August	92.6	71.7	82.2	99	62	92.1	71.2	81.7	98	62
September	90.5	70.5	80.6	97	57	90.4	70.4	80.4	99	55
October	85.4	63.7	74.6	96	41	85.2	63.7	74.5	95	39
November	78.7	55.8	67.3	93	25	79.5	55.6	67.6	90	26
December	74.0	50.0	62.0	90	18	74.8	50.0	62.4	92	21
Year	84.0	60.9	72.5	103	18	84.1	60.5	72.4	101	21

Note: Temperatures are in °F.
Period of Record: 1951 - 1980
Source: Gale Research, 1985

TABLE 2.3.7-2
MONTHLY PRECIPITATION MEANS AND EXTREMES REPRESENTATIVE OF THE POLK COUNTY SITE

Month	BARTOW			WAUCHULA		
	Mean	Greatest Monthly	Greatest Daily	Mean	Greatest Monthly	Greatest Daily
January	2.52	6.65	2.79	2.40	7.84	2.41
February	3.37	8.11	4.07	3.01	7.37	3.34
March	3.32	11.53	4.72	3.02	9.22	5.75
April	2.59	8.40	3.56	2.46	8.26	5.55
May	5.35	13.05	4.30	4.94	11.32	5.72
June	7.18	13.74	3.88	8.33	16.03	5.83
July	8.33	17.58	4.00	8.50	14.60	4.73
August	7.46	12.05	4.64	6.87	12.46	3.58
September	6.68	15.59	3.15	7.03	14.38	4.82
October	2.76	9.10	2.80	2.88	10.36	6.32
November	2.03	6.52	4.57	1.76	6.43	4.97
December	2.10	4.95	2.63	1.89	4.83	2.19
Year	53.69	17.58	4.72	53.09	16.03	6.32

Note: Precipitation measurements are in inches.
Period of Record: 1951 - 1980
Source: Gale Research, 1985

TABLE 2.3.7-3
MEAN DIURNAL MIXING HEIGHTS
TAMPA, FLORIDA

Season	Morning	Afternoon
Winter	394	1,052
Spring	503	1,523
Summer	656	1,460
Fall	419	1,401
Annual Average	493	1,359

Note: Mixing heights are in meters.
Period of Record: 1960 - 1964
Source: Holzworth, 1972

TABLE 2.3.7-4
REGIONAL 1990 AMBIENT AIR QUALITY DATA

			CONCENTRATION ($\mu g/m^3$)				
			3 HOUR		24 HOUR		ANNUAL
POLLUTANT	LOCATION	SITE NO.	HI	2ND HI	HI	2ND HI	
SO_2	LAKELAND	2160004F02	122	122	42	27	5
	NICHOLS	3680010F02	341	252	66	62	9
	SARASOTA	4080002G01	245	224	62	42	6
	SARASOTA	4100012G01	103	98	45	43	8
	HILLSBOROUGH CO	1800021G02	411	388	85	80	15
	TAMPA	1800095G02	590	586	104	100	19
	N. RUSKIN	1800106J02	274	223	54	53	9
	N. RUSKIN	1800107J02	680	438	97	89	10
	TAMPA	4360035G02	369	322	143	105	21
	TAMPA	4360053G02	384	343	102	98	24

			ONE HOUR	
			HIGH	2ND HIGH
O_3	HILLSBOROUGH BAY	1800081G03	231	219
	TAMPA	4360035G02	242	219
	TAMPA*	4360055G01	123	118
	TAMPA**	4360065G01	268	213
	CLEARWATER	0620004G01	237	213
	ST. PETERSBURG	3980018G01	219	219
	TARPON SPRINGS	4380002G03	251	204
	SARASOTA	4080002G01	213	196
	SARASOTA	4080005G01	200	200

* JAN - APR
** APR - DEC

TABLE 2.3.7-4
REGIONAL 1990 AMBIENT AIR QUALITY DATA

			CONCENTRATION ($\mu g/m^3$)			
POLLUTANT	LOCATION	SITE NO.	ANNUAL ARITHMETIC MEAN			
NO_2	TAMPA	4360065G01	25			
	ST. PETERSBURG	3980018G01	24			
	TARPON SPRINGS	4380002G03	17			
			ONE HOUR (PPM)		8 HOUR (PPM)	
			HIGH	2ND HIGH	HIGH	2ND HIGH
CO	TAMPA	4360035G02	5	5	3	2
	TAMPA	4360045G01	8	8	6	5
	SEMINOLE HTS	4360060G01	12	10	7	6
	TAMPA	4360063G01	9	9	5	3
	LARGO	2260002G01	6	5	3	3
	ST. PETERSBURG	3980018G01	11	9	6	5
	ST. PETERSBURG	3980024G01	7	7	5	4
	TARPON SPRINGS	4380002G03	5	5	2	2
	SARASOTA	4080002G01	7	6	3	3
	SARASOTA	4080004G01	11	10	6	6
			24 HOUR		ANNUAL ARITHMETIC MEAN	
			HIGH	2nd HI		
PM_{10}	GIBSONTON	1800066G02	72	68	37	
	TAMPA	1800095G01	44	39	28	
	TAMPA	4360002G01	49	41	29	
	TAMPA	4360035G02	50	46	30	
	TAMPA	4360035G09	48	46	29	
	SEMINOLE HTS	4360060G01	70	50	31	
	LARGO	2260004G02	56	50	27	
	LARGO	2260004G09	59	48	28	
	TARPON SPRINGS	4380002G03	33	32	20	
	SARASOTA	4080003G01	54	50	27	
	SARASOTA	4080003G09	52	47	27	
	SARASOTA	4100013G01	41	35	21	
	VENICE	4560001G01	68	60	36	
	VENICE	4560001G09	56	51	36	

TABLE 2.3.7-4
REGIONAL 1990 AMBIENT AIR QUALITY DATA

POLLUTANT	LOCATION	SITE NO.	CONCENTRATION (µg/m³)			
			24 HOUR		ANNUAL ARITHMETIC MEAN	
			HIGH	2nd HI		
TSP	BRANDON	0370002G01	88	73	44	
	RUSKIN	1800003G03	65	62	36	
	GIBSONTON	1800066G02	129	119	78	
	GARDINIER PARK	1800083G02	87	79	49	
	HILLSBOROUGH	1800085G02	67	60	37	
	TAMPA	1800095G01	114	94	61	
	N. RUSKIN	1800106J02	58	58	40	
	N. RUSKIN	1800107J02	85	77	39	
	TAMPA	4360002G01	85	80	54	
	TAMPA	4360002G09	90	79	54	
	TAMPA	4360030G01	87	68	43	
	SEMINOLE HTS	4360060G01	186	127	57	
	TAMPA	4360060G09	174	122	55	
	TAMPA	4360064G02	384	192	139	
	TEMPLE TERRACE	4440001G01	64	52	33	
	AUBURNDALE	0120001F01	169	68	46	
	BARTOW	0180003F01	78	66	40	
	LAKELAND	2160004F02	72	63	29	
	NICHOLS	3680010F02	96	76	44	
	SARASOTA	4080003G01 (2 OBS)	80	36	58	
	SARASOTA	4100013G01 (8 OBS)	58	41	29	
	SARASOTA	4100013G09 (4 OBS)	60	42	39	
			QUARTERLY ARITHMETIC AVERAGE			
			JAN/ MAR	APR/ JUN	JUL/ SEPT	OCT/ DEC
Pb	RUSKIN	1800003G03	0.0	0.0	0.0	0.0
	TAMPA	1800103G02	0.0	0.0	0.0	0.0
	HILLSBOROUGH CO	1800104G02	0.1	NA	NA	NA
	HILLSBOROUGH CO	1800104G09	0.0	NA	NA	NA
	TAMPA	4360002G09	0.1	0.0	0.1	0.0
	SEMINOLE HTS	4360060G01	0.0	0.0	0.0	0.0
	TAMPA	4360060G09	0.0	0.0	0.0	0.0
	TEMPLE TERRACE	4440001G01	0.1	0.0	0.0	0.0

Source: FDER, 1990

TABLE 2.3.7-5
SUMMARY OF TAMPA ELECTRIC COMPANY POLK COUNTY
AIR QUALITY MONITORING DATA

Pollutant	Averaging Period	Highest Monitored Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	FAAQS ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3 hr	202	1,300	1,300
	24 hr	42	365	260
	Annual*	7	80	60
Ozone (O_3)	1 hr	192	235	235
Particulate Matter (PM_{10})	24 hr	43	150	150
	Annual*	18	50	50

*Period of Record: April 1, 1991 - December 31, 1991

Source: FDER Air Quality Data Base, Site #103680036J01

TABLE 2.3.7-6
SUMMARY OF POLK COUNTY SITE
ON-SITE AIR QUALITY MONITORING DATA

Pollutant	Averaging Period*	Highest Monitored Concentration ($\mu g/m^3$)	Second Highest Monitored Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	FAAQS ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3 hr	86	78	1,300	1,300
	24 hr	35	34	365	260
	4 mo (annual standard)	5	--	80	60
Ozone (O_3)	1 hr	149	149	235	235
Particulate Matter (PM_{10})	24 hr	37	24	150	150
	4 mo (annual standard)	17	--	50	50

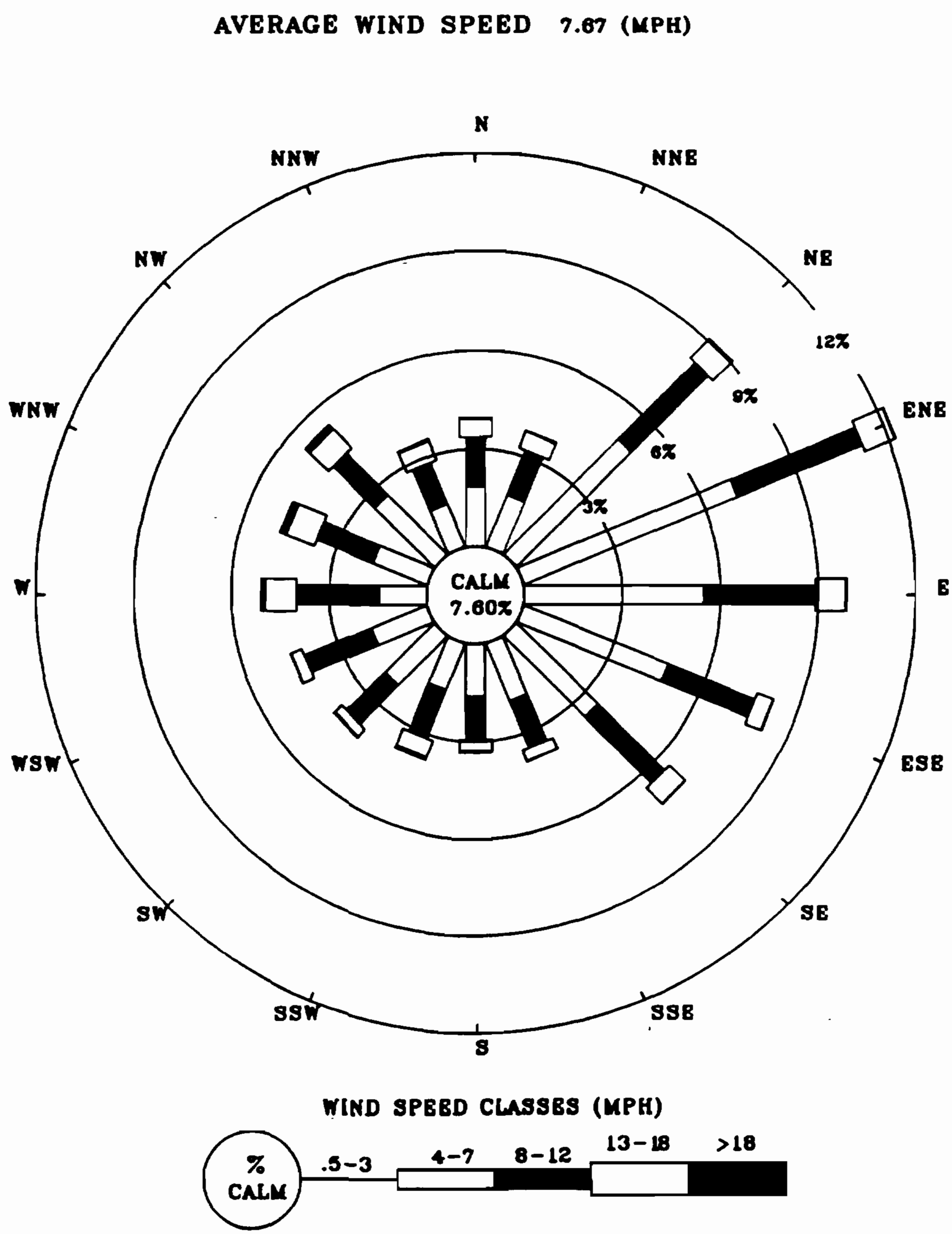
*Period of Record: October 15, 1991 through February 14, 1992

Source: Ebasco Environmental, 1992

TABLE 2.3.7-7
BACKGROUND AIR QUALITY DATA

Parameter		Averaging Period	Concentration[5] ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	FAAQS ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	[1]	3 hr	78	1,300	1,300
		24 hr	34	365	260
		4 mo (annual standard)	5	80	60
Ozone (O_3)	[1]	1 hr	149	235	235
Particulate Matter (PM_{10})	[1]	24 hr	24	150	150
		4 mo (annual standard)	17	50	50
Carbon Monoxide (CO)	[2]	1 hr	11,450	40,000	40,000
		8 hr	6,870	10,000	10,000
Nitrogen Dioxide (NO_2)	[3]	Annual	25	100	100
Lead (Pb)	[4]	Quarterly Average	0.1	1.5	1.5

Data Source:
[1] FPC Homeland AQ Station (10/15/91 through 02/14/92)
[2] FDER Hillsborough Site 060G01 (1990)
[3] FDER Hillsborough Site 002G09 (1990)
[4] FDER Hillsborough Site 065G01 (1990)
[5] Second-highest short-term and highest annual or long-term concentrations are presented.

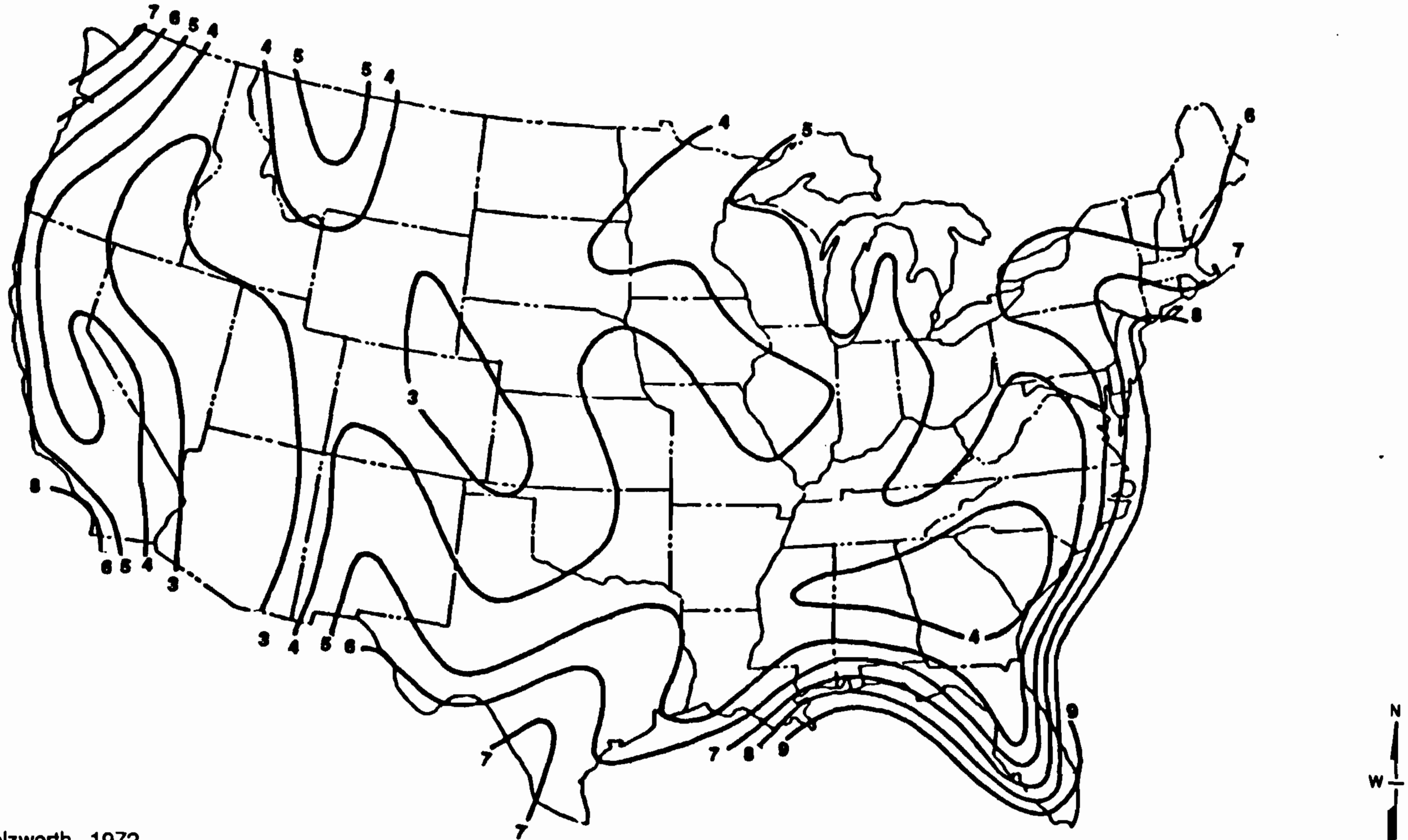


Source: NCDC Tampa, FL CD-1440 Format Data, 1982 through 1986

Florida Power Corporation

Polk County Site

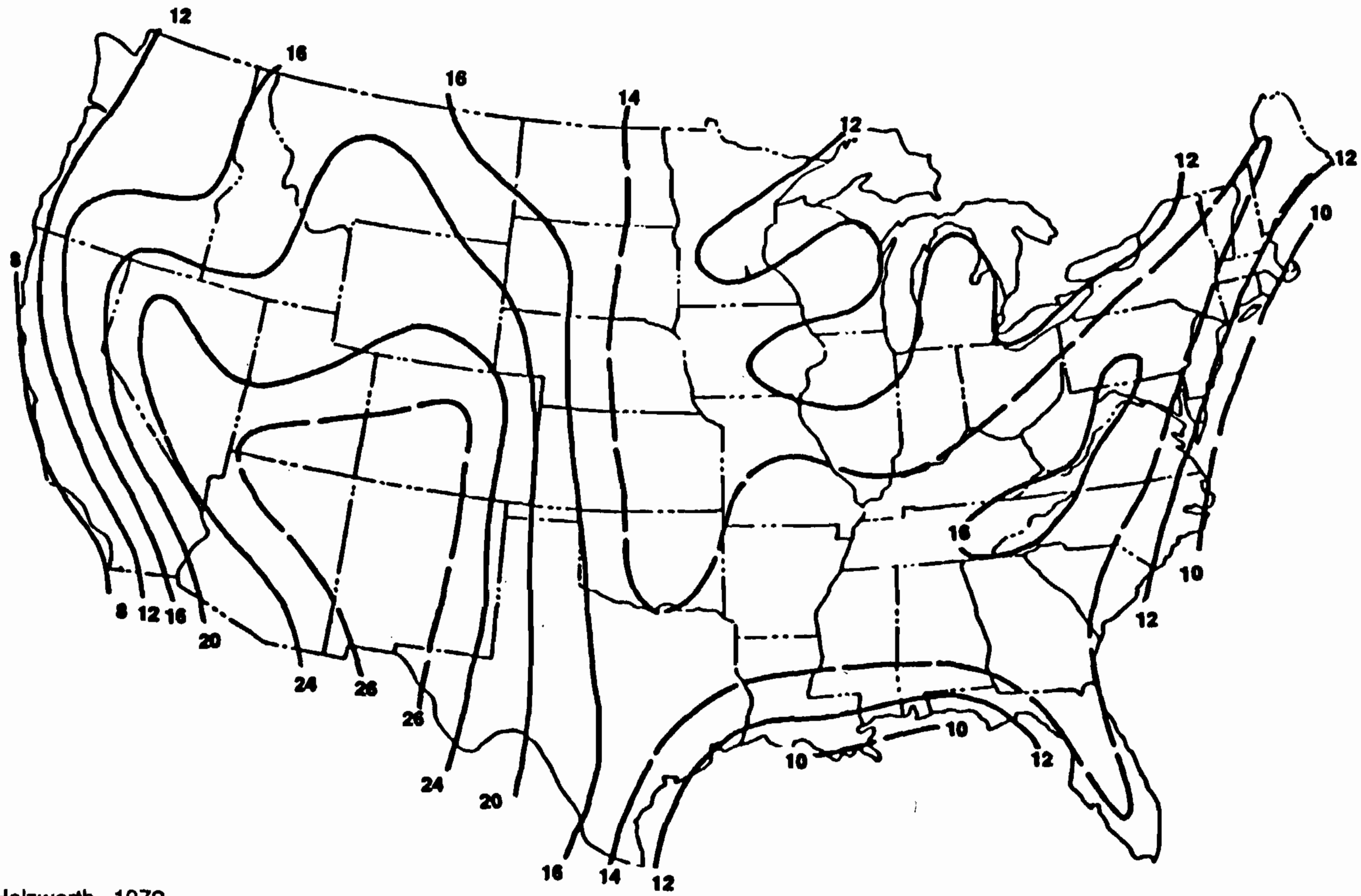
FIGURE 2.3.7-1
ANNUAL WIND ROSE
TAMPA, FLORIDA
1982 THROUGH 1986



Source: Holzworth, 1972

Florida Power CORPORATION
Polk County Site

FIGURE 2.3.7-2
ISOPLETHS (m x 10^2) OF MEAN ANNUAL MORNING MIXING HEIGHTS



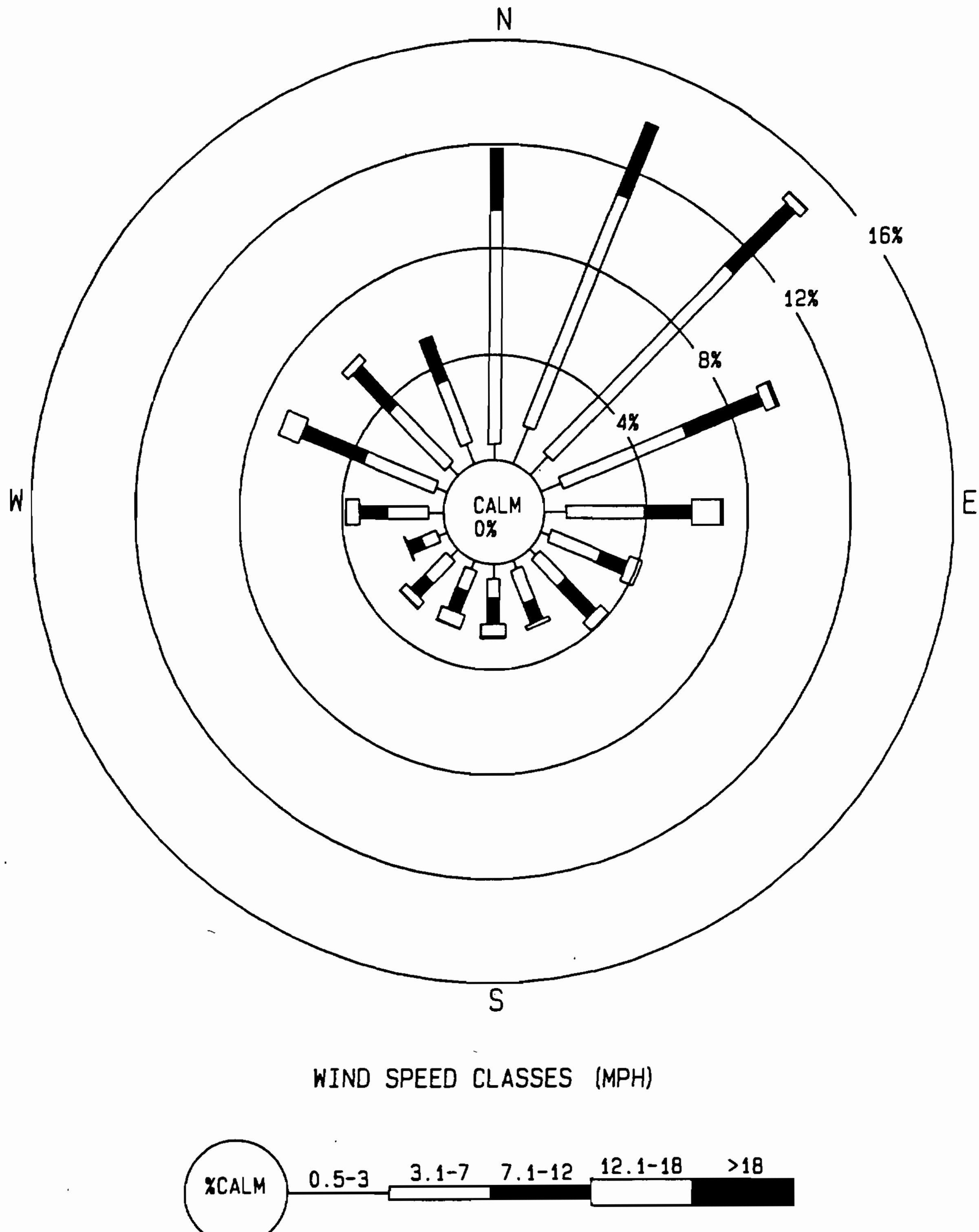
Source: Holzworth, 1972

Florida Power CORPORATION

Polk County Site

FIGURE 2.3.7-3

ISOPLETHS (m x 10^2) OF MEAN ANNUAL AFTERNOON MIXING HEIGHTS

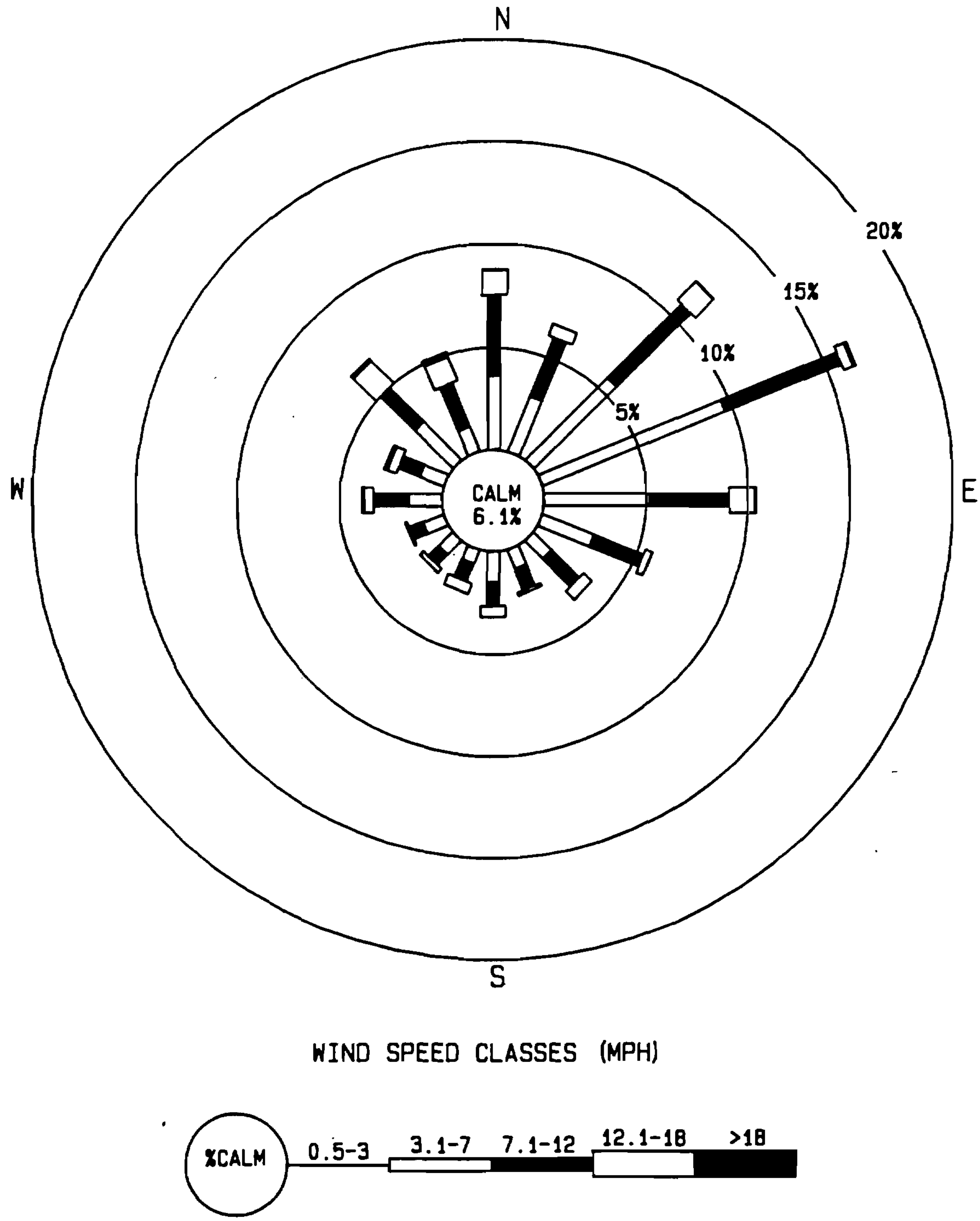


Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.3.7-4
ON-SITE WIND ROSE
OCTOBER 15, 1991 - FEBRUARY 14, 1992

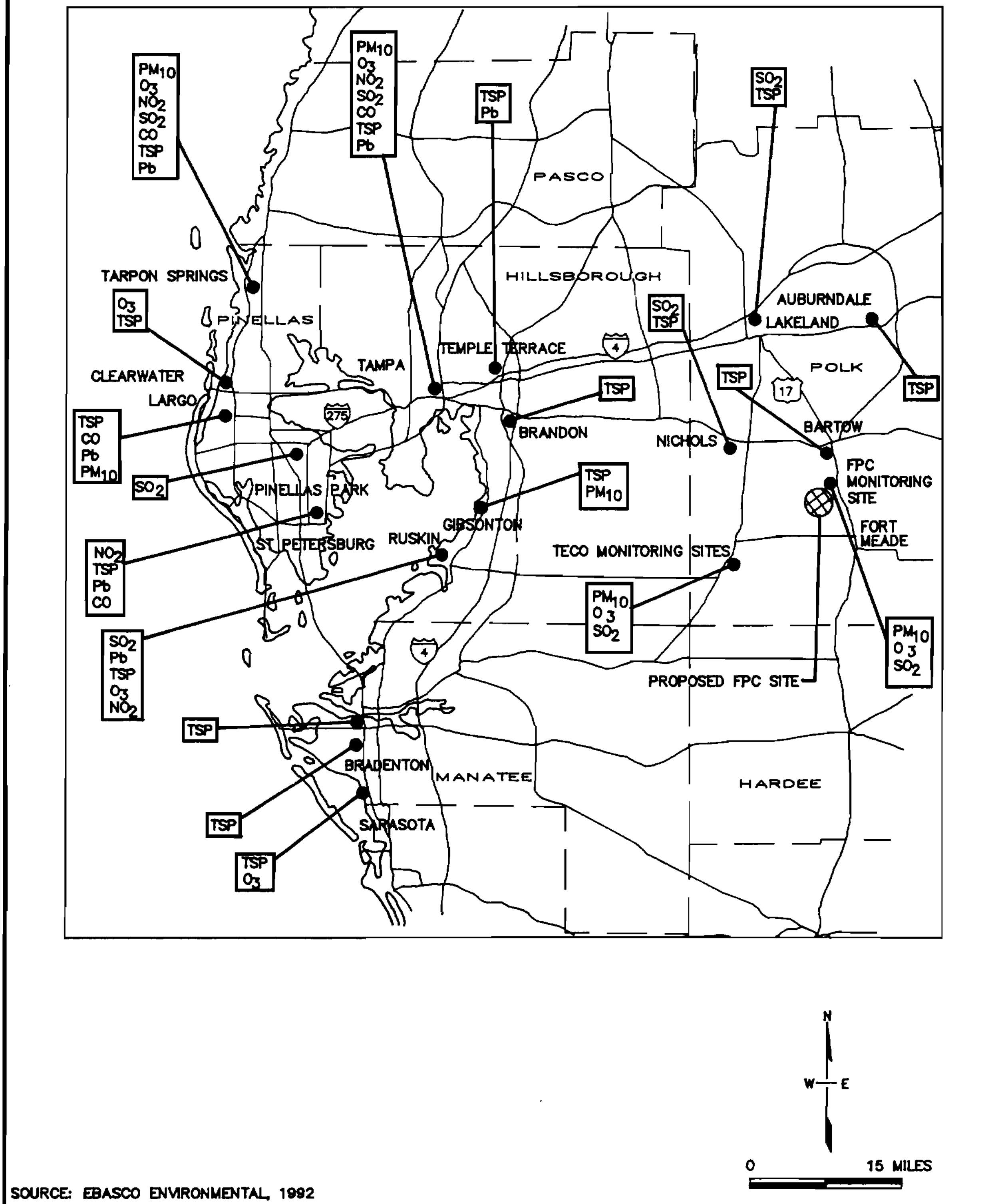


Source: NCDC Tampa FL TD-1440 Format Data, 10/91 - 2/92

Florida Power CORPORATION

Polk County Site

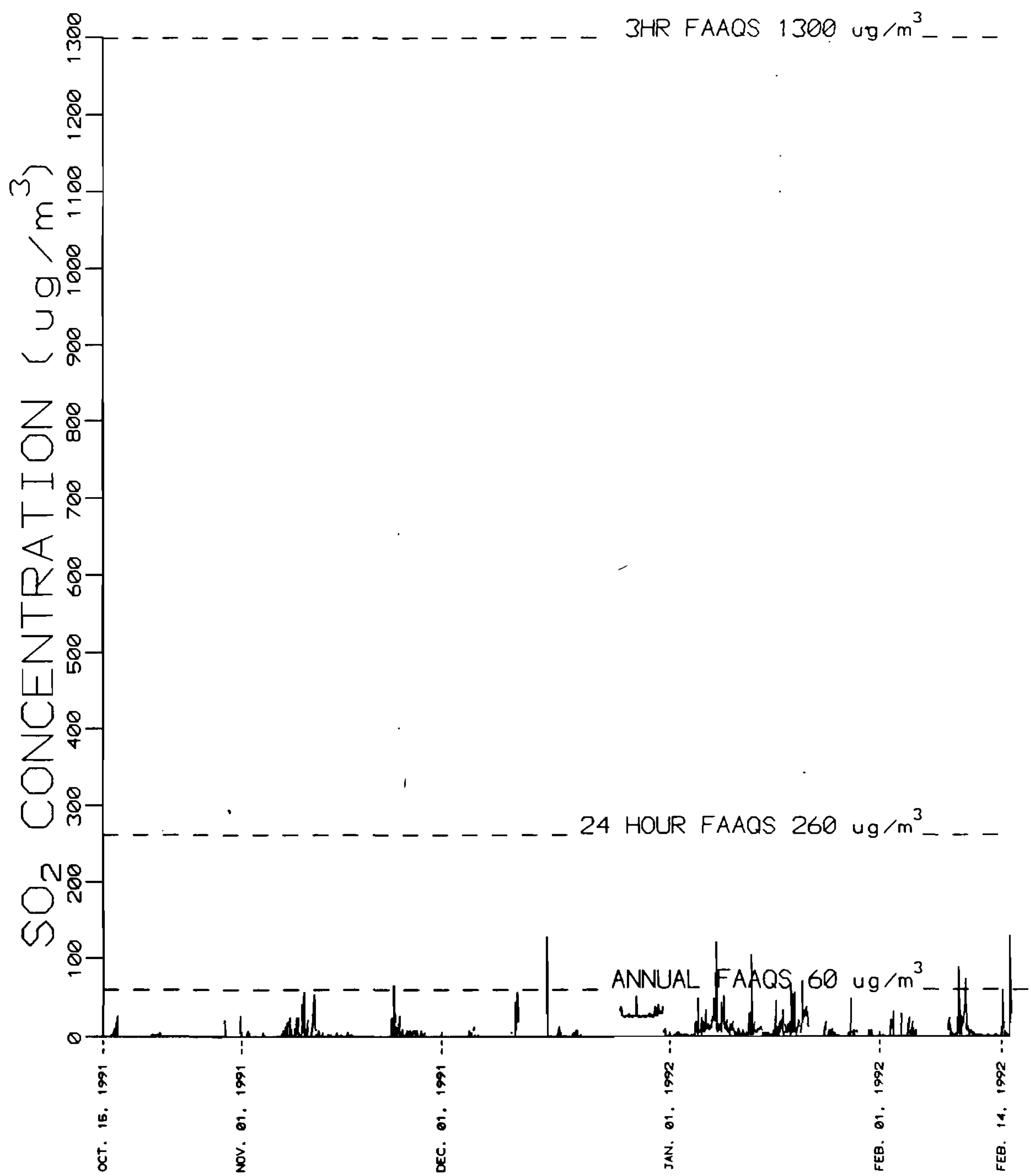
FIGURE 2.3.7-5
TAMPA, FLORIDA - NWS
WIND ROSE
OCTOBER 15, 1991 - FEBRUARY 14, 1992



Florida Power CORPORATION

Polk County Site

FIGURE 2.3.7-6
LOCATIONS OF FDER AND OTHER AMBIENT AIR QUALITY MONITORING SITES



Note: A one-hour average standard for SO_2 does not exist and one hour values are not directly comparable with longer term standards.

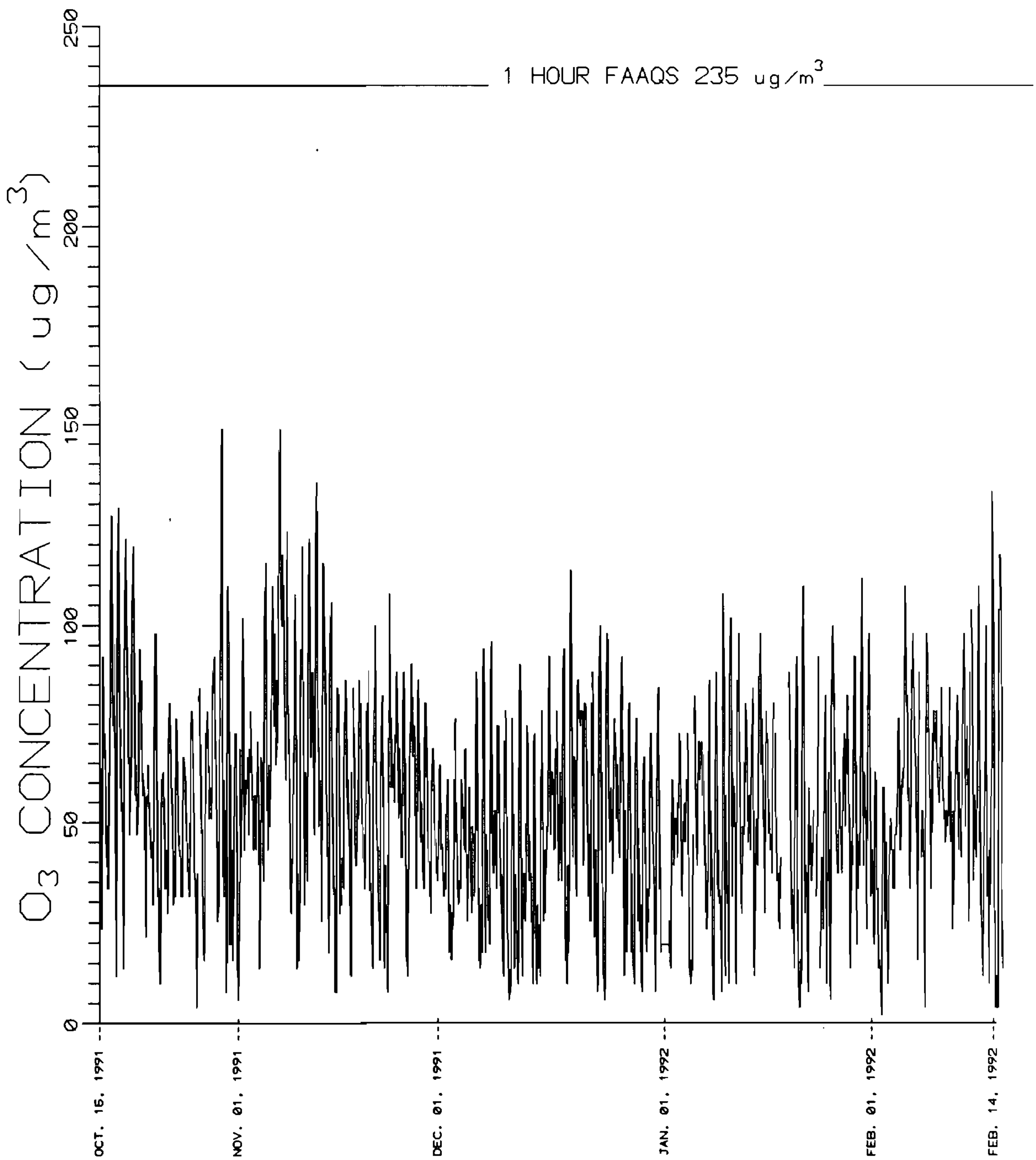
Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.3.7-7

SO_2 HOURLY AVERAGE CONCENTRATIONS COMPARED WITH 3-HOUR, 24-HOUR AND ANNUAL STANDARDS (OCTOBER 15, 1991 - FEBRUARY 14, 1992)



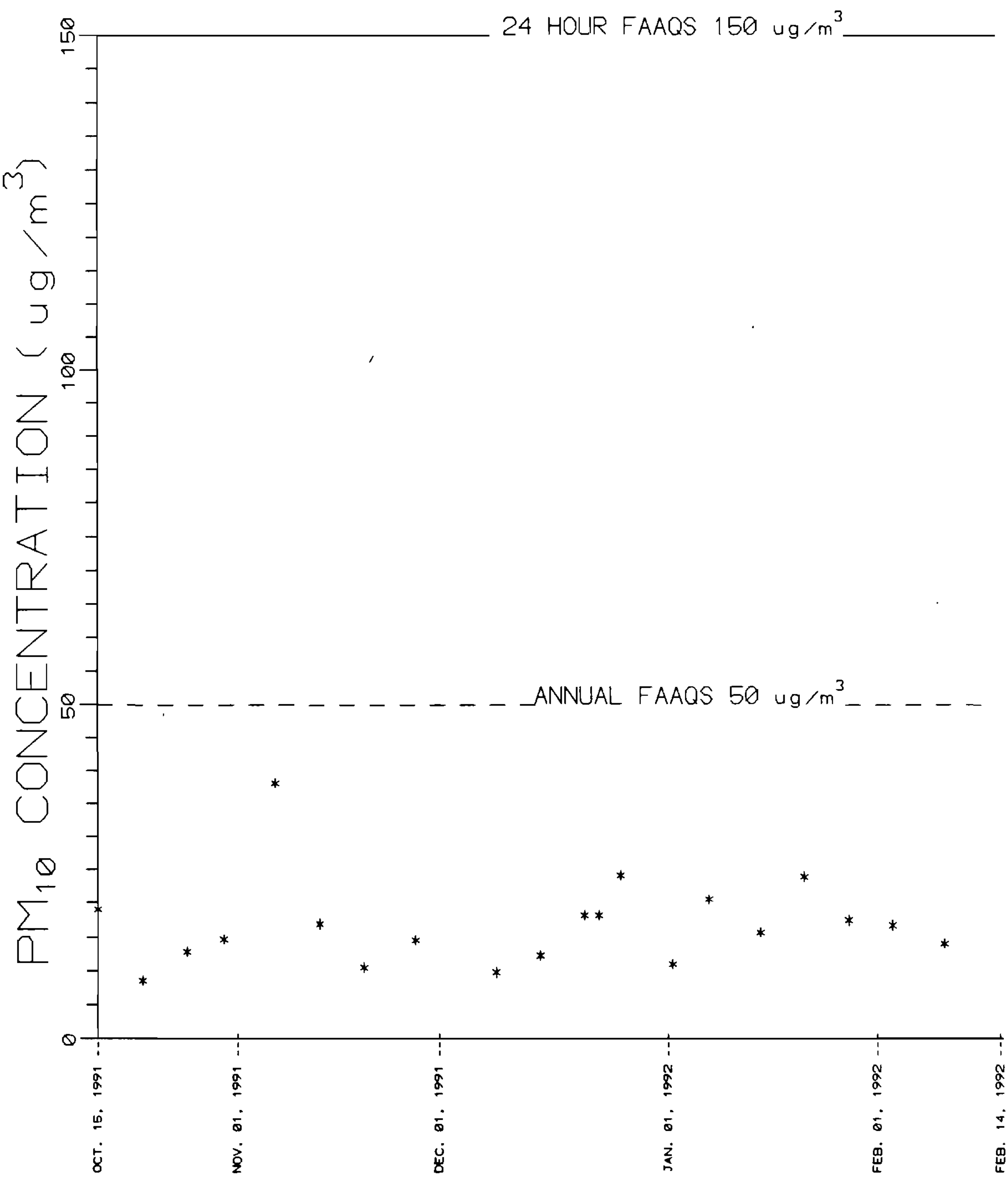
Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.3.7-8

O_3 HOURLY AVERAGE CONCENTRATIONS COMPARED WITH 1-HOUR STANDARD (OCTOBER 15, 1991 - FEBRUARY 14, 1992)



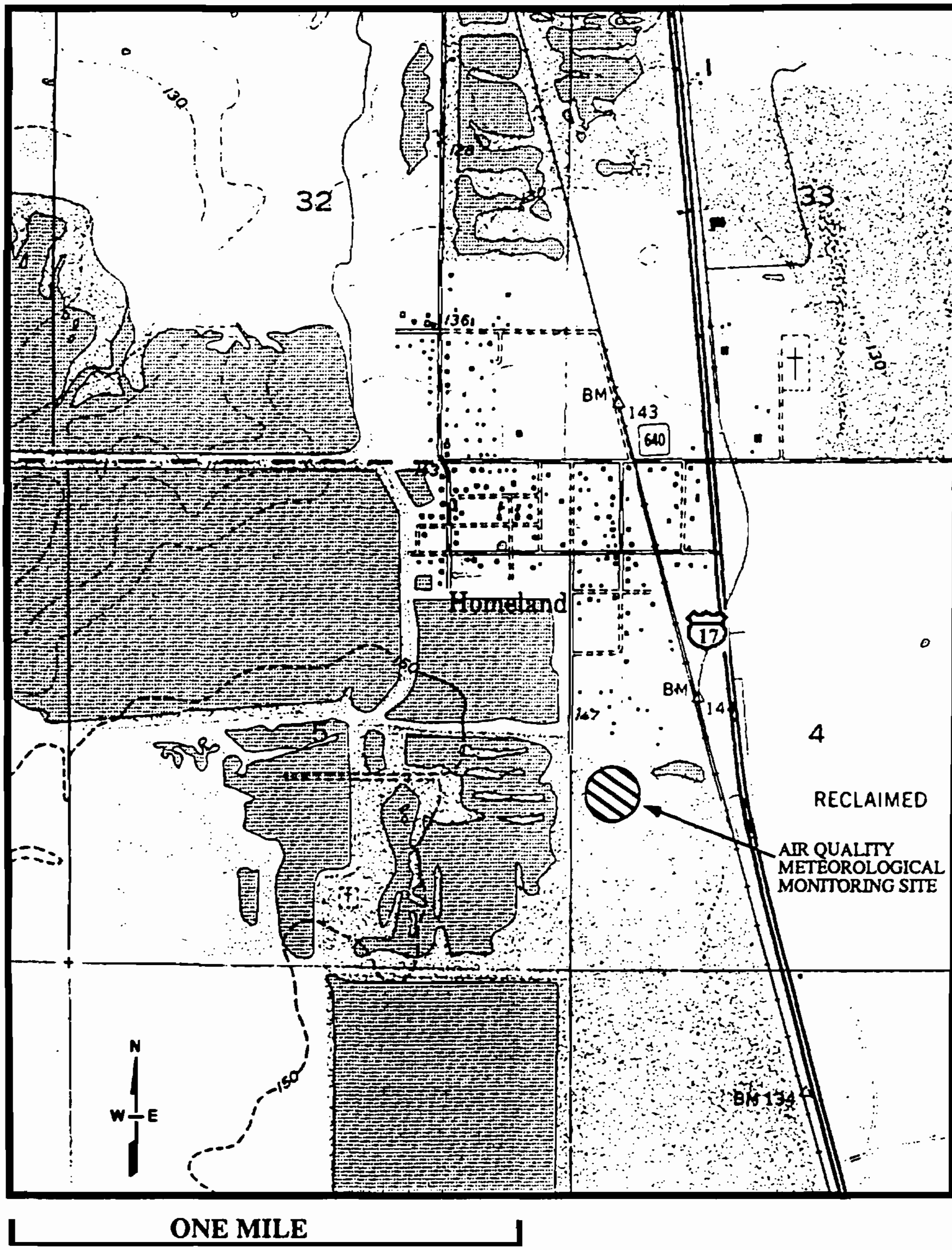
Note: 24-hour average concentrations are directly comparable with 24-hour average standards but are not directly comparable with annual standards.

Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.3.7-9
PM_{10} 24-HOUR AVERAGE CONCENTRATIONS COMPARED WITH 24-HOUR AND ANNUAL STANDARDS (OCTOBER 15, 1991 - FEBRUARY 14, 1992)



SOURCES: USGS 7.5' QUAD HOMELAND, FL
EBASCO ENVIRONMENTAL, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 2.3.7-10
AIR QUALITY/METEOROLOGICAL MONITORING SITE LOCATION MAP

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CHAPTER 3

THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

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3.0 THE PLANT AND DIRECTLY ASSOCIATED FACILITIES

The following sections describe the plant and associated on-site facilities proposed for the Polk County Site. Section 3.1 describes the generating technology options and their influence upon selection of other site equipment. Section 3.2 gives a summary of the layout of the site, with associated acreages. Section 3.3 describes the anticipated primary and backup fuels, and their delivery, handling, and storage on-site. Section 3.4 describes the expected air emissions from the plant, and the proposed emission control methods and equipment. Section 3.5 describes plant water use and Section 3.6 describes plant wastewater generation and handling. Section 3.7 describes the solid wastes and hazardous wastes expected to be generated by the plant, and how they will be treated, stored, and/or disposed, as applicable. Section 3.8 describes the zero-discharge surface water management system (site drainage). Section 3.9 describes materials handling during both the construction and operational phases of the project. Section 3.10 addresses aquifer storage and recovery, which is not proposed for the Polk County Site.

3.1 BACKGROUND

Florida Power Corporation (FPC) proposes to install and operate multiple generating units at the Polk County Site beginning in 1998. The units are to be brought on-line sequentially, with the scheduling of units to match the estimated growth of demand through the ultimate site capacity of up to 3,200 megawatts (MW). The expansion of generating capacity at the Polk County Site will be accomplished using the most cost-effective fuel and generating technology throughout the life of the project. This approach offers FPC maximum flexibility and cost control.

The initial phase of generating units, providing approximately 940 MW (470 MW of which are addressed in the Florida Public Service Commission (PSC) Need Determination Order), will consist of natural gas-fired combined cycle (CC) units capable of conversion to coal gasification units (CG) which would be fired by coal-derived gas. Later units within the ultimate site capacity being requested will be optimized with the same flexibility, and may include pulverized coal (PC) units. At the present time, natural gas prices are projected to remain competitive beyond the end of the decade. At that time, coal is expected to be the more cost effective fuel. Among the advantages of CC technology are its fuel flexibility, modularity, and efficiency. If coal becomes the more economical fuel, the CC units can be converted to burn synthetic coal gas. Because of the modularity of CC units, they can be sized and built incrementally to match demand without losing the economy of scale.

The present status of advanced combustion turbine technology is such that the largest, most efficient configuration for stand-alone units (one combustion turbine [CT], one heat recovery steam generator [HRSG], and one steam turbine [ST] per unit) will produce approximately 235 MW of electricity. Future progress in CT technology is expected to continue, resulting in new and/or retrofitted units of nominal 250 MW capacity. Since the filing of the Plan of Study (POS) for this project, one vendor has already raised the rating of their advanced CT by 9 MW as a result of improved burner design. It should been noted that CT output varies significantly with ambient air temperatures; the cooler and more dense the air, the higher the output. An equivalent option would consist of 2 CTs coupled to one HRSG and one ST to form a nominal 500 MW unit. As a result, CC unit size, as measured by number of megawatts, is variable, depending on design, unit configuration and ambient temperature, and could range from 235 MW to more than 500 MW.

Site development has been predicated on the assumption that the ultimate installation could include the following cases:

Case A - 12 CTs with associated HRSGs, STs, and gasification units for a total site capacity of 3,000 MW

Case B - 8 CTs with associated HRSGs, STs, and gasification units plus 2 PC units, each of nominal 600 MW size, for a total site capacity of 3,200 MW

Cases A and B represent the development associated with worst-case environmental effects. Another case (Case C), consisting of 12 CTs with associated HRSGs and STs, but without coal gasification units, for a total site capacity of 3,000 MW, represents the worst case with respect to net economic and social benefits and is addressed only in Chapter 7 of this SCA.

The design of ancillary facilities (solid waste and by-product disposal areas, cooling pond, etc.) is predicated upon an ultimate site capacity of 3,200 MW (Case B).

Schedules of estimated site capacity over time, for both Case A Coal Gasification Combined Cycle (CGCC) and Case B (CGCC/PC) are presented in Tables 3.1.0-1 and 3.1.0-2. The sequence and timing of the units may vary somewhat from those shown in these tables.

TABLE 3.1.0-1
SCHEDULE OF ESTIMATED
SITE CAPACITY VS. TIME
CASE A - 3,000 MW CGCC

YEAR	MW	FUEL	YEAR #
1998	235	NATURAL GAS	1
1999	705	"	2
2000	940	"	3
2001	940	"	4
2002	1,190	"	5
2003	1,190	"	6
2004	1,440	"	7
2005	1,440	"	8
2006	1,690	"	9
2007	1,690	"	10
2008	1,940	"	11
2009	1,940	"	12
2010	1,940	COAL-GAS	13
2011	1,940	"	14
2012	2,190	"	15
2013	2,190	"	16
2014	2,440	"	17
2015	2,440	"	18
2016	2,690	"	19
2017	2,690	"	20
2018	3,000	"	21
2019	3,000	"	22
2020	3,000	"	23
2021	3,000	"	24
2022	3,000	"	25
2023	3,000	"	26
2024	3,000	"	27
2025	3,000	"	28
2026	3,000	"	29
2027	3,000	"	30

Source: Ebasco Environmental, 1992

TABLE 3.1.0-2
SCHEDULE OF ESTIMATED
SITE CAPACITY VS. TIME
CASE B - 2,000 MW CGCC & 1,200 MW PC

YEAR	NATURAL GAS-FIRED MEGAWATTS	COAL-GAS FIRED MEGAWATTS	PC-FIRED MEGAWATTS	TOTAL MEGAWATTS	YEAR #
1998	235			235	1
1999	705			705	2
2000	940			940	3
2001	940			940	4
2002	940			940	5
2003	940			940	6
2004	940		600	1,540	7
2005	940		600	1,540	8
2006	940		600	1,540	9
2007	940		600	1,540	10
2008	940		600	1,540	11
2009	940		1,200	2,140	12
2010		940	1,200	2,140	13
2011		940	1,200	2,140	14
2012		1,190	1,200	2,390	15
2013		1,190	1,200	2,390	16
2014		1,440	1,200	2,640	17
2015		1,440	1,200	2,640	18
2016		1,690	1,200	2,890	19
2017		1,690	1,200	2,890	20
2018		2,000	1,200	3,200	21
2019		2,000	1,200	3,200	22
2020		2,000	1,200	3,200	23
2021		2,000	1,200	3,200	24
2022		2,000	1,200	3,200	25
2023		2,000	1,200	3,200	26
2024		2,000	1,200	3,200	27
2025		2,000	1,200	3,200	28
2026		2,000	1,200	3,200	29
2027		2,000	1,200	3,200	30

Source: Ebasco Environmental, 1992

3.2 SITE LAYOUT

The FPC Polk County Site as shown on Figures 2.1.3-1A and 2.1.3-1B contains a plant island and several ancillary areas which make up the balance of the site. This section provides a description of potential arrangements of the power generating facilities and associated facilities on-site.

3.2.1 Plant Island

Figures 3.2.1-1 and 3.2.1-2 depict the preliminary ultimate site arrangement options for the 3,000 to 3,200 MW (nominal) Polk County Site. Figure 3.2.1-1 shows the site arrangement for Case A (3,000 MW) utilizing six 470 MW CC units, each with two CTs and one or two STs, and coal gasification facilities. Figure 3.2.1-2 shows the site arrangement for Case B (3,200 MW) utilizing four 470 MW CC units, each having two CTs and one or two STs, coal gasification facilities, and two additional 600 MW PC steam electric units. The decision of whether or not to install PC units or coal gasification combined cycle units for ultimate site development will depend on which generation technology is judged more appropriate considering environmental, technological, and economic factors. The plant island arrangement for either site arrangement will occupy approximately 964 acres of the site.

The site arrangements shown on Figures 3.2.1-1, and 3.2.1-2, utilize a plant island which will be located in the southern portion of the site, east of CR 555. The plant island consists of existing phosphate mining company parcels designated as SA-11, SA-12 and SA-13. The respective areas of parcels SA-11, SA-12, and SA-13 are approximately 200, 601, and 163 acres, for a total of 964 acres. These parcels were selected for the plant island because, although originally intended to be waste clay settling areas, they were never so utilized. Thus, there are no waste clays in these areas which could complicate the structural foundation design.

Equipment, such as combustion turbines, electrical generators, heat recovery steam generators, gasification facilities, and steam turbine generators, in addition to water and wastewater treatment facilities will be located in parcel SA-11. The CC units will be situated in the northern portion of parcel SA-11, while water and wastewater treatment facilities and fuel oil tanks will be south of the CC units. The storm water retention pond will be located in the southern portion of parcel SA-12 to take advantage of existing topography. Rail access will be located in the northern portion of parcel SA-12 and also parcel SA-13. The main plant access road and electrical transmission line corridor will also be located in parcel SA-13. Fuel oil storage will be located in SA-11 and coal storage in SA-12.

Should the Case B option, utilizing four CC units plus two PC units, be implemented, these units will be located as shown on Figure 3.2.1-2. The two PC units will be situated west of the CC units. The sludge conditioning building, thickeners, sludge stockout and limestone handling facilities will be west of the PC units. Figure 3.2.1-3 depicts the Case B elevation views with approximate facility heights given.

In accordance with the Polk County CUP, the site arrangement includes a 100-foot landscape buffer along the western boundary of the plant island where it borders CR 555. A plan for the landscape buffer is provided on Figures 3.2.1-4A, 3.2.1-4B and 3.2.1-4C in compliance with CUP conditions.

3.2.2 Balance of Site

The balance of the site will be used as described below.

Cooling Pond

One of the requirements for steam electric power plants is a reliable supply of cooling water to allow condensing and recycling of the steam. A cost-effective device to achieve that supply, while minimizing the consumptive use of water, is a cooling pond. The parcels designated as N-16, N-15, N-11B, and N-11C, amounting to approximately 2,600 acres, have been set aside for that purpose. During the early development of the project (presently estimated to be 1998 through 2009), only N-16 will be required for cooling. When fully developed, parcels N-15, N-11B, and N-11C will be added and the cooling pond will be designed to operate at two water levels. The northern portion (N-15, N-11B, N-11C) will operate at a fixed water level, while the southern portion (N-16) will operate at a varying level. This will allow storage of water obtained by water cropping from idle solid waste disposal areas and, during the early stage of cooling pond development, parcels N-15, N-11C, and N-11B. Water cropping has been defined for this project as the capture and reuse of rainfall runoff. The cooling pond is shown on Figure 3.2.2-1.

The estimated physical dimensions of the cooling pond are tabulated in Table 3.2.2-1. Detailed descriptions of cooling pond design and operation are presented in Section 3.5.1.

Solid Waste Disposal

Although every effort will be made to market combustion and gasification by-products, the property boundary has been selected to provide enough on-site disposal area to store virtually all of the potentially produced solid waste. To this end, the areas designated as SA-8, SA-10, P-2, P-3, and Phosphoria, are planned for solid waste disposal. The solid waste disposal areas (SWDA) are approximately 2,179 acres. The estimated acreages of the individual areas to be used for solid waste disposal are:

Area	Acreage
SA-8	429
SA-10	294
P-2	448
P-3	483
Phosphoria	523
Total	2,179

The types of solid waste which could be stored in those areas include slag from coal-gasifiers; fly ash, bottom ash and flue gas desulfurization (FGD) wastes from PC units; and solids from water and wastewater treatment facilities. When operating on coal-derived gas, slag is estimated to be produced at a rate of about 1,060 tons per year per megawatt. A PC unit will generate bottom and fly ash at rates of about 92 and 858 tons per year per megawatt respectively, and about 300 tons of scrubber sludge per year per megawatt, if wet scrubbers are used for sulfur dioxide (SO_2) removal. Sludge from water and/or wastewater treatment facilities can be expected to be generated in the range of about 5.8 tons per year per megawatt.

All of these materials have been determined previously to be non-hazardous at similar facilities. However, elements in these waste products could leach into ground water if rain water passes through them and into the ground. For this reason, FPC has selected as disposal areas parcels that held waste clays during the mining operation (except for the Phosphoria area). During normal mine reclamation, the waste clays in these areas will be consolidated into a thick layer which will be virtually impermeable to water should it leach through the solid wastes. This clay liner will thus retard leachate from passing into the ground water. The Phosphoria area has not been mined completely; it is anticipated that the area will be mined before the end of the century. FPC can arrange to have waste clays deposited in this area after it is mined to allow for its development as a SWDA, if Case B is selected. If further design indicates this area would not be required as a SWDA, it would remain part of the water cropping/surface water management system.

Solid waste disposal areas will be designed to hold stormwater with no discharge off-site. This design will include maintaining the dams at their existing elevations and slopes. Because of the weather expected in the site vicinity, confirmed through historical data, net evaporation from these areas is expected to exceed net rainfall. At any given time, only one of these parcels will be receiving solid waste. The others will be used to minimize groundwater withdrawals through water cropping. Because the dams will retain storm water within these areas, it will be possible to recycle excess storm water as makeup to the cooling pond.

A detailed description of the solid waste handling system is presented in Section 3.7. The solid waste disposal areas are shown on Figure 3.2.2-2.

Brine Pond

Two unique features of this site are the availability of waste clays, and the presence of structurally sound dams remaining from the previous phosphate mining activities. These features accommodate the use of an evaporative brine pond to receive concentrated wastewaters resulting from the zero-discharge design. The area designated as SA-9, comprising about 311 acres of the site area, will be utilized as the brine pond. As described above, waste clays will be consolidated into an impermeable liner along the bottom of this area. A synthetic liner will be used to make the interior slopes of the dams watertight. The brine pond location is shown on Figure 3.2.2-3.

Buffer Area

The remaining parcels on the Polk County Site have been reserved for use as a buffer area. These include the areas designated as N-11A, N-13, N-9B, Tiger Bay, and N-9. Negotiations and preliminary designs are underway to use portions of these areas for wildlife habitat enhancement. These areas were selected because they lie between the existing communities of Homeland and Fort Meade and the area of the site in which the actual generating and associated equipment will be placed, thus buffering those communities from the plant and its operations. The buffer area location is shown on Figure 3.2.2-4.

Buffer area parcel acreages are as follows:

Parcel		Acreage
N-11A		295
N-13		388
N-9B		362
Tiger Bay		417
Tiger Bay East		107
N-9		70
	Total	1,649

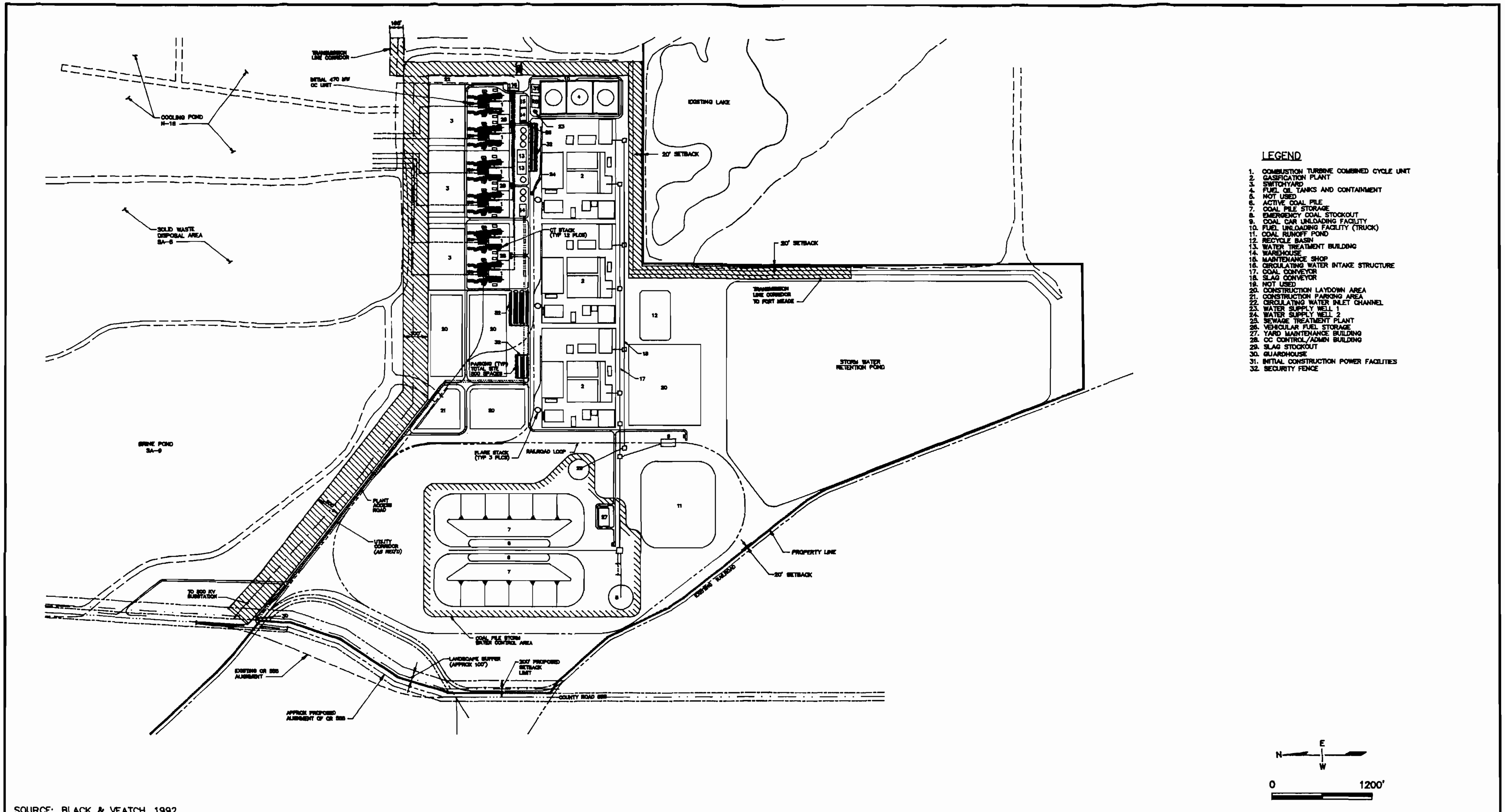
Triangle Lakes

The area surrounding the northern end of P-2, shown on Figure 3.2.2-5, is referred to as the Triangle Lakes area. It presently includes several water bodies which are surge ponds within the International Minerals & Chemical Corporation (IMC) Noralyn mine water recirculation system. It also includes the existing FPC Barcola Substation and 230 kV transmission line. In order to maintain the site zero discharge design, perimeter berms approximately 2 to 3 feet in height will be required. The area will serve as part of the FPC site surface water management system.

TABLE 3.2.2-1
COOLING POND PARCEL PHYSICAL CHARACTERISTICS

	Elevation (Ft MSL)	Water Depth (Ft)	Area (Ac)	Volume (Ac-Ft)
N-16				
Bottom Elevation	146	0	1,160	0
Minimum Water Level	156	10	1,195	11,775
Maximum Water Level	163	17	1,219	20,222
Top of Dam	172	26	1,250	30,969
N-15				
Bottom Elevation	155	0	828	0
Constant Water Level	165	10	844	8,360
Top of Dam	175	20	860	16,880
N-11B				
Bottom Elevation	155	0	186	0
Constant Water Level	165	10	193	1,895
Top of Dam	175	20	199	3,658
N-11C				
Bottom Elevation	155	0	326	0
Constant Water Level	165	10	335	3,305
Top of Dam	175	20	344	6,365

Source: Ebasco Environmental, 1992

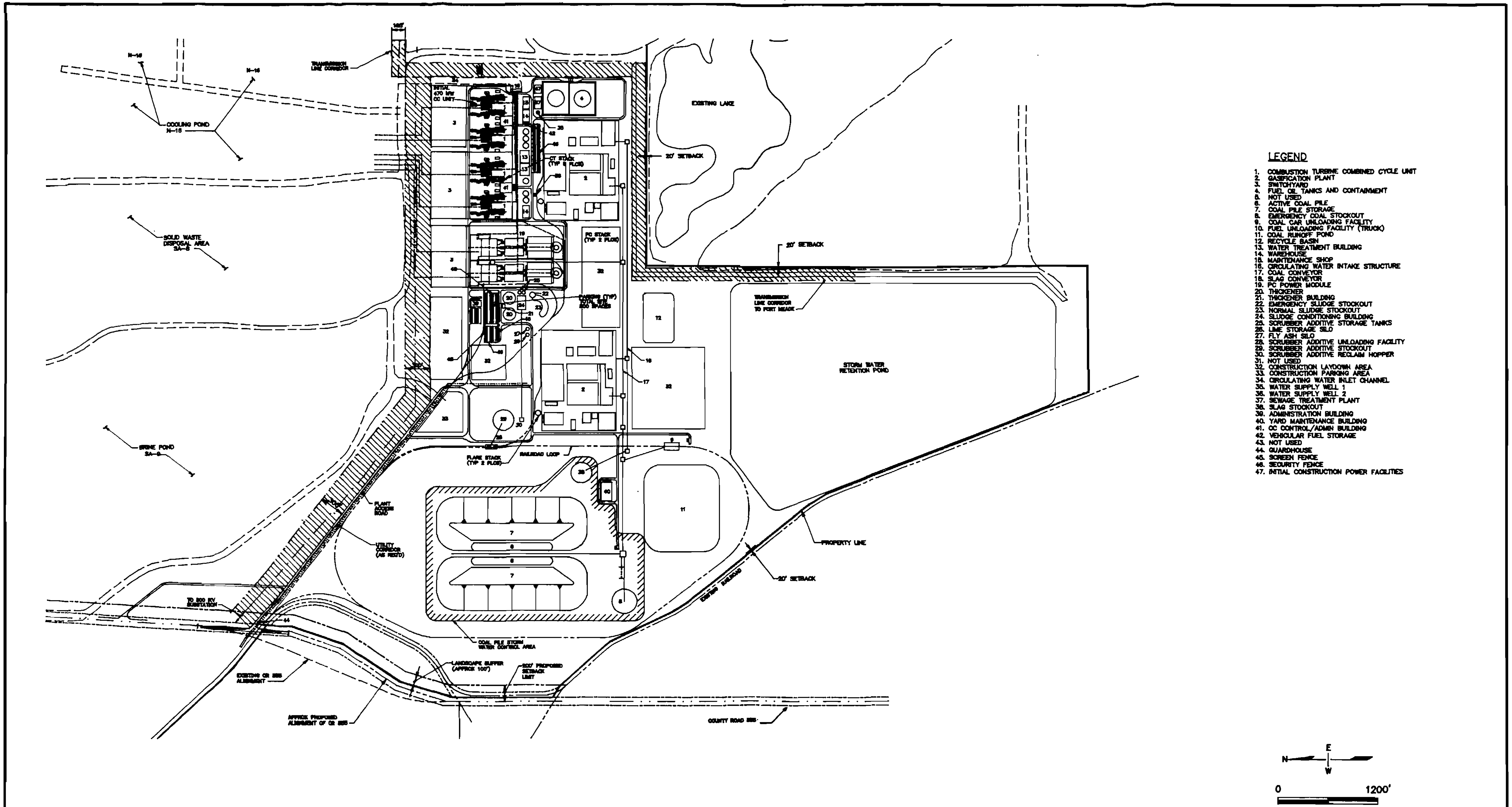


SOURCE: BLACK & VEATCH, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 3.2.1-1
PRELIMINARY ULTIMATE SITE ARRANGEMENT-CASE A
SIX COMBINED CYCLE UNITS

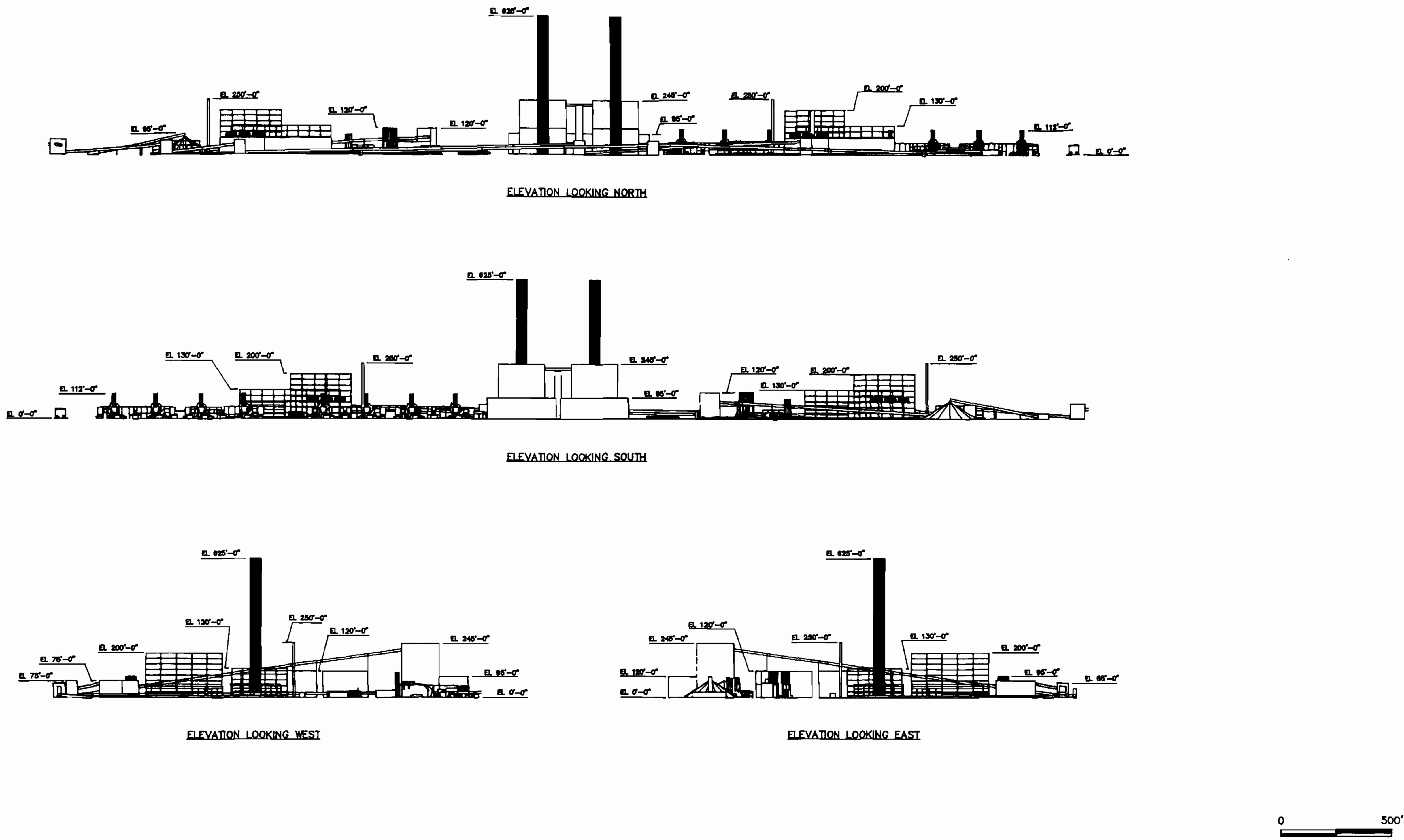


SOURCE: BLACK & VEATCH, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 3.2.1-2
PRELIMINARY ULTIMATE SITE ARRANGEMENT–CASE B
FOUR COMBINED CYCLE AND TWO PULVERIZED COAL UNITS

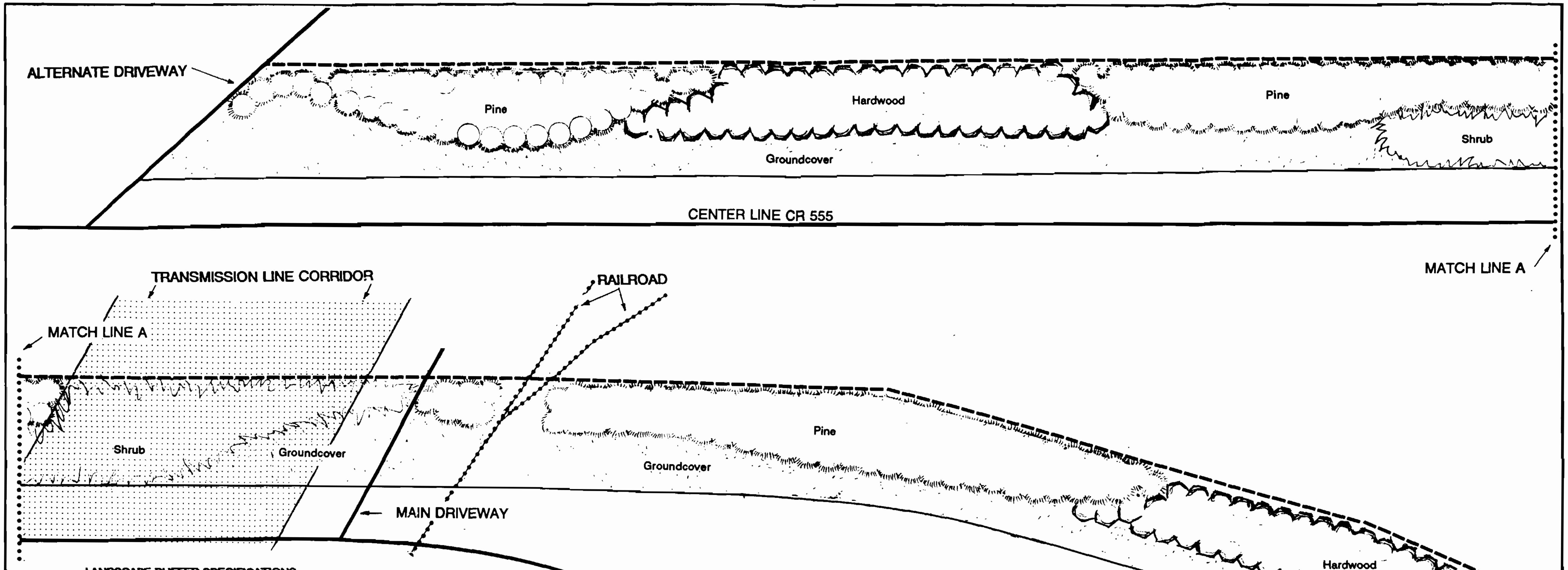


SOURCE: BLACK & VEATCH, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 3.2.1-3
CASE B ELEVATION VIEWS



LANDSCAPE BUFFER SPECIFICATIONS

PINE BUFFER:

This buffer area shall consist of Slash Pine "Pinus elliottii improved" planted 10' on center. Pine tree mix at time of planting shall include thirty percent at a minimum of 6' in height in 3 gallon containers and sixty percent at a minimum of 3' in height in one gallon containers.

HARDWOOD MIX BUFFER:

This buffer area shall consist of a mix of Live oak "Quercus virginiana", Red maple "Acer rubrum", Golden Rain Tree "Koelreuteria elegans", and Sweetgum "Liquidambar styraciflua". Trees, 6'-8' in height, shall be planted 20' on center.

SHRUB MIX BUFFER:

The shrub mix buffer area shall consist of Wax myrtle "Myrica cerifera", Flowering plum "Prunus angustifolia", and Saw palmetto "Serenoa repens". Wax myrtle and flowering plum shall be a minimum of 24" in height (Saw palmetto shall be a minimum of 12" in height) and spaced 5' on center.

GROUNDCOVER AREA:

Groundcover shall consist of native grasses (Bahia) to be seeded in areas indicated on plans.

SOURCE: MOORE/BOWERS, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 3.2.1-4A
LANDSCAPE BUFFER
LANDSCAPE PLAN
SHEET A

LANDSCAPE BUFFER SPECIFICATIONS

PINE BUFFER:

This buffer area shall consist of Slash Pine "Pinus elliottii improved" planted 10' on center. Pine tree mix at time of planting shall include thirty percent at a minimum of 6' in height in 3 gallon containers and sixty percent at a minimum of 3' in height in one gallon containers.

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GROUNDCOVER AREA:

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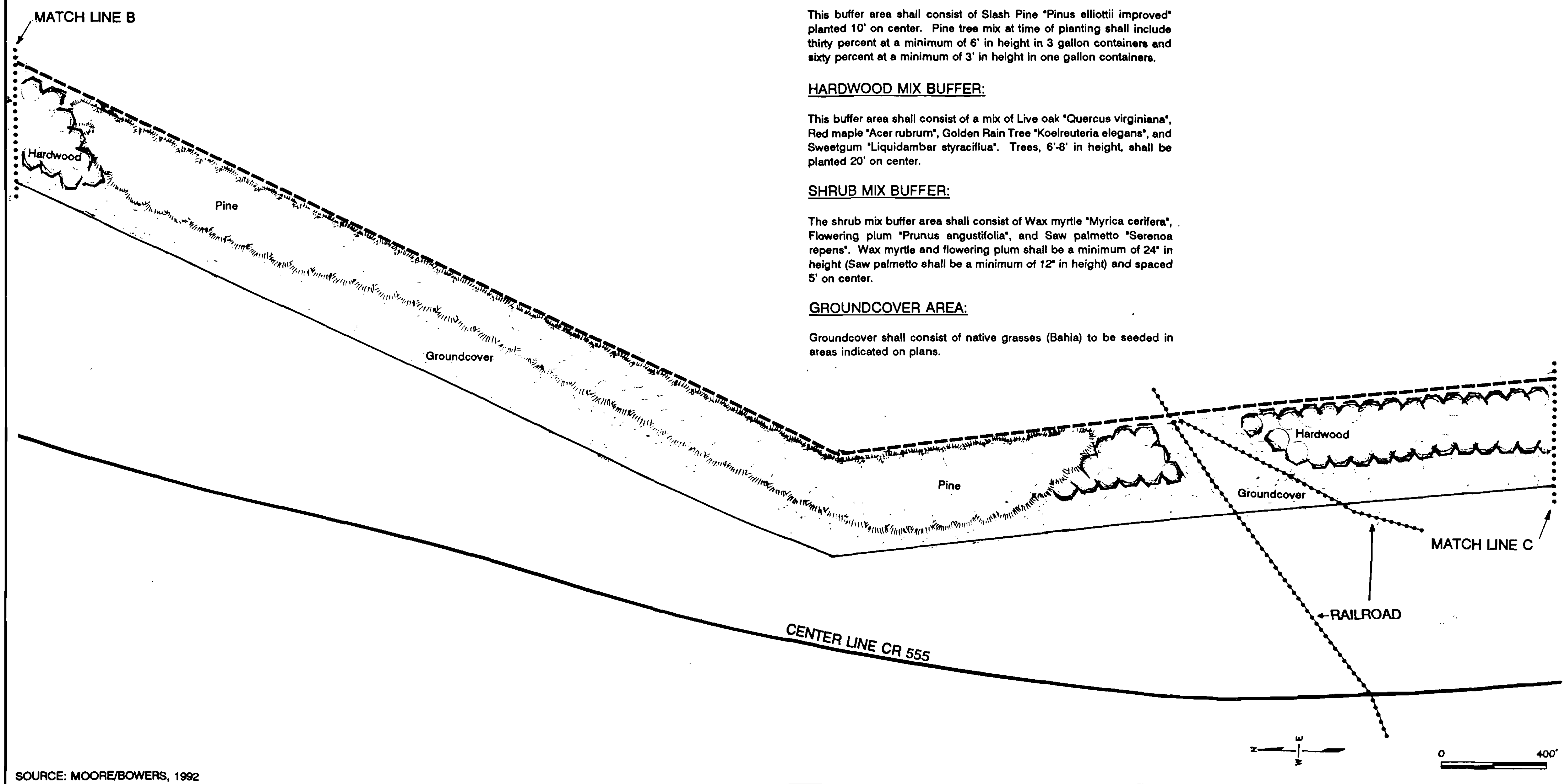
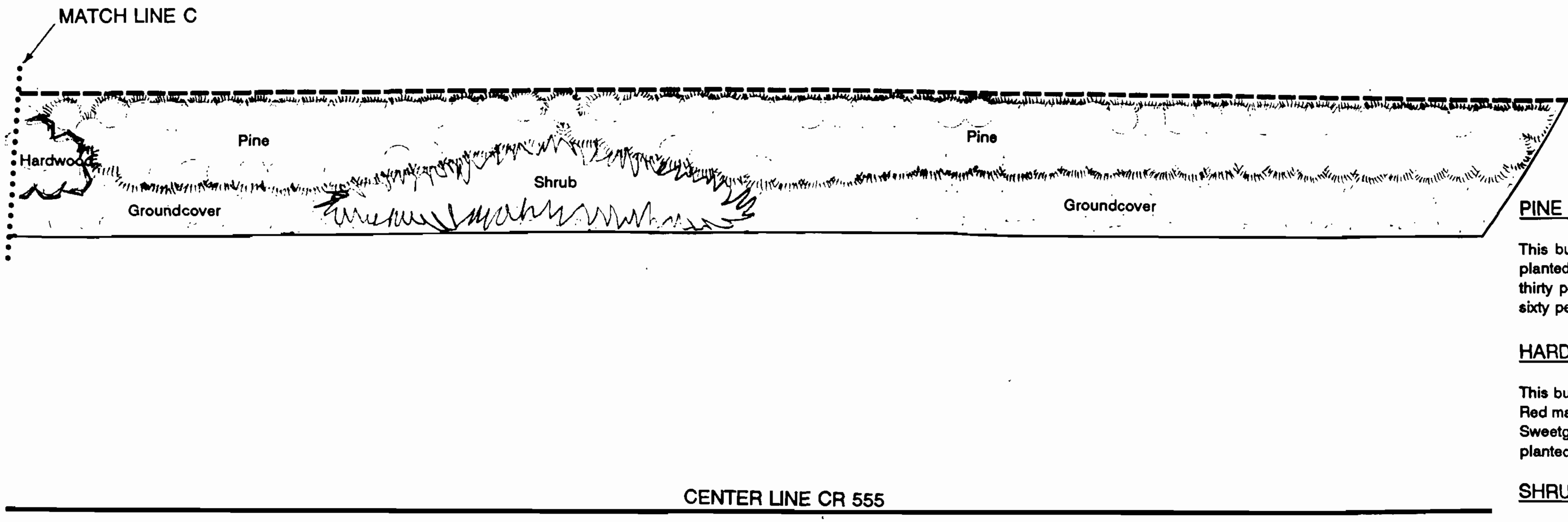


SOURCE: MOORE/BOWERS, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 3.2.1-4B
LANDSCAPE BUFFER
LANDSCAPE PLAN
SHEET B



LANDSCAPE BUFFER SPECIFICATIONS

PINE BUFFER:

This buffer area shall consist of Slash Pine "Pinus elliottii improved" planted 10' on center. Pine tree mix at time of planting shall include thirty percent at a minimum of 6' in height in 3 gallon containers and sixty percent at a minimum of 3' in height in one gallon containers.

HARDWOOD MIX BUFFER:

This buffer area shall consist of a mix of Live oak "Quercus virginiana", Red maple "Acer rubrum", Golden Rain Tree "Koelreuteria elegans", and Sweetgum "Liquidambar styraciflua". Trees, 6'-8' in height, shall be planted 20' on center.

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The shrub mix buffer area shall consist of Wax myrtle "Myrica cerifera", Flowering plum "Prunus angustifolia", and Saw palmetto "Serenoa repens". Wax myrtle and flowering plum shall be a minimum of 24" in height (Saw palmetto shall be a minimum of 12" in height) and spaced 5' on center.

GROUNDCOVER AREA:

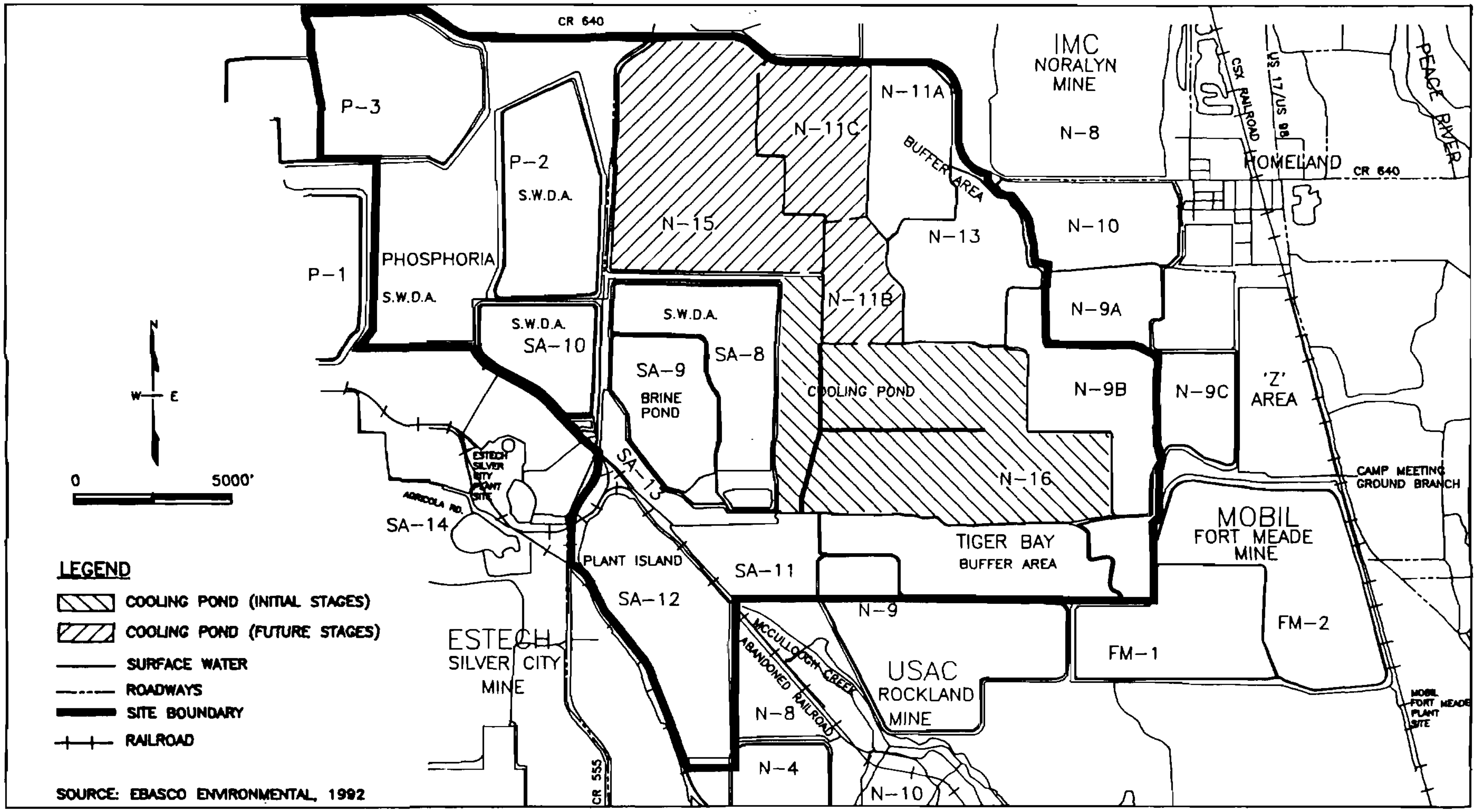
Groundcover shall consist of native grasses (Bahia) to be seeded in areas indicated on plans.

SOURCE: MOORE/BOWERS, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 3.2.1-4C
LANDSCAPE BUFFER
LANDSCAPE PLAN
SHEET C

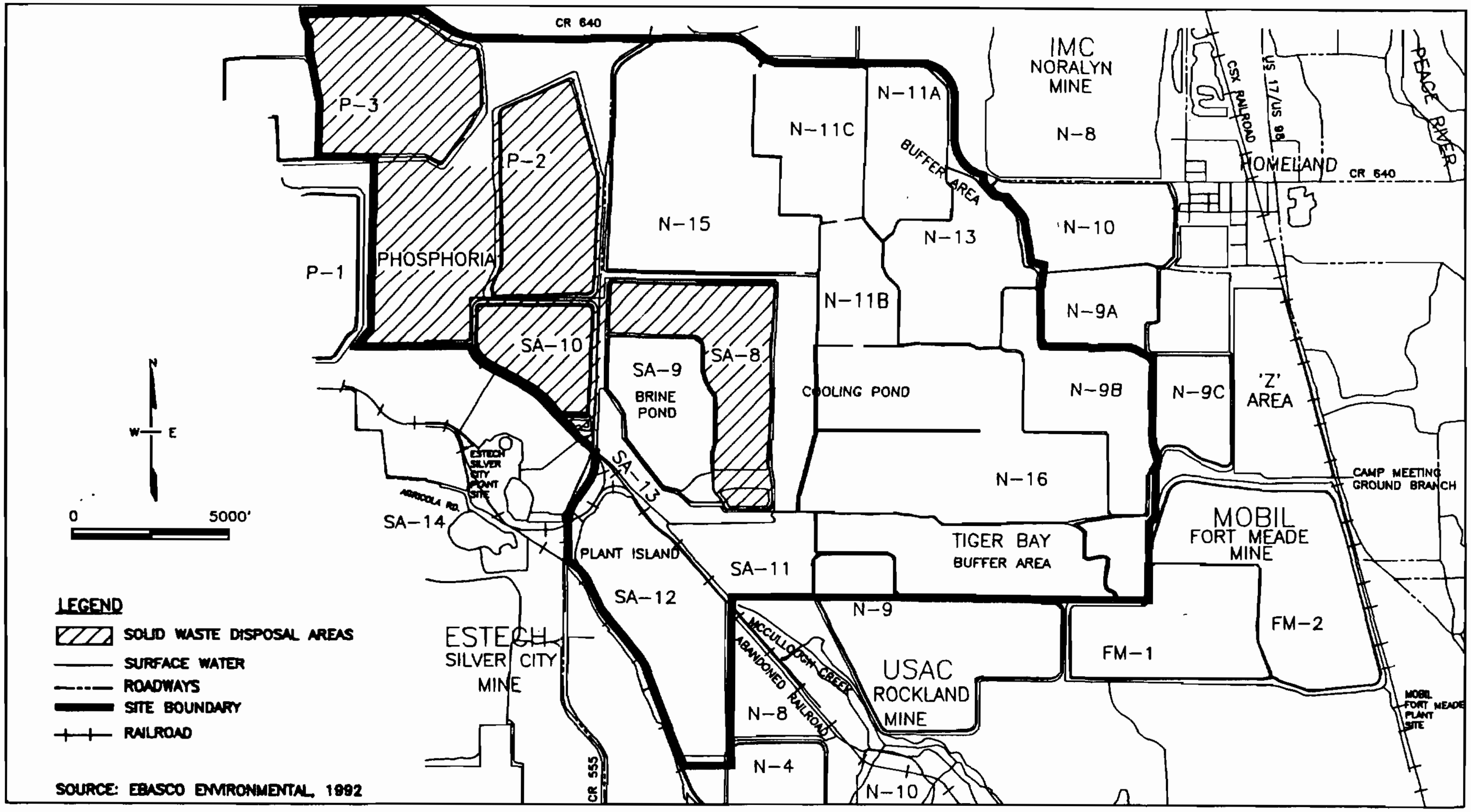


Florida Power CORPORATION

Polk County Site

FIGURE 3.2.2-1

COOLING POND AREA

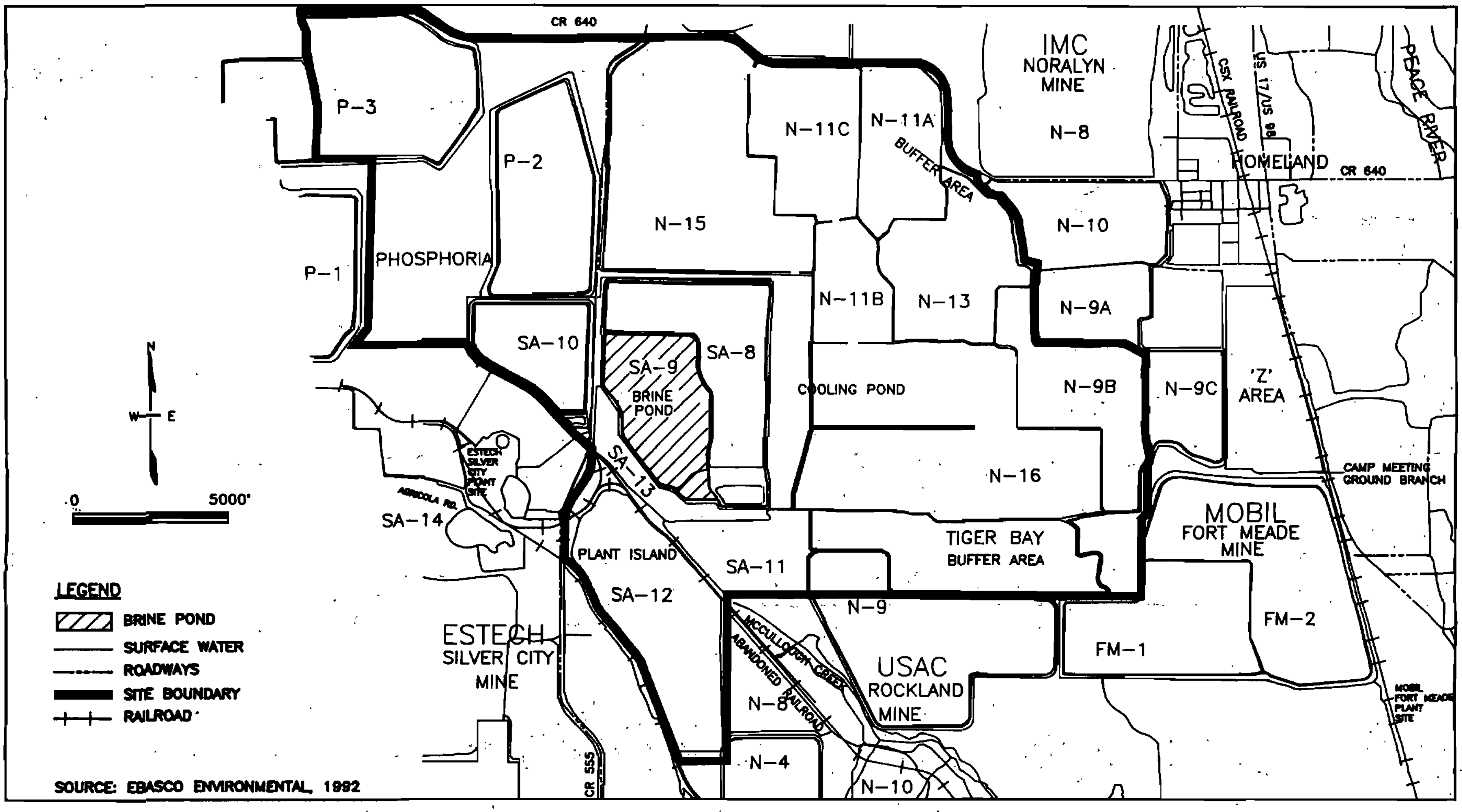


Florida Power CORPORATION

Polk County Site

FIGURE 3.2.2-2

SOLID WASTE DISPOSAL AREA

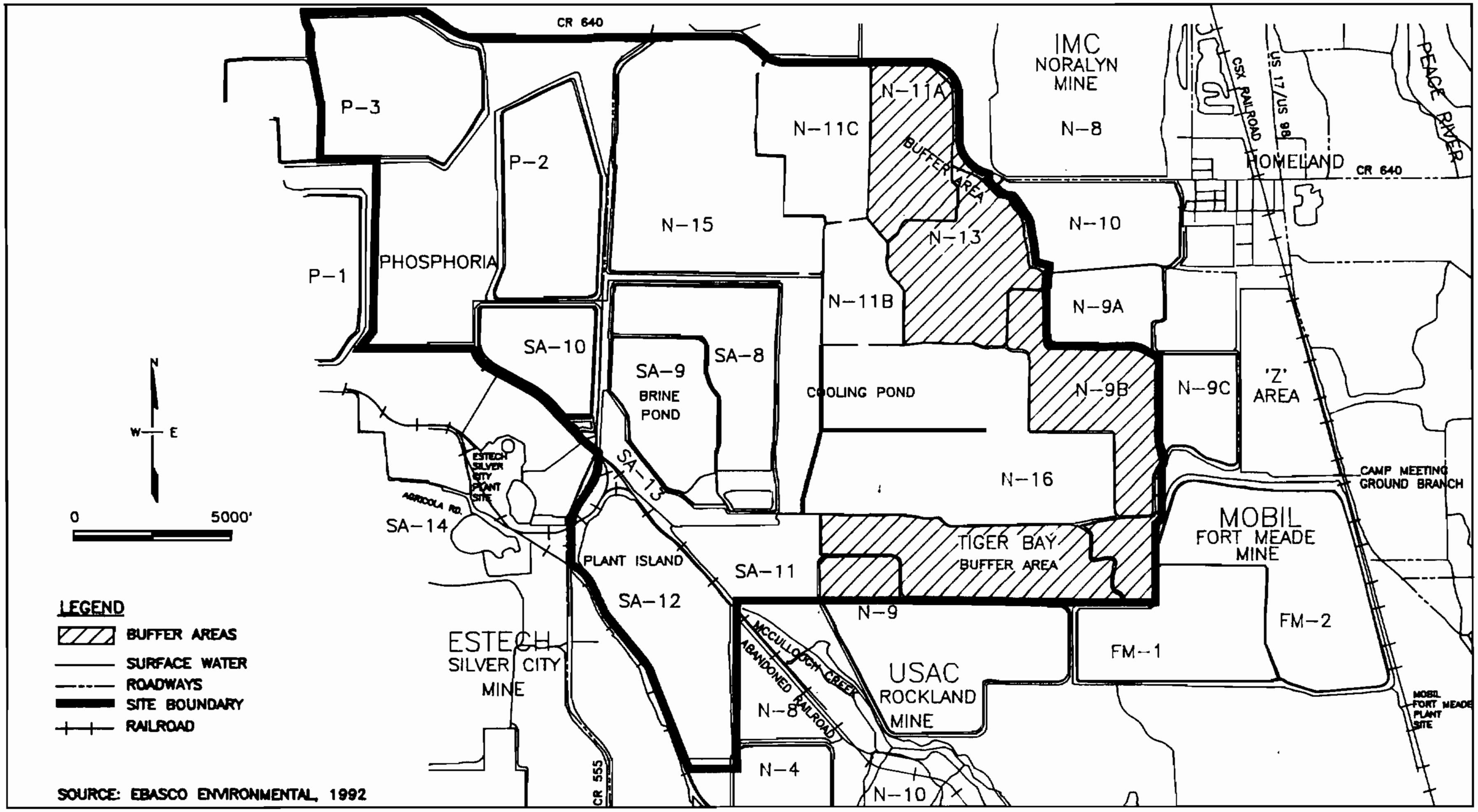


Florida Power CORPORATION

Polk County Site

FIGURE 3.2.2-3

BRINE POND AREA

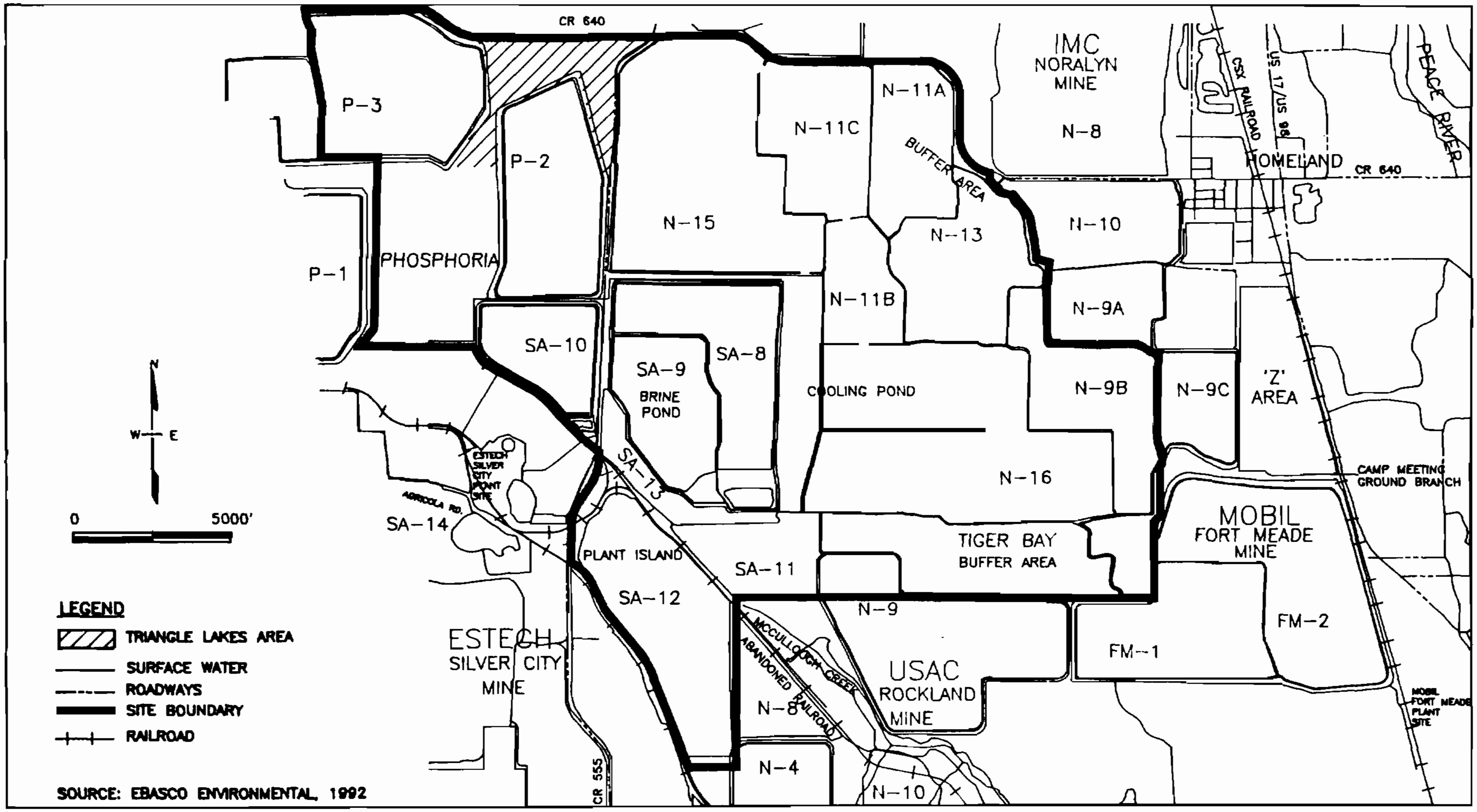


Florida Power CORPORATION

Polk County Site

FIGURE 3.2.2-4

SITE BUFFER AREA



Florida Power CORPORATION

Polk County Site

FIGURE 3.2.2-5

TRIANGLE LAKES AREA

3.3 FUEL AND FUEL HANDLING CHARACTERISTICS

The first phase of the Polk County Site will utilize natural gas as the primary fuel and low sulfur fuel oil as the backup fuel. Later phases of the ultimate site development may involve additional natural gas/fuel oil-fired CC units, conversion of these units to burn coal-derived gas, installation of coal gasification units, and/or the installation of PC steam electric generating units.

Following is a description of the fuel characteristics, supply considerations, and storage concepts associated with each of the fuels proposed for use at the Polk County Site.

3.3.1 Natural Gas

The CC units will use natural gas at an approximate rate of 1,433,000 standard cubic feet per hour per CT at full load and at an ambient temperature of 40°F. A typical fuel gas analysis is shown in Table 3.3.1-1.

Natural gas will be supplied via a pipeline to the Polk County Site under one of two options. In the preferred option, this gas pipeline will be constructed and licensed separately by a gas pipeline company under appropriate federal and state approval processes. A back-up option consists of a maximum 30-inch gas pipeline lateral connecting to an approved Florida Gas Transmission pipeline in eastern Hillsborough County. The latter option is presented in Section 6.2 as an associated linear facility. In either event, an on-site service lateral will be used to connect the pipeline to the CTs.

3.3.2 Fuel Oil

Low sulfur fuel oil will be used as a backup fuel for the CC units at the Polk County Site. A total of approximately 13,180 gallons of fuel oil will be consumed per hour per CT at full load and an ambient temperature of 40°F. A typical fuel oil analysis is shown in Table 3.3.2-1.

Fuel oil will be delivered to the site by truck and unloaded by fuel oil unloading pumps. All fuel oil handling and storage facilities, including unloading areas, the pump areas, piping system, storage tanks, and the tank containment area, will meet the requirements of the Florida Department of Environmental Regulation (FDER) in Chapter 17-762, F.A.C., and the applicable National Fire Prevention Association (NFPA) codes.

For each 940 MW block of CC units, a 4 million gallon (nominal) storage tank will be provided. Therefore, at ultimate site development, there will be either two or three of these 4-million gallon fuel oil storage tanks on-site. This arrangement will provide approximately 3 days of fuel oil storage, if the combined cycle units operate at full load and an ambient temperature of 40°F. Fuel oil tank locations are shown on the site arrangement drawings in Section 3.2. The fuel oil tanks, containment measures, and related piping systems will be designed, constructed, and operated in accordance with federal, state, and local standards.

3.3.3 Coal

Numerous coal sources will be considered in the determination of a source of coal to supply the Polk County Site. Consequently, a range of coal properties is presented in Table 3.3.3-1. Coal selection will be based on economic, engineering and environmental factors. The same coal will likely be used by both the PC units and CGCC facilities.

Each CG plant will use 8,860 tons of 12,100 Btu/lb coal per day at full load and 40°F to supply coal-derived gas for a 940 MW block of CC units. Each 600 MW PC unit will use 5,900 tons of 12,100 Btu/lb coal per day at full load. Consequently, the 3,000 MW CGCC ultimate site capacity (Case A) will use about 26,600 tons of coal per day. The ultimate site capacity consisting of two 600 MW PC units plus roughly 2,000 MW of CGCC capacity (Case B) will use about 29,500 tons of coal per day. Under the worst case scenario, the annual tonnage requirement for full-load operation (ultimate site capacity) of the Polk County Site will be approximately 10.1 million tons.

Coal will be delivered by rail to the Polk County Site. Depending on delivery schedules, three to four 100-car unit trains will be required per day to support plant operations. Once on site, coal will be transported along a rail loop surrounding the storage area to a car unloading system, and subsequently relayed to receiving hoppers. Proposed on-site rail loop locations are shown on Figures 3.2.1-1 and 3.2.1-2, which depict proposed site arrangements.

From the hoppers, the coal will be conveyed to the coal storage piles which will include a 3-day active area and a 90-day inactive area. The coal will be placed by a traveling stacker. Piles will have a maximum height of 60 feet for coal pile maintenance purposes and an average height of 35 feet. Reclaiming of the active pile will be by traveling stacker/reclaimers.

The coal will be conveyed from the coal pile to the coal preparation area of the coal gasification units and/or PC units. In the coal preparation area, the raw coal will be crushed, ground, and/or dried prior to being conveyed to the gasifier facilities or PC units. The design fuel analysis for the resulting coal-derived gas is presented in Table 3.3.3-2.

3.3.4 Groundwater Protection/Runoff Collection and Treatment

The coal pile area will have a runoff collection and treatment system, as well as groundwater protection measures. The coal pile runoff pond area will be sized to collect and contain all runoff from a 10-year, 24-hour precipitation event. Rainfall in excess of this amount will follow drainage patterns to the recycle basin. A liner will be provided under the coal pile area, in the bottom of the coal pile runoff pond, in the bottom of the recycle basin, and in the bottom of connecting conveyances to prevent coal pile runoff from infiltrating into the underlying soils and ground water. The liner system will be constructed completely above the seasonal high water table and will consist of a flexible membrane liner.

The liner will be designed to accommodate the stresses, pressures, weather exposure, and potential abrasion associated with its intended use. A typical liner material would be high density polyethylene (HDPE). A prepared subgrade material (e.g., sand) will be provided under the liner to protect it from tearing or perforation. The liner under the coal pile will also include geotextile and geonet under-liners.

The liner system for the coal pile area will be covered by a minimum of 24 inches of permeable drainage material that will also serve to protect the liner from abrasion and weather exposure. The leachate/runoff collection and removal system will be designed to prevent stormwater from exceeding a depth of 1 foot above the liner. The runoff pond system for the coal storage area and the plant recycle basin will have liner systems similar to that for the coal pile areas, except that the geotextile and geonet layers will not be used. The bottom of the runoff pond and recycle basin will be built above the seasonal water table.

Precipitation entering the coal pile runoff pond will be pumped at a controlled rate to the recycle basin and then used in the coal gasification units or the flue gas desulfurization systems for the PC units. Untreated coal pile runoff will not be mixed with uncontaminated runoff, discharged off-site, nor conveyed or stored in unlined portions of the surface water management system.

Groundwater protection measures for the solid waste disposal areas are described in Section 3.7.

3.3.5 Alternative Fuels

The Polk County Site will have the capability to use multiple fuels. The initial CC units will be designed to burn either natural gas or fuel oil as a back-up fuel. The CC units will also have the ability to be converted to burn coal-derived gas to provide security against escalation in the cost or the unavailability of gas. Alternatively, steam electric generating units may be added that are designed to use pulverized coal as fuel.

In the normal course of business, alternative fuels such as low grade coal or oil based fuels will be evaluated for use at the site based on overall economic and environmental acceptability. No such alternative fuels are being considered for the Polk County Site at this time.

TABLE 3.3.1-1
TYPICAL NATURAL GAS ANALYSIS

ANALYSIS	MOLE (%)
Carbon Dioxide	0
Ethane	9.665
Hexanes Plus	0.05
Iso-Butane	0.19
Methane	81.11
Nitrogen	5.15
Normal-Butane	0.24
Pentanes Plus	0.09
Propane	3.505
Total:	100.000
Specific Gravity (air at 1)	.71
Quality Information	**Parameters**
Heating Value (LHV)	21,515 Btu/lb
Total Sulfur (Maximum)	Neg.
Hydrogen Sulfide (Maximum)	Neg.

Source: EPA, 1973

TABLE 3.3.2-1 TYPICAL NO. 2 FUEL OIL ANALYSIS	
NO. 2 DISTILLATE OIL	PERCENT (BY WEIGHT)
Carbon	85.5
Hydrogen	12.7
Nitrogen	0.2
Oxygen	1.5
Sulfur	0.05
Ash	0.01

Lower Heating Value: 18,550 Btu/lb
Higher Heating Value: 19,200 Btu/lb

Source: FPC, 1992

TABLE 3.3.3-1 ULTIMATE COAL ANALYSIS			
PARAMETER	TYPICAL PERCENT	RANGE PERCENT	DESIGN CASE PERCENT
Moisture	8.50	8.00 to 12.00	9.50
Carbon	65.85	60.00 to 70.00	61.20
Hydrogen	4.70	4.00 to 5.10	4.30
Nitrogen	1.15	1.00 to 1.60	1.30
Sulfur	3.00	2.50 to 3.50	3.50
Chlorine	0.16	0.09 to 0.29	0.29
Oxygen (by difference)	5.14	4.00 to 10.00	4.91
Ash	11.50	6.50 to 13.00	13.00
Heating Value	11,700 Btu/lb	11,000 to 12,100	12,100
Source: Black & Veatch, 1992			

TABLE 3.3.3-2
DESIGN FUEL ANALYSIS
COAL-DERIVED GAS

PARAMETER	VOLUME PERCENT
Carbon Monoxide	44.88
Hydrogen	38.46
Carbon Dioxide	15.48
Methane	0.16
Inert Gases	1.02
Sulfur Bearing Compounds (H_2S+COS)	0.03

Lower Heating Value (LHV) = 4,650 Btu/lb

Source: Ebasco Environmental, 1992

3.4 AIR EMISSIONS AND CONTROLS

Ultimate development of the Polk County Site will include up to 3,200 MW of power generating capacity. The total installed capacity will be constructed in phases. The first phase of development will consist of four natural gas fired CC units capable of producing approximately 940 MW. Specific information about the initial units is presented in the Prevention of Significant Deterioration (PSD) application included as Appendix 10.1.5. The PSD application encompasses the impacts of the 470 MWs of CC unit generating capacity for which the PSC has determined the need and an additional 470 MWs of CC unit generating capacity which are scheduled for construction and therefore are an appropriate subject of review. The PSD permit for the scheduled 940 MWs of CC unit generating capacity is sought independent of the site certification.

The remainder of this section will address the air emissions and control for the ultimate development cases.

3.4.1 Air Emission Types and Sources

Following is a description of the sources and types of air emissions at the Polk County Site for Case A (3,000 MW CGCC) and Case B (3,200 MW CGCC and PC). For the purposes of this SCA, CG plant performance is assumed to be similar to that of the Cool Water Coal Gasification Program (EPRI, 1990) initiated by Southern California Edison Company and Texaco Incorporated. The gasification process at Cool Water was licensed by Texaco Development Corporation, the Claus process for sulfur recovery was licensed by Amoco Oil Company, and the tail gas treating process was licensed by Shell Development Company.

3.4.1.1 Sources

The primary sources of air emissions for Case A (3,000 MW CGCC) will be the CGCC units and the CG plant thermal oxidation units. The CGCC units will burn coal-derived gas as the primary fuel, with fuel oil for the emergency back-up fuel. For Case B, in addition to these sources, there would also be the PC boilers. The PC boilers will burn a medium sulfur eastern bituminous coal. The locations of the HRSG, PC boiler, and thermal oxidation unit stacks have been identified previously on Figure 3.2.1-3. The best available control technology (BACT) for these sources is presented in Section 3.4.3 of this SCA.

The secondary air emission sources of the Polk County site will be as follows:

- Auxiliary boiler
- Bulk material handling systems (fugitive emissions)
- Emergency diesel generator
- Emergency flares

The auxiliary boiler will operate only during cold start-up of a CGCC unit, PC boiler, or gasifier unit, and only if no other steam generating units are operating. Therefore, the auxiliary boiler will not operate concurrently with any of the primary sources under normal load operation. When needed, steam from the auxiliary boiler will be used to pre-heat a cold unit. However, if any other steam generating unit is operating, then steam will be used from the operating unit rather than from the auxiliary boiler. As the ultimate site development progresses and additional sources of steam are installed, use of the auxiliary boiler is expected to be reduced. The bulk material handling system will be used to unload, transport, and store the coal and limestone which will be used in the PC units and CG process. Fugitive dust emissions may result from the storage and handling of these bulk materials. Good engineering design and operating practices will be incorporated in the bulk material handling systems to minimize the fugitive emissions. A preliminary BACT analysis for emissions from these sources is presented in Section 3.4.

The emergency diesel generator will be used only for those rare periods when in-plant power is lost. The emergency diesel generator will burn only low sulfur (0.05 percent) fuel and will be equipped with advanced design combustors in order to minimize pollutant emissions. The emergency flares will operate only during gasifier start-up and shut-down, and during infrequent, unanticipated interruptions of the CG plant operating cycles. CG plant start-up and shut-down procedures will minimize flare operation in order to reduce potential pollutant emissions from these sources. The flares will most likely be non-assisted flares with 98 to 99 percent combustion efficiency. Given the infrequent and/or emergency mode of operation of the emergency diesel generator and emergency flares, emissions from these secondary sources are not considered in the BACT analysis.

3.4.1.2 Emissions

Estimated maximum emissions from each of the air emission point sources noted in Section 3.4.1.1 are tabulated in Tables 3.4.1-1 through 3.4.1-8. The estimated emissions represent full load operating conditions and are not inclusive of background ambient concentrations introduced into the particular processes. It is anticipated that higher emission rates will occur for short periods of time when a unit is started from a cold start or possibly during a malfunction. The significant emission rate thresholds given in Table 3.4.1-9. A comparison demonstrates that the project is subject to PSD BACT review for nitrogen oxides (NO_x), sulfur dioxide (SO_2), sulfuric acid mist (H_2SO_4), carbon monoxide (CO), particulate matter (PM and PM_{10}), volatile organic compounds (VOC), lead (Pb), mercury (Hg), beryllium (Be), and total fluorides. Arsenic (As), benzene (C_6H_6), and radionuclides will also be emitted from air emission sources at the Polk County Site. Although significant emission rates have not been promulgated for these pollutants, they are regulated and subject to PSD BACT review if emitted in any concentration.

3.4.1.3 Emissions Inventory

For source specific emissions, DER Form 17-1.202(1), "Application to Operate/Construct Air Pollution Source", has been completed for the first phase of 940 MW; a copy is included in Appendix 10.1.5. These emissions are based on a 100 percent capacity factor at full load.

3.4.2 Air Emission Controls

The proposed control technologies and associated emission rates for the regulated pollutants emitted from each of the primary sources on the site are tabulated in Tables 3.4.2-1 through 3.4.2-3. The proposed control technologies and associated emission rates for the regulated pollutants emitted from the auxiliary boiler and bulk material handling systems are tabulated in Tables 3.4.2-4 and 3.4.2-5, respectively. A preliminary BACT analysis considering technical, energy, and environmental factors for each of these sources is presented in Section 3.4.3. A detailed BACT analysis, including an economic evaluation, will be performed for each phase of development at the site when supplemental air emission permit applications for that particular phase are submitted.

3.4.3 Best Available Control Technology (BACT)

3.4.3.1 Introduction

This BACT discussion provides a preliminary "worst case" scenario of generation alternatives and the corresponding analysis of the air quality control alternatives for controlling pollutant emissions from the Polk County Site. The total generating capacity for the site will be up to 3,200 MW. The ultimate site development will include coal-derived gas fired CC units, CG plants, and possibly two PC boilers.

Under the federal Clean Air Act (CAA), BACT represents an emission limitation based on the maximum degree of pollutant reduction determined on a case-by-case basis considering technical, economic, energy, and environmental considerations. However, BACT cannot be less stringent than the emission limits established by the applicable New Source Performance Standards (NSPS) for stationary sources.

This BACT analysis follows the general requirements of the EPA's draft "top down" BACT guidance document (EPA, 1990), which requires that the BACT analysis start by assuming the use of the most stringent control alternative. Other, less efficient emission control technologies are evaluated if this most stringent alternative is determined to be technologically infeasible or unreasonable considering economic, energy, and environmental factors. This BACT presents a general discussion of control technology options available for the Polk County Site. Current control technologies will be evaluated based on technical, energy, and environmental considerations. Since the ultimate development will occur over a long period of time, it is expected that changes will occur in pollution control technologies available for later phases, especially with regard to coal gasification. These changes are expected to alter the relative economics of current technologies for CG and PC. Because of these anticipated changes, this BACT analysis is restricted to qualitative discussions and represents a "worst case" that can be utilized in support of the requested ultimate site capacity certification. No cost effectiveness discussion of the various control technologies is presented in this SCA BACT discussion.

As shown in Section 3.4.1, the following regulated pollutants at ultimate capacity exceed the PSD significant emission rate thresholds and are, therefore, subject to PSD review:

- Carbon Monoxide (CO)
- Nitrogen oxides (NO_x)
- Sulfur dioxide (SO_2)
- Particulate (PM and PM_{10})
- Volatile organic compounds (VOC)
- Lead (Pb)
- Beryllium (Be)
- Mercury (Hg)
- Fluorides (F)
- Sulfuric acid mist (H_2SO_4)
- Benzene (C_6H_6)
- Arsenic (As)
- Radionuclides

Consequently, this BACT analysis addresses the control of emissions of these pollutants. Also included are discussions of the effects of the BACT systems selected on the emissions of other regulated pollutants emitted below de minimis levels and unregulated hazardous air pollutants. Control technology evaluations for specific trace element emissions from the primary sources will be presented in detail in the PSD BACT applications for those sources.

3.4.3.2 Requirements and Assumptions

This "worst case" BACT analysis assumes that the ultimate development of the Polk County Site will include 2,000 MW of CGCC units, 1,200 MW of PC unit generating capacity and two coal gasification plants. Each coal gasification plant will consist of four gasification units and two thermal oxidation units to control process tail gases from the gasification units.

3.4.3.3 Nitrogen Oxides

NO_x will be emitted from the CGCC units, PC boilers, thermal oxidation units, and the auxiliary boiler. NO_x are formed in combustion sources by either the thermal oxidation of nitrogen in the combustion air (thermal NO_x), or the reduction and subsequent oxidation of the nitrogen contained in the fuel (fuel NO_x). Virtually all NO_x emissions exit the stack as nitric oxide (NO). The reaction requires that both nitrogen and oxygen dissociate into atomic form at high combustion temperatures and then recombine to form NO. A minor fraction of the NO, approximately 5 percent, further oxidizes in the flue gas to form NO_2. The majority of NO_x emissions from the sources being considered in this BACT analysis are the result of the thermal NO_x process.

The rate of formation of thermal NO_x is a function of the residence time, free oxygen, and peak flame temperature in the combustion zone. Therefore, most combustion control techniques for thermal NO_x are aimed at minimizing one or more of these variables. Post-combustion NO_x control methods remove NO_x from the exhaust gas stream.

CGCC UNITS

The project will use CGCC units equipped with the most technically advanced low NO_x combustors available. The low NO_x combustors will be capable of limiting NO_x emissions to the lowest levels attainable for combustion control.

Currently, 40 CFR 60 Subpart GG of the NSPS establishes a NO_x emission limitation for CT units of 75 parts per million on a dry volume basis (ppmvd) corrected to 15 percent oxygen, before a correction for fuel nitrogen content and turbine heat rate. A review of the latest control technology determinations (CARB, 1991 and 1992; EPA, 1985 and 1990) did not reveal any emission limit determinations for CGCC units. Recent CGCC unit permit decisions in the state of Florida have limited NO_x emissions to 42 ppmvd. These emission rates were achieved using combustion controls and water injection. The lowest NO_x emission limits listed in Clearinghouse documents for all types of CC units are achieved using standard turbine combustors with steam or water injection, low NO_x combustors and selective catalytic reduction (SCR) systems. The only stationary sources required to meet the most stringent emission limits are those new sources being located in non-attainment areas or sources which have other unique circumstances which require exceedingly stringent pollution control.

TECHNICAL ANALYSIS. Following is a summary of the technical analysis performed for the alternative CGCC NO_x emission control technologies including SCR.

Selective Catalytic Reduction. SCR is a post-combustion method for control of NO_x emissions. The SCR process combines vaporized ammonia with NO_x in the presence of a catalyst to form nitrogen and water. The vaporized ammonia is injected into the exhaust gases prior to passage through the catalyst bed. The performance and effectiveness of SCR systems is directly dependent on catalyst operating temperatures. The optimum flue gas temperature range for SCR operation is approximately 650°F to 750°F. At temperatures lower than 600°F, the ammonia reaction rate with NO_x is ineffective, resulting in large quantities of ammonia slipping through the system unreacted (ammonia slip). At temperatures greater than 800°F, permanent damage to the catalyst occurs.

Flue gas from a CT will typically be 950°F to 1,100°F. Accordingly, an SCR device would be installed at an intermediate point of the HRSG after several rows of tubes, where a temperature of approximately 700°F occurs. The narrow SCR temperature window dictates that the SCR catalyst be precisely located in the HRSG. A recent report indicated that effective SCR operation becomes very difficult for units that see a variation in gas flow and temperature through the HRSG due to load changes or ambient temperature swings (Boericke, 1990). Another recent report indicates that maintaining the catalyst in the narrow SCR temperature window over the entire CC unit operating load range can be difficult (Shorr, 1991). Therefore, SCR performance will be difficult to maintain if the CGCC unit load varies or if significant ambient temperature swings occur.

Catalyst NO_x reduction efficiency will be affected by the type of fuel being burned. When firing coal-derived gas or fuel oil, the SCR catalyst will oxidize approximately three percent of the sulfur in the flue gas to SO_3. Catalytic reduction efficiency will be reduced when available reaction sites are occupied by sulfur compounds. Additionally, the ammonia present in the flue gas will react with the SO_3 to form ammonia sulfate salts and the water in the flue gas will react with the SO_3 to form sulfuric acid mist. The formation of ammonia sulfate salts will reduce the amount of ammonia available for reaction with the NO_x. Ammonium bisulfate, one of the ammonia salts formed, will also reduce the combined cycle thermal efficiency by coating the heat transfer surfaces of the HRSG and potentially limit unit availability due to forced outages for HRSG cleanup. Both the ammonia sulfate salts and the sulfuric acid mist will increase the amount of particulate matter emitted in the flue gas. This particulate will predominantly consist of matter less than 10 microns in size (PM_{10}).

Catalyst life expectancy can also be affected by the type of fuel burned. Catalyst poisoning can be caused by such trace elements as arsenic, cadmium, chromium, copper, lead, and manganese, all of which can be found in coal-derived gas and fuel oil.

SCR systems are also relatively complex chemical reaction systems to operate and control. Continuous emissions monitoring (CEM) systems used to trim ammonia injection to minimize ammonia slip have proven unreliable and relatively insensitive to the low concentrations being measured. SCR system users cited by a recent report experienced problems of enough technical complexity to require frequent vendor representative assistance to repair and service the equipment (Radian, 1991).

Selective Non-Catalytic Reduction. Nitrogen oxide emissions from other combustion sources, such as PC boilers, also have been controlled through installation of selective non-catalytic reduction (SNCR) systems such as Thermal $DeNO_x$ and NO_xOUT. SNCR systems require gas temperatures of at least 1,500°F for NO_x reduction. Temperatures below 1,300°F result in ammonia slipping through the system unreacted without any corresponding reduction in NO_x emissions. The temperature at the outlet of a CT unit is too low (950°F to 1,100°F) for such systems. Accordingly, this alternative is judged not to be technically feasible for application on a CGCC unit.

Combustion Controls. Use of water or steam injection in the combustion zones of a CGCC unit can limit the amount of NO_x formed. Thermal NO_x formation is avoided due to lower combustion temperatures resulting from the water or steam injection. The degree of reduction in NO_x formation is somewhat proportional to the amount of water or steam injected into the turbine.

As cited in recent General Electric CT performance data, advanced design low NO_x combustors will be available for the Polk County Site. The CT's are targeted for combustor controlled NO_x emissions of 25 ppmvd while burning coal-derived gas (water injection may be required) and 42 ppmvd while burning fuel oil with water injection. It should be noted that the GE emission estimates while burning coal-derived gas were based on preliminary fuel analyses from existing CG projects. CC integration with coal gasification technology is undergoing rapid development worldwide. Nitrogen injection into the coal-gas stream has proven to be a feasible method of inhibiting thermal NO_x formation in CGCC units (Siemens, 1992). It is realistic to expect projected NO_x emissions from coal-gas fired CC units to decrease with future development of the CGCC unit technology.

ENERGY IMPACTS ANALYSIS. The use of an SCR system will require the use of additional energy. The SCR system requires energy to vaporize ammonia and energy to operate blowers or air compressors necessary to provide dilution air for injection of the additive. In addition, an SCR system will add approximately 4 inches water gauge gas pressure drop to the system as a result of the catalyst. This will reduce the output of the CGCC units by approximately 0.42 percent (8 MW for Case B). Since power demand will remain constant, this derate will be replaced by a combustion source that likely has higher NO_x emissions than the CGCC units at the Polk County Site.

ENVIRONMENTAL IMPACTS ANALYSIS. The use of ammonia in an SCR system introduces an element of environmental risk. Ammonia is listed as a hazardous substance under Title III Section 302 of the Superfund Amendments and Reauthorization Act of 1986 (SARA). Anhydrous ammonia is a hazardous material. Accordingly, this material must be handled and stored with extreme care. There is a potential for ammonia to be released during transportation, transfer, and storage.

Some ammonia slip (including a number of amine compounds) from the HRSG stack is unavoidable due to the imperfect distribution of the reactant and reaction inefficiencies associated with catalyst reactivity or operating temperatures. Although ammonia emissions are not regulated nationally, the Northeast States for Coordinated Air Use Management (NESCAUM) has recommended an ammonia emissions limit of 10 ppmvd, unless that limit is shown to be inappropriate. At least one air pollution control district in California has set an ammonia emissions limit of 10 ppmvd. Unreacted ammonia emissions from an SCR system could average 5 to 10 ppmvd. However, excursions due to ammonia injection control problems could result in ammonia slips in excess of 40 ppmvd. The U.S. Occupational Safety and Health administration has adopted an ammonia short term exposure limit of 35 ppmvd.

Monitoring ammonia slip emissions has also proven to be difficult. To date, there is not a reliable, accurate ammonia slip monitor available. Poor monitor system response and accuracy can make proper ammonia injection difficult. This can lead to excessive ammonia slip emissions.

The most common commercial SCR catalysts are vanadia/titania based, where vanadium pentoxide (V_2O_5) is used as the active catalyst compound. Vanadium is classified by the EPA as a hazardous material, and as such would require disposal in a RCRA hazardous waste (Subtitle C) landfill. Because of the requirements associated with such disposal, some manufacturers have stated they will accept return of deactivated vanadia based catalyst which they manufactured. However, it is uncertain if this alternative will be available in the future when the quantity of spent catalyst requiring disposal becomes significant and the associated costs and liability for disposal are realized. This issue is further complicated by transportation of hazardous wastes through third party states or internationally. Although existing federal laws prohibit states from outlawing such transportation, there continues to be a political and public concern regarding the transportation of hazardous wastes across state lines.

SUMMARY OF EVALUATED TECHNOLOGIES. The following control technologies are ranked according to their control effectiveness.

- Low NO_x combustors with SCR and water injection achieving NO_x emissions of 6 ppmvd (80 percent reduction) while firing coal-derived gas, and 15 ppmvd while burning fuel oil with water injection.
- Low NO_x combustors achieving NO_x emissions of 25 ppmvd and 42 ppmvd while firing coal-derived gas (water injection may be required) and fuel oil with water injection, respectively.

RATIONALE FOR PROPOSED CGCC UNIT NO_x BACT. Use of an advanced design low NO_x combustor unit (with water injection, if required) to control NO_x emissions to 25 ppmvd represents BACT for the Polk County site. The project is not located in an ozone non-attainment area. The NO_x emissions from the proposed low NO_x CGCC units are lower than recent permit decisions for similar CGCC projects in the state of Florida. The FPL Martin CGCC project recently proposed NO_x emissions of 42 ppmvd using combustor design and steam injection as control technologies. The lowest NO_x emission limit listed in the EPA's Clearinghouse documents for the state of Florida is 42 ppmvd. However, several sites within the state have recently been permitted for NO_x emissions of 25 ppmvd (natural gas fired) and one project has proposed 15 ppmvd while firing natural gas.

The use of an SCR system could result in adverse environmental effects due to unreacted ammonia being released to the atmosphere or accidental release of ammonia during transport or storage causing a potential human health hazard. Use of an SCR system would also require frequent transfers of ammonia increasing the risk of accident and exposure. An SCR system would trade potential small decreases in ambient NO_x concentrations for potential health and safety problems due to ammonia exposure.

Based on the foregoing site specific technical, energy, and environmental considerations, use of low NO_x advanced design CGCC units (with water injection, if required) to achieve NO_x emissions of 25 ppmvd and 42 ppmvd while burning coal-derived gas and fuel oil, respectively, represents BACT for the Polk County Site.

PC BOILERS

Case B (3,200 MW) involves 1,200 MW of PC units, and assumes the use of PC boilers equipped with the most technically advanced low NO_x burners available. By using low NO_x burners, the Polk County Site will be able to reduce NO_x formation to the lowest levels possible before utilizing potentially hazardous NO_x reduction technologies.

Subpart Da of the NSPS 40 CFR 60 establishes a NO_x emission limitation for bituminous coal fired boilers of 0.60 lb/mmBtu. A review of the latest control technology determinations (U.S. EPA, 1985 and 1990) indicates that the lowest NO_x emission limit established to date for a PC unit is 0.10 lb/mmBtu for the Chambers Cogeneration Project located in New Jersey. This project's NO_x determination was predicated on the fact that it is located in an ozone non-attainment area. The Chambers Cogeneration Project will use low NO_x burners and SCR to limit NO_x emissions. The Chambers permit has provisions to increase the NO_x limit to a maximum of 0.17 lb/mmBtu should SCR performance fail certain criteria.

TECHNICAL ANALYSIS. Following is a summary of the technical analysis performed for the alternative PC Boiler NO_x emission control technologies including SCR.

Selective Catalytic Reduction. SCR systems for PC boilers are very similar to those used on CC units. A downflow catalyst is typically housed in a reactor vessel located between the economizer outlet and the air heater inlet. An economizer bypass may be required to maintain the reactor temperature during low load operation. This will reduce boiler efficiency at lower loads.

SCR systems were first used on coal fired power plants in Japan during the 1970s. Soon after, in response to acid rain legislation, German utilities retrofitted many of their larger coal fired plants. Through 1990, there were approximately 169 coal-fired power plants in both Japan and Germany that were fitted with SCR systems. Most of the German SCR systems are operated to achieve 70 to 80 percent NO_x reduction to meet a NO_x emission limit of approximately 100 ppm while maintaining ammonia slip emissions to below 5 ppm. SCR fitted boilers in both countries typically burn coals that have low sulfur (0.7 to 1.2 percent) and ash (5 to 8 percent) contents.

To date, there are no coal fired boilers operating in the United States which use SCR systems. However, the Chambers Project 140 MW PC fired boiler was recently permitted in New Jersey with SCR and low NO_x burners. The facility will not begin operations for two to three years. Therefore, it is not possible to presently evaluate the effectiveness of SCR at facilities burning US coals. However, since the precedent has been established for use of SCR on a PC fired plant, this BACT analysis will evaluate SCR. The analysis will be based on the use of low NO_x burners followed by an SCR system.

The Japanese and European experiences with SCR cannot be blindly applied to US facilities. There remain two significant uncertainties about design, performance, operating parameters, and cost of SCR systems. First, US utility power plants tend to be load following units which operate under variable loads. Foreign utility coal fired plants tend to operate at constant load levels. Second the amounts and types of sulfur, ash, and trace elements in US coals are different from those in coals consumed in Japan and Europe.

Variable load conditions result in variable temperatures in the SCR reactor. At low temperatures, SCR reaction efficiencies drop off markedly resulting in either lower NO_x reduction or additional ammonia slip emissions.

Japanese and German SCR experience has been with coals with relatively low sulfur and ash contents. Combustion of higher sulfur coals will result in the emission of larger quantities of sulfur trioxide (SO_3). In addition, SCR catalysts oxidize SO_2 resulting in at least a 100 percent increase in SO_3 emissions.

Similar to CC units, sulfur trioxide in the presence of ammonia will form ammonia sulfate and ammonia bisulfate salts. Resultant particle diameters are on the order of 1 to 3 microns (potentially increasing plant PM_{10} emissions). Ammonia bisulfate can foul the catalyst's micropore structure, limiting reactivity. In addition, ammonia bisulfate is a sticky substance which can deposit on downstream equipment. Ammonia bisulfate will tend to liquefy at a temperature of about 410°F in the intermediate baskets of the air heater. Once liquefied, it solidifies in nodules in the space between the intermediate and cold end baskets. The result can be increased pressure drop, and eventual plugging of the air heater. Cold-end soot blowers are not generally effective in reaching and removing these deposits on-line. Therefore, an outage would be required to clean the air heater, resulting in decreased unit reliability. Off-line water washings are necessary to remove the soluble deposits. To alleviate this problem in Japan and Germany, recent SCR designs have limited ammonia slip emissions to between 3 and 5 ppm. In order to lower ammonia slip below 5 ppm, additional catalyst volume and tight control of the gas flow across the catalyst face is required. These factors further increase the system costs.

Increased SO_3 concentrations lead to an increase in the flue gas acid dew point. In order to prevent corrosion of downstream equipment, higher air heater exit temperatures are required. These higher temperatures result in decreased boiler thermal efficiency, thus decreasing unit capacity.

A number of alkali metals and trace elements (especially arsenic) poison the catalyst significantly affecting reactivity and life. Average arsenic concentrations for US coals are three times the worldwide average. Other elements such as sodium and potassium can also poison the catalyst by neutralizing the active catalyst sites. Poisoning of the catalyst does not occur immediately but is a continual process over the life of the catalyst. As the catalyst becomes deactivated, more ammonia must be injected to compensate and meet NO_x emission limits. This will result in an increased amount of ammonia slip. Increased ammonia slip will in turn result in additional ammonia salt formation and fouling of downstream equipment.

A significant quantity of ammonia slip from an SCR system will condense onto fly ash. The ammonia content of the fly ash can have an impact on waste disposal practices or on viability for fly ash reuse as concrete admixture. At elevated pH, ammonia in the fly ash will be released possibly leading to odorous emissions. Fixation of wet scrubber or spray dryer reaction products will result in spontaneous ammonia releases.

It is reasonable to expect that an SCR system could be designed to limit NO_x emissions to 0.10 lb/mmBtu. An SCR system designed for higher NO_x reductions would have a higher SO_2 to SO_3 conversion rate that could lead to increased unit forced outages, thus decreasing unit availability. Unit availability has direct economic consequences due to utility obligations to supply power to its customer base.

Selective Non-Catalytic Reduction. Selective non-catalytic NO_x reduction systems rely on the appropriate reagent injection temperature and good reagent/gas mixing rather than a catalyst to achieve NO_x reductions. SNCR systems can use either ammonia (Thermal $DeNO_x$) or urea (NO_xOUT) as reagents.

Ammonia for a Thermal $DeNO_x$ system is stored as a liquid. Subsequently, the ammonia is vaporized and injected into the flue gas using either compressed air or steam as a carrier. The ammonia then reacts with the NO_x to form nitrogen and water. Reagents for SNCR systems are injected in the backpass (convective portion) of the boiler.

Urea for a NO_xOUT system is stored as a 50 percent solution in water. This solution is atomized at the injection point to optimize mixing. In the flue gas, the urea molecule dissociates to form two molecules of ammonia. The ammonia reacts with NO_x to form nitrogen and water. Urea would be injected at a similar location to an ammonia based SNCR system.

In general, SNCR systems on PC fired boilers will be capable of between 40 and 50 percent NO_x reduction. The major site specific considerations that establish the NO_x emission reduction efficiency of SNCR systems include boiler temperature profile, the coal's sulfur and chlorine contents, and the geometry of the boiler as it affects additive distribution.

The optimum temperature range for injection of ammonia or urea is 1,550°F to 1,900°F. The NO_x reduction efficiency of the SNCR system decreases at temperatures outside this range. A PC boiler operates at a temperature of between 2,500°F and 3,000°F. Therefore, the optimum temperature window in a PC boiler occurs somewhere in the backpass of the boiler. This temperature location will change as a function of unit load.

As previously described for SCR systems on the CGCC units, ammonia is a hazardous material. Accordingly, this material for a Thermal $DeNO_x$ type SNCR must be handled and stored with great care. Working on and around ammonia equipment may cause operational personnel to be less productive than under normal working conditions.

A review of information contained in the BACT/LAER Clearinghouse (1985 and 1990 editions) provided a number of California circulating fluidized bed projects that were required to use SNCR systems. However, because of the non-attainment status and California's unique air quality problems, these limitations are more representative of a most stringent control technology than a BACT determination. Recent NO_x emission permit decisions for PC units in the state of Florida (Indiantown Cogeneration and OUC Stanton Unit 2) have established emission limits achievable using SNCR post-combustion controls.

Combustion Controls. The commercial installation of low NO_x burners over the last several years represents an advance in the control of NO_x emissions from PC fired boilers. Low NO_x burners reduce NO_x formation in the boiler by maintaining a reducing atmosphere at the coal nozzle and diverting additional combustion air (to complete combustion) to secondary air registers. This staged combustion primarily inhibits the formation of thermal NO_x. A NO_x emission rate of 0.30 lb/mmBtu is achievable, based on current PC combustion controls utilizing advanced design burners and associated peripherals.

ENERGY IMPACTS ANALYSIS. An SCR system consumes electrical energy for SCR auxiliary operation and for incremental induced draft fan demand to overcome SCR draft losses. This represents approximately 0.45 percent (5.4 MW) of total projected output from the PC units.

An SNCR system also consumes electrical energy. An ammonia based SNCR system would require approximately 0.48 percent (5.8 MW) of total projected output from the PC units .

Similar to SCR systems on CC units, catalysts for PC boiler SCR systems are considered to be hazardous materials. Spent catalyst will require proper disposal procedures. As the quantity of spent catalyst requiring disposal becomes significant, it is uncertain what costs might be imposed on the project to dispose of these wastes.

ENVIRONMENTAL IMPACTS ANALYSIS. Operation of an SCR system to meet a NO_x emission limitation of 0.10 lb/mmBtu will result in ammonia slip emissions of between 2 and 5 ppm. Catalyst manufacturers will guarantee ammonia slip emissions during the first two years of operation. When catalyst surfaces are relatively new, ammonia slip will be very low. However, as the catalyst ages and becomes either deactivated or blinded, ammonia slip emissions will increase.

Use of SCR results in at least a 100 percent increase in SO_3 emissions. Unreacted ammonia and SO_3 can react to form ammonia bisulfate and ammonia sulfate salts. These particulates will generally be smaller than 10 microns, and thereby, potentially increase PM_{10} emissions. Sulfur trioxide emissions that do not react with ammonia will most likely react with moisture in the flue gas and exit the unit as H_2SO_4 mist emissions.

Ammonia is a hazardous material. Therefore, ammonia used in either SCR or SNCR systems must be handled and stored with great care. Storage and use of ammonia on-site may increase the likelihood of hazardous or fatal accidents. Recent projects in California required to use ammonia have had difficulty obtaining local permits allowing ammonia use.

SUMMARY OF EVALUATED TECHNOLOGIES. The following control technologies are ranked according to their control effectiveness.

- Low NO_x burners with SCR designed to reduce NO_x emissions to 0.10 lb/mmBtu.
- Low NO_x burners with SNCR designed to reduce NO_x emissions to 0.17 lb/mmBtu.
- Low NO_x burners designed to reduce NO_x emissions to 0.30 lb/mmBtu.

RATIONALE FOR PROPOSED NO_x BACT. Based on recent permit decisions by the Florida DER and EPA Region IV, it is assumed that NO_x emissions from the PC boilers at the Polk County Site will be controlled using low NO_x burners and a post-combustion NO_x reduction ammonia injection control technology. SNCR systems require less equipment, are simpler to operate, and do not have catalyst disposal problems like SCR systems. However, SNCR systems will have higher ammonia slip. Neither system has a history of operation on PC boilers burning US coal. The choice of post-combustion control technology for the Polk County Site will depend on installation and maintenance trends established by the generation of air quality control equipment being designed and installed during the next decade. However, it is expected that BACT for NO_x emissions control on the PC boilers will be the use of low NO_x burners and a post-combustion NO_x control system to achieve an emission rate of 0.17 lb/mmBtu or less.

CG PLANT THERMAL OXIDATION UNITS

The thermal oxidation units will oxidize the tail gas from the CG facility immediately following the tail gas sulfur recovery process. The majority of NO_x emissions from the oxidation system will be formed by thermal oxidation of the nitrogen in the combustion air. Thermal oxidation units can operate with as high as 200 percent excess air. Thus, combustion controls will be the primary form of NO_x control.

NSPS standards have not been established for gasification-based power plants. However, 40 CFR 60 Subpart J (Standards of Performance for Petroleum Refineries) establishes emission standards for Claus sulfur recovery plants which process gases produced within petroleum refineries. Although the CG plant thermal oxidation units upon which this SCA is based oxidize tail gases from Claus sulfur recovery plants, a CG plant is not a petroleum refinery. For demonstration purposes only, the emission standards established in 40 CFR 60 Subpart J will be presented in the SCA when discussing NSPS for the CG plant thermal oxidation units.

As with most combustion units, low NO_x burners are being developed to limit NO_x emissions from thermal oxidation units. The low NO_x burners limit thermal NO_x formation by staging combustion and lowering flame temperatures to the lowest level possible. Typical flame temperatures are in excess of 3,000°F.

40 CFR 60 Subpart J does not establish NO_x emission limits for Claus sulfur recovery plants. Typical NO_x emissions cited at the Cool Water CG Program were 35 ppmvd (EPRI, 1990). Total NO_x emissions from the thermal oxidation unit will be small relative to emissions from the electrical power generating sources at the Polk County site. NO_x emissions from the thermal oxidation units are estimated to be 57 lb/hr per unit. Therefore, BACT for NO_x emissions from the CG plant thermal oxidation units is assumed to be combustion controls.

AUXILIARY BOILER

The NSPS governing air emissions from the auxiliary boiler are contained in 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units). No NSPS criteria have been established regarding NO_x emissions in Subpart Dc. The auxiliary boiler is expected to have NO_x emissions of 9.9 lb/hr and 19.8 lb/hr while firing natural gas and fuel oil, respectively. These emission rates will be achieved using low NO_x

burners and combustion controls. The low NO_x burners on the auxiliary boiler will operate in a manner similar to the low NO_x combustors on the CGCC units.

Flue gas recirculation is another method of controlling NO_x formation. Flue gas recirculation has historically been used to control steam temperature. Flue gas is taken from the economizer outlet and reintroduced into the wind box of the burner utilizing a fan and ductwork. The recirculation of flue gas to the furnace area lowers the flame temperature. The lowered flame temperature reduces thermal NO_x formation in the furnace.

NO_x emissions from the auxiliary boiler can also be limited using post-combustion control technologies. Both, SCR and SNCR systems can be used on auxiliary-type boilers. NO_x emission reduction efficiencies using SCR and SNCR systems on an auxiliary such a the one at the Polk County Site would be approximately 70 percent and 40 percent, respectively. As previously discussed in the CGCC unit and PC boiler NO_x control sections, SCR and SNCR systems reduce NO_x emissions by introducing an ammonia reagent into the flue gas to react with the NO_x particles. Both processes are temperature sensitive. The optimum flue gas temperature ranges for SCR and SNCR operation are approximately 650°F to 750°F and 1,550°F to 1,900°F, respectively. Both of these temperature ranges occur somewhere in the convective or backpass portion of the boiler. Since auxiliary-type boilers are typically packaged designs, the boiler manufacturer would be required to alter the standard design to accommodate post-combustion NO_x control systems. For SCR systems, the boiler backpass could be shortened to provide a flue gas exit temperature in the required range. This would reduce the boiler thermal efficiency due to reduced heat transfer surface area in the boiler backpass. An economizer could be added after the SCR catalyst to recover a portion of this lost thermal efficiency. For SNCR systems, operation below the optimum temperature window will result in excessive ammonia emissions (slip) with no corresponding reduction in NO_x emissions. Operation above the optimum temperature window will result in increased NO_x emissions. The exact location of this temperature range will occur at different locations within the boiler, dependent on boiler load and inlet air temperatures. Therefore, multiple sets of injection nozzles would be required in order to follow the optimum temperature location.

Post-combustion NO_x control systems will require additional power for ammonia vaporization and injection. In addition, additional fan power will be required on an SCR system in order to overcome draft loss due to the catalyst. Both systems also use ammonia. As discussed in the CGCC unit NO_x emissions control section, ammonia is listed as a hazardous substance under

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and must be handled with caution. Also, since the auxiliary boiler will only be operated for 100 hours per year, the total NO_x emissions reduced will be small. It is estimated that the total annual NO_x emissions reduced using SCR and SNCR systems on the auxiliary boiler while firing natural gas will be 0.35 tons and 0.20 tons, respectively. Clearly, the incremental cost effectiveness of post-combustion NO_x emission control systems on the auxiliary boiler (dollars per ton of NO_x removed) will be extremely high for this project. Therefore, it is expected that low NO_x burners and combustion controls will be BACT for NO_x emissions control on the auxiliary boiler.

3.4.3.4 Sulfur Dioxide

CGCC UNITS

The NSPS established by EPA for emissions from CC units sets a maximum SO_2 level in the flue gas of 150 ppmvd or a maximum fuel sulfur content of 0.8 percent by weight (40 CFR 60, Subpart GG). Current BACT/LAER Clearinghouse documents do not list any coal-derived gas or fuel oil fired CC units that are required to use flue gas desulfurization (FGD) systems to meet SO_2 emission requirements.

Coal-derived gas and fuel oil sulfur contents are controlled through fuel-production process controls. Sulfur removal and recovery in CG units usually involve three processes:

- Acid gas removal
- Sulfur recovery
- Tail gas treating

Acid gas removal systems remove hydrogen sulfide, carbonyl sulfide, and carbon dioxide from the fuel gas using an acid gas absorbent solution. The resulting clean fuel gas is burned in the CGCC units. The acid gases are stripped from the absorbent solution and supplied to the sulfur recovery unit. A Claus sulfur recovery unit converts hydrogen sulfide to high purity elemental sulfur using a catalytic reaction. The reaction is performed in two stages. The first stage thermally oxidizes approximately one third of the hydrogen sulfide in the feed gas to SO_2. The SO_2 is then catalytically reduced along with the remaining feed gas. The products of the catalytic reaction are a vapor containing water and elemental sulfur. The sulfur is condensed out of the gas and stored in a collection vessel. The remaining tail gases are sent to a tail gas cleaning system which converts the remaining sulfur products to hydrogen sulfide using another catalytic reaction. The hydrogen sulfide is again stripped from the gases and recycled back to the Claus system. The gases leaving the tail gas treatment system are fed to the CG thermal oxidation units. The sulfur removal efficiency in the acid gas removal system is approximately 98.5 percent. The overall sulfur removal efficiency for the tail gases going to the thermal oxidation units is approximately 99.9 percent.

Recent coal-gas fired CC unit performance tests on eastern bituminous coals resulted in CGCC unit SO_2 emission rates of 15 parts per million by volume wet (ppmvw) (EPRI). Recent permits for fuel oil fired CC units have included limits on maximum allowable fuel sulfur contents and fuel firing times. The CGCC units at the Polk County Site will burn fuel oil for back-up purposes only. Expected SO_2 emissions from the CGCC units while firing fuel oil (with a sulfur content of 0.05 percent by weight) will be 11 ppmvw. Therefore, BACT for SO_2 emissions from the CGCC units is assumed to be good sulfur removal efficiencies in the CG plant and low sulfur content fuels.

<u>*PC BOILERS*</u>

The NSPS established by EPA for emissions from large PC units (40 CFR 60 Subpart Da) sets a maximum SO_2 level in the flue gas of 0.60 lb/mmBtu as determined on a 30-day rolling average basis. FGD for PC fired boilers can be accomplished by either a wet lime or limestone scrubbing system, or a lime spray dryer system. A review of information contained in the EPA BACT/LAER Clearinghouse indicates that the most restrictive SO_2 removal permit requirement for a PC unit is 95 percent for a proposed installation in Nevada. FGD at that facility will be provided by a wet lime scrubber. Therefore, the most stringent SO_2 emissions control alternative for a PC fired source such as the PC boilers at the Polk County site would be a wet lime scrubber.

TECHNICAL ANALYSIS. A number of post-combustion FGD processes have demonstrated SO_2 removal capabilities for use downstream of a PC fired boiler. However, wet scrubber and spray dryer systems are the most widely used FGD systems.

Wet lime or limestone scrubbing and lime spray drying FGD systems have the advantage over other scrubbing systems because they use low cost widely available calcium based additives.

FGD alternatives using sodium based additives are not practical since the cost of sodium delivered to the Polk County site (approximately $250 to $300 per ton) would be prohibitive compared to the cost of lime or limestone ($70 and $15 per ton, respectively). In addition, the use of sodium based additives increases the complexity and cost of waste disposal due to the high solubility of sodium wastes (increased potential for groundwater contamination due to leachate problems). Considering economic as well as environmental issues, sodium based FGD alternatives are not feasible for use at the Polk County site.

Currently, 118 utility units in the United States with a combined capacity of 53,800 MWs are in operation with wet scrubbers using either lime or limestone. In addition, 17 utility units with a combined capacity of 10,500 MWs are under construction or under contract to use these wet scrubbing technologies. Lime and limestone wet scrubbers represent about 80 percent (MW basis) of the FGD system capacity in operation, under construction, or under contract in the United States.

During the last decade, the lime spray dryer process has been used on a number of new PC boiler installations burning low to moderate sulfur fuels. This FGD process absorbs SO_2 through the use of a spray absorber dryer module followed by a fabric filter. A benefit of the spray dryer process compared to wet scrubber FGD systems is the dry waste product, resulting in less complicated and less expensive waste disposal.

Both wet scrubbers and spray dryers are capable of SO_2 removal efficiencies greater than 95 percent. Because of the highly alkaline nature of lime, wet lime scrubbers are capable of up to 98 percent SO_2 removal. Considering an adequate control margin of 2 to 3 percent (to ensure reliability during process control upsets), a wet lime scrubber should be capable of meeting an outlet emission requirement of 0.29 lb/mmBtu (95 percent removal using worst case, 3.5 percent sulfur coal). Wet limestone scrubbers are capable of 96 to 97 percent SO_2 removal. Considering a 2 percent control margin, wet limestone scrubbers should be capable of meeting SO_2 emission requirements of 0.29 to 0.35 lb/mmBtu (95 to 94 percent removal using worst case coal).

The lime spray drying technology is capable of short term 96 percent removal using worst case coal (3.5 percent sulfur). Considering a control margin of 2 percent, lime spray dryers should be capable of maintaining compliance with an outlet emission requirement of 0.35 lb/mmBtu (94 percent removal).

Wet Lime. With a wet lime FGD system, flue gas exiting the air heater passes through a fabric filter and is directed by ID fans to the absorber modules (spray towers). The ID fans are located between the fabric filter and the absorber modules to minimize particulate erosion and water vapor condensation on fan internals.

Wet lime absorber modules serve as the contact zone where the alkaline additive absorbs the SO_2 from the flue gas. Recycle pumps spray the lime slurry counter-current to the direction of the flue gas flow. The resultant reaction products flow downward through the spray tower into the reaction tank while the flue gas flows out of the absorber module and into the stack.

The preparation of lime slurry is accomplished by the additive storage and preparation system. With this system, pebble lime is stored in silos to protect it from moisture. Lime from storage silos is hydrated in a slaker/classifier system for feed to the slurry storage tanks (24-hour capacity). Additive from the slurry storage tank is transported to absorber module reaction tanks by additive feed pumps.

To convert the liquid waste to a solid waste product for disposal, blowdown from the absorber module reaction tanks is pumped to a thickener for primary dewatering. The decanted water from the thickener is reused in the reaction tanks and to slurry additional lime, while the underflow from the thickener is pumped to vacuum filters for additional dewatering. Thickened sludge from the vacuum filters is mixed with fly ash to form a product suitable for transport and disposal. Wastes are transported by trucks to an on-site disposal area. If the waste products are sufficiently free of impurities (ie. chlorides and heavy metals) a salable wallboard grade gypsum may be produced.

Wet Limestone. With the exception of additive preparation, a wet limestone system is very similar to a wet lime system. Additive preparation differences are due to the low solubility of limestone allowing on-ground bulk storage and requiring ball mills for preparing additive slurry.

Spray Dryer Absorber. The lime spray dryer FGD system is a two-stage process that removes both sulfur dioxide and particulate from the flue gas through the use of a spray dryer/absorber followed by a fabric filter. The absorber modules serve as the initial contact zone where alkaline additive and SO_2 in the flue gas react to form dry reaction products. The majority of reaction products formed in the spray dryer flow out of the absorber modules and onto the fabric filter for removal with the fly ash. The ID fans are located between the fabric filters and the stack to minimize particulate erosion on fan internals.

The absorber modules are sized on the basis of gas flow rate and residence time. Residence times of approximately 10 seconds have proved sufficient to ensure adequate reaction product drying. The atomizers, which disperse the additive slurry, are sized on the basis of additive and tempering water feed necessary to achieve the required SO_2 removal level and outlet gas temperature. Flue gas temperatures at the fabric filter inlet must be sufficiently high to avoid corrosion in the fabric filter and in other downstream equipment. Low flue gas temperatures can also cause condensation of cementatious fly ash materials on the filter bags, severely affecting bag life and fabric filter operation. Adjustment of the spray dryer module approach temperature (number of degrees that the spray dryer operates above the saturation temperature) determines the spray dryer module outlet gas temperature. The amount of water added to the slurry is adjusted to control the spray dryer module outlet gas temperature. For the same SO_2 removal efficiency, a higher approach temperature results in greater lime consumption. Lime consumption increases as a result of a reduction in the SO_2 removal reaction efficiency at the higher approach temperature. An approach temperature of 38°F results in a fabric filter inlet gas temperature of approximately 165°F. An inlet gas temperature of 165°F is sufficiently high to protect the fabric filter and other downstream equipment.

The preparation of lime for use as additive in a spray dryer FGD system is accomplished by the additive storage and preparation system. With this system, pebble lime is stored in silos to protect it from moisture. Lime from storage silos is hydrated in a slaker/classifier system for feed to the slurry storage tanks (24-hour capacity). Additive from the slurry storage tank is pumped to the additive feed tank.

Since a significant portion of the lime feed does not initially react with the SO_2 in the flue gas stream, a portion of the solids collected in the fabric filter are returned and mixed with fresh lime slurry so that unreacted lime or alkalinity contained in the fly ash can be utilized. The lime and recycled solids are blended in a recycle slurry mix tank and pumped to the additive feed tanks.

The solids collected in the fabric filter, which are not recycled, are collected in the solids storage silo and subsequently transported by trucks to an on-site disposal area.

ENERGY IMPACTS ANALYSIS. The lime spray dryer FGD system has the lowest energy demand of the FGD alternatives. At peak demand, this difference represents 1 to 2 percent of the total plant output. In the wet lime/limestone processes, the majority of energy consumption is attributed to reagent preparation and the higher pumping power requirements dictated by the liquid to gas (L/G) ratio required for these processes.

ENVIRONMENTAL IMPACTS ANALYSIS. One drawback common to each of the FGD processes evaluated is the large site requirement for by-product disposal. The wet lime and wet limestone processes produce a sludge that must be dewatered before disposal. However, if the waste sludge is sufficiently free of contaminants, a salable wallboard grade gypsum may be produced. Waste disposal from lime spray dryer systems are somewhat simpler than lime/limestone wet processes since spray dryer wastes are in a dry state. Unlike wet lime/limestone processes, dewatering and stabilization of scrubber sludge is not required.

SUMMARY OF EVALUATED TECHNOLOGIES. The following control technologies are ranked according to their control effectiveness

- Wet lime scrubber designed to achieve an SO_2 emission rate of 0.29 lb/mmBtu (95 percent SO_2 reduction) on a 30-day rolling average basis.
- Wet limestone scrubber system designed to achieve an SO_2 emission rate range between 0.29 and 0.35 lb/mmBtu (95 to 94 percent SO_2 reduction) on a 30-day rolling average basis.
- Lime spray dryer system designed to achieve an SO_2 emission rate of 0.35 lb/mmBtu (94 percent SO_2 reduction) on a 30-day rolling average basis.

RATIONALE FOR PROPOSED SO_2 BACT. The selection of BACT for SO_2 emissions will be based primarily upon the relative economics, environmental, and energy considerations of each system when the units are permitted. Recent permit decisions in the state of Florida have required 95 percent SO_2 removal for facilities burning coals similar to those proposed at the Polk County Site. In order to achieve comparable removal efficiencies and emission limits, wet scrubbers must be considered. Accordingly, it is assumed at this point that BACT for SO_2 emissions from the PC boilers is a wet scrubber system limiting SO_2 emissions to 0.29 lb/mmBtu.

CG PLANT THERMAL OXIDATION UNITS

The NSPS (40 CFR 60, Subpart J) to this project for Claus sulfur recovery plants at petroleum refineries, although not applicable, sets a maximum SO_2 level in the flue gas of the thermal oxidation unit at 250 ppmvd, corrected to zero percent excess air. The SO_2 emissions will be directly related to the sulfur removal efficiency of the Claus system and the tail gas treatment process. Recent experience with CG demonstration plants indicates that they can maintain at least a 96 percent overall sulfur removal efficiency during normal operation. The tail gas treatment process has typical sulfur removal efficiencies over 98 percent. This represents an overall sulfur removal efficiency of over 99.9 percent for the gases entering the thermal oxidation units. Estimated SO_2 emissions from the Polk County Site thermal oxidation units are 26 lb/hr per unit. Good sulfur collection and removal efficiencies in the Claus and tail gas treatment processes are assumed to be BACT for SO_2 emissions on the CG plant thermal oxidation units.

AUXILIARY BOILER

Subpart Dc of the NSPS limits SO_2 emissions to 0.5 lb/mmBtu for oil fired sources. BACT/LAER Clearinghouse documents (CARB, 1991 and 1992; U.S. EPA, 1985 and 1990) list the most stringent SO_2 determination for this source category as 0.05 lb/mmBtu for a proposed project in California. This facility burns residual fuel oil with a sulfur content of approximately 1.0 percent. Caustic scrubbers will be used at this facility to remove 95 percent of the SO_2. The Clearinghouse documents do not list any SO_2 emission limitations for Subpart Dc classification boilers that burn natural gas.

Emissions of SO_2 can be controlled by either limiting the sulfur content of the fuel, or by a post combustion flue gas desulfurization (FGD) system. Since the primary fuel for this facility will be natural gas and the unit will only operate for 100 hours per year, the addition of an FGD system to control emissions during fuel oil firing would be an excessive method of SO_2 control. Additionally, the fuel oil used at the Polk County Site will be low sulfur fuel oil (0.05 percent). SO_2 emissions from the auxiliary boiler while firing natural gas are expected to be negligible. SO_2 emissions while firing low sulfur fuel oil are expected to be 5.1 lb/hr. Therefore, use of natural gas, limited unit operation, and use of low sulfur fuel oil (0.05 percent) for back-up purposes only is BACT for SO_2 emissions control on the auxiliary boiler.

3.4.3.5 Sulfuric Acid Mist

CGCC UNITS

A review of BACT/LAER Clearinghouse documents did not reveal any post-combustion sulfuric acid mist (H_2SO_4) control technologies being used on CGCC units. Post combustion control technologies such as a FGD system could be used to reduce H_2SO_4 emissions. However, due to inherently low H_2SO_4 emissions, addition of an FGD system would be an extremely costly method of emission control. H_2SO_4 formation is directly proportional to the amount of sulfur in the fuel. As previously discussed in the CGCC SO_2 BACT section, the sulfur content of the fuel is controlled by the fuel-production process. The acid gas removal process is expected to remove 98.5 percent of the sulfur from the coal derived gas. The backup fuel oil will have a low sulfur content (0.05 percent). The H_2SO_4 emissions are estimated to be 21.7 lb/hr and 9.7 lb/hr per unit while burning coal-derived gas and fuel oil, respectively. Therefore, burning low sulfur fuels is BACT for sulfuric acid mist emissions on the CGCC units.

PC BOILERS

Sulfur trioxide, a precursor to H_2SO_4, is an acid and as such should react with either the $Ca(OH)_2$ or $CaCO_3$ available in the scrubber modules. A removal efficiency of approximately 50 percent can be expected from a wet scrubber. Acid mist emissions from the PC boilers are expected to average 260 lb/hr per unit. Therefore, SO_2 scrubbers are assumed to be BACT for sulfuric acid mist emissions on the PC boilers.

CG PLANT THERMAL OXIDATION UNITS

To date, no sulfuric acid mist control technologies have been used on tail gas thermal oxidation units. The Claus sulfur removal system and the tail gas treating process remove almost all of the sulfur from the gases going to the thermal oxidation units. Therefore, efficient sulfur collection in the upstream sulfur recovery processes is assumed to be BACT for the thermal oxidation units. Sulfuric acid mist emissions from the thermal oxidation units are estimated to be less then 0.4 lb/hr per stack.

AUXILIARY BOILER

Sulfuric acid mist emissions will be present only when fuels containing sulfur are being burned in the auxiliary boiler. BACT/LAER Clearinghouse documents do not list any emission limitations for sulfuric acid mist from Subpart Dc classification boilers. Sulfuric acid mist emissions from the auxiliary boiler are estimated to be 0.00099 lb/hr and 0.076 lb/hr while firing natural gas and low sulfur fuel oil (0.05 percent), respectively. Emission controls for sulfuric acid mist are the same as those used for SO_2. Therefore, use of natural gas, limited unit operation, and use of low sulfur fuel oil (0.05 percent) for back-up purposes only is BACT for sulfuric acid mist emissions from the auxiliary boiler.

3.4.3.6 Carbon Monoxide and Volatile Organic Compounds

CO and VOC's are formed by incomplete combustion of fossil fuels. Combustion controls such as high combustion temperatures, excess air, and good fuel/air mixing will minimize CO and VOC formation. NO_x formation, however, is increased by combustion control efforts to minimize CO and VOC emissions. Because of this inverse relationship, NO_x emission control technologies must always be considered when determining CO and VOC emission controls. Post-combustion control technologies such as an oxidation catalyst could reduce both CO and VOC emissions. The oxidation catalyst reduction efficiency for VOC's, however, is highly dependent upon the type of fuel burned and the temperature of the application. Ten percent or less of the higher molecular weight VOC's produced from fuel oil and coal combustion will oxidize in the presence of an oxidation catalyst.

CGCC UNITS

CGCC units have inherently low CO and VOC emissions. A review of control technology determinations (CARB 1991 and 1992, EPA 1985 and 1990) indicates that the lowest CO emission limit established to date for a CC unit is 2.0 ppmvd for a CC unit located in a non-attainment area in California. That permit value was based on the use of an oxidation catalyst system. The lowest VOC emission limit for a CC unit is 4.1 ppmvw for a unit in Rhode Island which is an ozone non-attainment area. An alternative to the oxidation catalyst system is to use combustion controls to limit CO and VOC emissions. Recent permit decisions for CGCC units in the state of Florida have required efficient combustion to control CO and VOC emissions.

TECHNICAL ANALYSIS. The CO and VOC oxidation catalyst process is based on a straight catalytic reaction requiring no additives. The reactions and catalysts used (platinum based) are similar to the catalytic oxidation technology used for automotive emission control. Products from the reaction include carbon dioxide and water. Catalytic oxidation systems are capable of CO reductions of between 50 and 80 percent. However, this reduction potential will be somewhat influenced by initial concentrations of the pollutants. VOC reduction efficiencies, as discussed previously, vary between 5 and 50 percent depending on the type of fuel being burned.

ENERGY IMPACTS ANALYSIS. Similar to the SCR system, use of a CO catalyst would result in a derate of approximately 0.42 (8 MWs) percent of CGCC output. Since power demand will remain constant, this derate will be replaced by a combustion source that likely has higher CO emissions than the CGCC units at the Polk County Site.

ENVIRONMENTAL IMPACTS ANALYSIS. A catalyst which oxidizes CO to CO_2 will also oxidize SO_2 to SO_3. While firing coal-derived gas or fuel oil, 50 to 60 percent of the SO_2 in the flue gas will be converted to SO_3. When found in high enough concentrations and when the SO_3 comes in contact with moisture, it will form sulfuric acid mist which can cause corrosion damage to downstream plant equipment and damage to surrounding vegetation. The sulfuric acid mist created will also increase particulate emissions from the facility.

Although CO has been well documented as a hazardous pollutant, significant international pressure is now being exerted to reduce CO_2 emission levels in response to the suspected contributions of the gas to global warming. A CO oxidation catalyst could increase the CO_2 emissions from the CGCC units by over 125 lb/hr per unit.

SUMMARY OF EVALUATED TECHNOLOGIES. The following control technologies are ranked according to their control effectiveness:

- Oxidation catalyst to reduce CO emissions by approximately 80 percent - VOC emissions will be reduced by less than 10 percent for coal-derived gas and fuel oil emissions.
- Combustion control to assure proper fuel mixing and complete fuel combustion

RATIONALE FOR PROPOSED CO AND VOC BACT. No NSPS limits have been set for CO or VOC emissions from CC units. In addition, the Polk County site is located in a CO attainment area. To date, no precedent has been set in the state of Florida requiring CO catalysts on CGCC units. A CO catalyst will cause downstream equipment corrosion and increase particulate emissions due to sulfuric acid mist formation during coal-derived gas operation. A CO catalyst will also increase CO_2 emissions when burning any fuel. Estimated CO and VOC emissions from the CGCC units while firing coal-derived gas and fuel oil using combustion controls are only 100 and 12 lb/hr per unit, respectively, for coal-derived gas and only 96 and 11 lb/hr per unit, respectively, for fuel oil. Combustion controls are therefore assumed as BACT for the CGCC units.

PC BOILERS

No NSPS limits have been set for CO or VOC emissions from PC boilers.

Lower CO and VOC emissions are possible if boiler temperatures are increased. However, NO_x formation would increase. Therefore, consistent with the approach of evaluating BACT for CGCC units, increasing combustion temperatures to limit CO and VOC emissions is not an option.

As explained in the previous section, a catalytic CO and VOC emissions reduction method is available for use on the exhaust from CC units; however, this process has never been applied to a coal fired power plant. The catalytic reaction is effective at a temperature of approximately 700°F. In PC boilers, a temperature of 700°F is available prior to particulate removal, just upstream of the air heater. However, because of the potential for erosion and pluggage of the platinum catalyst by abrasive combustion products, and poisoning of the catalyst by trace metals in the fly ash, this process is unsuited to coal fired applications, and is, therefore, considered not technically feasible for the boilers. Estimated CO and VOC emissions from the PC boilers while using combustion controls are 0.15 lb/mmBtu and 0.015 lb/mmBtu, respectively. Combustion controls are, therefore, assumed as BACT for CO and VOC for the PC boilers.

CG PLANT THERMAL OXIDATION UNITS

No NSPS limits have been set for CO or VOC emissions from Claus sulfur recovery units.

CO emissions from the thermal oxidation units at the Polk County Site will be approximately 5 lb/hr per unit. VOC emissions are expected to be negligible. These emission rates are low enough to consider the thermal oxidation process as BACT.

AUXILIARY BOILER

No NSPS limits have been set for CO or VOC emissions from Subpart Dc classification sources.

As noted in the previous evaluations of CO and VOC emissions control, CO and VOC's are formed as a result of incomplete combustion of the fuel. Therefore, the control determination for NO_x must be taken into consideration when evaluating CO and VOC controls since NO_x formation is reduced by incomplete combustion. CO and VOC emissions are estimated to be 4.9 lb/hr and 0.5 lb/hr, respectively, while firing natural gas using low NO_x burners and combustion controls.

Catalytic oxidation is the primary post-combustion method for controlling CO and VOC emissions. The optimum flue gas temperature range for CO and VOC catalyst operation on a gas or oil fired boiler is between 850°F and 1,100°F. However, flue gas from the auxiliary boilers will typically be between 475°F to 620°F in the areas of the auxiliary boilers in which the catalyst can be located. Therefore, a CO and VOC catalyst is not technically feasible for use on the auxiliary boilers. Good combustion controls, therefore, represent BACT for CO and VOC emissions on the auxiliary boiler.

3.4.3.7 Particulate Matter (PM_{10}) Emissions.

CGCC UNITS

The fuels to be used in the proposed CGCC units will only contain trace quantities of noncombustible material. Therefore, emission of particulate matter from the facility will be controlled by filtering the turbine inlet air and ensuring as complete combustion of the fuel as possible. The NSPS for CC units does not establish an emission limit for particulate matter. A review of BACT/LAER Clearinghouse documents did not reveal any post-combustion particulate matter control technologies being used on CC units. The manufacturer's standard operating procedures will ensure as complete combustion of the fuel as possible. Particulate emissions from each CGCC unit will be 36 lb/hr and 17 lb/hr for coal-derived gas and fuel oil firing, respectively. Accordingly, combustion control is assumed as BACT for particulate matter and PM_{10}.

PC BOILERS

The NSPS 40 CFR 60, Subpart Da limits particulate emissions from PC boilers to 0.03 lb/mmBtu, and opacity to a maximum of 20 percent. A review of information contained in the BACT/LAER Clearinghouse (1985 and 1990 editions) indicates that the most stringent particulate emission limit issued to date is a requirement of 0.012 lb/mmBtu for a proposed coal-fired project located in a particulate non-attainment area in California. This project will use a fabric filter to control particulate emissions. Recent permit decisions in the state of Florida have limited particulate emissions from PC boilers to 0.018 lb/mmBtu.

Two particulate removal systems have demonstrated removal efficiencies adequate to achieve NSPS emission requirements on PC fired boilers: electrostatic precipitators and fabric filters. Precipitators are very sensitive to coal properties and ash loadings. A precipitator sized to accommodate the range of coal quality and ash loadings anticipated for the source would be prohibitively expensive, and would not provide any advantage over fabric filters. In addition, fabric filters are more effective at limiting PM_{10} emissions. Since a significant number of trace element pollutants either form particles within this size range or are condensed onto particles within this size range, fabric filters will reduce toxic air emissions more effectively than precipitators. Therefore, as a result of the fabric filters' superior fuel flexibility and particulate collection capabilities, electrostatic precipitators are not considered for use at the Polk County site.

Fabric filters are effective in meeting NSPS particulate emission requirements. Fabric filters have been the control technology of choice on projects where the most stringent emission control is required. In addition, fabric filters are efficient at removing small particles (PM_{10}). Unlike precipitators, fabric filter design is not based on any physical properties of the fly ash.

Fabric filters use fabric bags as filters to collect particulate. The particulate-laden flue gas enters a fabric filter compartment and passes through a layer of particulate and filter bags. The collected particulate forms a cake on the bag which enhances the bag's filtering efficiency. Fabric filters are capable of limiting particulate emissions from the PC boilers to 0.018

lb/mmBtu. This emission rate is consistent with recent permit decisions in the state of Florida. Therefore, fabric filters are considered BACT for the PC boilers.

CG PLANT THERMAL OXIDATION UNITS

No NSPS limits have been set in Subpart J for particulate emissions from Claus sulfur recovery units.

The CG process uses ceramic filters to remove ash from the dry fuel in order to protect processing equipment and operating efficiency. In addition, a liquid absorption process is used to strip hydrogen sulfide in the tail gas system. This process assures that a negligible amount of particulate will enter the thermal oxidation units. Particulate emission rates from the thermal oxidation units are estimated to be 1.5 lb/hr per unit. No particulate control is required.

AUXILIARY BOILER

NSPS limits oil fired steam generating units with heat input capacities of 30 mmBtu/h or greater to an opacity limit of 20 percent. NSPS has no mass emission limits for particulate. BACT/LAER Clearinghouse documents (CARB, 1991 and 1992; U.S. EPA, 1985 and 1990) do not list any particulate emission limitations or control equipment requirements for Subpart Dc classification boilers that burn natural gas or distillate fuel oil.

The natural gas fuel to be used in the auxiliary boiler will contain only trace quantities of noncombustible material and fuel oil use will be limited to backup purposes only. Also, the auxiliary boiler will only be used for 100 hours per year. The emission of particulates from the auxiliary boiler can be controlled by ensuring as complete combustion of the fuel as possible. The use of a post-combustion particulate control device would be excessively expensive. Estimated particulate emissions from the auxiliary boiler will be 0.5 lb/hr and 5.0 lb/hr for natural gas and fuel oil firing, respectively. Accordingly, combustion control is proposed as BACT for particulate matter and PM_{10}.

BULK MATERIAL HANDLING SYSTEMS

Fugitive dust emissions may result from storage and handling of coal and limestone. Sources of fugitive dust emissions arise from the delivery and unloading, conveying, processing, and storage of the bulk materials. Good engineering design and operating practices will be incorporated in the bulk material handling systems to minimize the fugitive emissions. These design and operating features include minimizing the number of material transfer points, enclosing conveyors and material drop points, using wet suppression systems or crusting agents to control emissions when materials are handled or stored in non-enclosed areas, and installing particulate collection devices, such as baghouses. Total coal and limestone fugitive dust emissions are estimated to be 15 lb/hr for the worst-case ultimate site development. Therefore, good engineering design and operating practices are assumed to be BACT for the bulk material handling systems.

3.4.3.8 Trace Pollutant Emissions

An additional requirement of BACT analyses is the evaluation of control technologies for lead, PSD noncriteria pollutants, and other trace air pollutants that may occur. It should be noted that there is still a great deal of uncertainty in estimating a number of the trace element emissions. Test requirements have only been dictated for a limited number of installations over the last several years. Therefore, it is difficult to estimate these emissions with a great deal of confidence. However, based on limited fuel quality and test data, and general chemical properties, it is possible to estimate potential emissions.

CGCC UNITS

Tables 3.4.3-1 and 3.4.3-2 present uncontrolled emission estimates for hazardous pollutants not listed with lead and the noncriteria pollutants in Tables 3.4.1-1 and 3.4.1-2. These pollutants will be emitted from the CGCC units when burning coal-derived gas and fuel oil. For coal-derived gas, the trace pollutants were originally in the solid coal ash and either volatilized with the carbon or carried to the CGCC units with the ash in the gas. For fuel oil, these pollutants are either contained in the fuel oil ash or dissolved in the liquid oil. A review of BACT/LAER Clearinghouse documents did not reveal any CC projects which have been required to install supplemental pollution control equipment to specifically reduce trace pollutant emissions. Almost all of the trace pollutants identified as potential emissions from the CGCC units are non-organic. These pollutants will either be volatilized upon combustion or carried in the turbine exhaust gas as PM_{10} particulate matter. The volatilized trace elements, metals in particular, may condense onto the fine particulate as the flue gas temperature decreases. The only identified methods of controlling the emission of these pollutants from the CGCC units are trace element removal in the CG process and complete combustion of the fuel. Accordingly, combustion control and good CG facility performance is assumed as BACT for the listed pollutants. This will be consistent with the BACT determination for particulate emission control.

PC BOILERS

Table 3.4.3-3 presents controlled emission estimates for other hazardous pollutants likely to be emitted from the PC boilers. These trace pollutants were not listed with lead and the noncriteria pollutants in Table 3.4.1-3. These trace pollutants are contained in the fuel and are either volatilized in the combustion chamber or carried with the fine particulate in the flue gas.

Trace emissions from the PC boilers will likely include many of the non-organic emissions expected to be emitted from the CGCC units. However, the PC boilers are also likely to emit organic compounds such as formaldehyde. Organic pollutants are predominately controlled by ensuring complete fuel combustion.

In addition to the organic pollutants, the PC boilers are also likely to emit acidic trace pollutants. The acidic trace pollutants, such as hydrogen fluoride, will be removed when contacted with alkaline based reagents in the flue gas desulfurization system.

The majority of the trace metals listed in Table 3.4.3-3 condense from the flue gas onto fly ash particles at air heater outlet temperatures. As mentioned previously, these elements preferentially condense onto fine particulate. This is due to the higher relative surface area available. Therefore, to a large degree, heavy metal trace pollutant emissions can be controlled by control of fine particulate emissions. A fabric filter with properly conditioned bags can attain removal efficiencies greater than 99 percent for particulate in the size range from 0.01 to 100 microns. Accordingly, fabric filters are an effective control technology for trace pollutants found in the fine particulate.

Of all the regulated trace pollutants emitted from PC units, mercury is the most difficult to control. Test data from wet scrubber systems on municipal solid waste (MSW) fired facilities indicate that mercury removal efficiencies can range from 70 percent, to as high as 95 percent (Getz et al.). However, mass balances around tested systems have occasionally failed to close; indicating additional mercury could be entering the system from such sources as the water or combustion air. Also, tests on European and U.S. MSW facilities equipped with spray dryers have documented additional mercury removal from the flue gas by injection of activated carbon prior to the spray dryers (White et al.). However, there is no experience with this technology on coal fired boilers and uncertainties exist with respect to the speciation of mercury in coal fired power plants. These differences do not allow for a direct comparison of control efficiencies between the two combustion sources.

In summary, good combustion, particulate removal, and FGD system performance are the only technically feasible methods of controlling hazardous air pollutants in utility coal fired boilers. Accordingly, complete combustion of the coal and use of a fabric filter followed by a FGD system is assumed as BACT for trace pollutant emissions.

CG PLANT THERMAL OXIDATION UNITS

Table 3.4.3-4 presents uncontrolled emission estimates for other regulated and hazardous pollutants from the thermal oxidation units. As with the other sources at the Polk County Site, trace pollutant emissions from the thermal oxidation units will predominantly depend on the gas entering the units. The only viable technology for controlling trace pollutant emissions from the thermal oxidation units is efficient design and operation of the gasification process. Therefore, efficient process design and control are assumed to be BACT for trace pollutant emissions from the thermal oxidation units.

AUXILIARY BOILER

Table 3.4.3-5 presents uncontrolled emission estimates for hazardous pollutants not listed with lead and the noncriteria pollutants in Table 3.4.1-5. The trace pollutants are either contained in the fuel ash or, for fuel oil, dissolved in the liquid oil. Natural gas contains essentially no ash. Therefore, with the exception of benzene and formaldehyde, natural gas does not contain hazardous trace pollutants. Typically, trace pollutants in the fuel will either volatilize upon combustion or be carried as solid particles with the fine particulate (PM_{10}). If temperature and pressure conditions are suitable, the volatilized pollutants will condense onto the fine particulate in the flue gas. Therefore, the only feasible methods of controlling the emission of these trace pollutants is using the same technology used for controlling PM_{10} emissions. Accordingly, combustion control is considered BACT for trace pollutant emissions from the auxiliary boiler.

3.4.3.9 Summary

Tables 3.4.2-1 through 3.4.2-5 summarize the control technologies that are assumed to be BACT for the pollutants subject to PSD review at the Polk County Site.

3.4.4 Design Data for Control Equipment

Control equipment design information is included as part of the BACT analyses contained in Section 3.4.3. Pollutant emission rates and specific control technologies are summarized in Tables 3.4.2-1 through 3.4.2-5.

The CGCC units will be designed to minimize NO_x formation by the use of combustion controls and low NO_x burners. Water will be injected into the combustion zones to lower combustion temperatures and limit NO_x formation, when required. The annual emissions of other regulated pollutants which might be emitted from the CGCC units in quantities subject to PSD review (SO_2, CO, particulate matter [PM_{10}], VOCs, H_2SO_4, and beryllium) will be controlled by limiting the amount of fuel oil burned annually, limiting the sulfur content of the fuel, efficient operation of the CG facility, and utilizing good combustion control of the units.

The PC boilers will be designed to minimize NO_x formation by the use of combustion controls, low NO_x burners, and a post-combustion NO_x reduction system. CO and VOC emissions will be controlled by utilizing good combustion control of the units. SO_2, H_2SO_4, particulate matter [PM_{10}], and trace element pollutants will be controlled through the use of a fabric filter and wet FGD system.

The CG plant thermal oxidation units will be designed to minimize NO_x and CO formation through the use of good combustion controls and low NO_x burners. The annual emissions of other regulated pollutants which might be emitted from the thermal oxidation unit in quantities subject to PSD review (SO_2) will be controlled by ensuring good design and operation of the gasification process.

Annual pollutant emissions from the auxiliary boiler will be minimized by limiting the unit to 100 hours of operation per year. NO_x, CO, and VOC emissions will also be limited by using combustion controls and low NO_x burners. SO_2 and H_2SO_4 emissions will be limited by burning natural gas or low sulfur fuel oil (0.05 percent sulfur). All other regulated pollutants will be limited through good combustion equipment design and operation.

Fugitive dust emissions from the bulk material handling systems will be controlled through good engineering design and operation of the respective system.

3.4.5 Design Philosophy

Air quality control system designs are determined based on conservative design parameters. The parameters are developed to ensure that the air quality control system performance meets or exceeds the requirements specified by state and federal regulatory NSPS. Critical equipment that may affect the overall system reliability will have spare units in place to assure continuous operation. In addition, the application of top-down BACT (i.e., the evaluation of technical/engineering, economic, and environmental considerations) is used to determine appropriate air emission control technologies. The BACT analysis, contained in Subsection 3.4.3, results in the selection of the best air quality control system for the particular site.

3.4.6 References

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TABLE 3.4.1-1
COAL GASIFICATION COMBINED CYCLE UNITS (3,000 MW)
POLLUTANT EMISSION RATES
(CASE A)

Pollutant	Coal-Derived Gas (lb/hr)	Coal-Derived Gas (tpy)	Fuel Oil (lb/hr)	Fuel Oil (tpy)
Carbon Monoxide	1,200	5,256	1,152	288
Nitrogen Oxides	1,956	8,567	3,816	954
Sulfur Dioxide	2,328	10,197	1,106	277
Particulate (PM/PM_{10})	432	1,892	204	51
Volatile Organic Compounds	144	631	134	34
Lead	3.3	14.45	0.192	0.048
Asbestos	N/A	N/A	N/A	N/A
Beryllium	0.0165	0.072	0.054	0.0135
Mercury	0.269	1.16	0.066	0.0165
Vinyl Chloride	N/A	N/A	N/A	N/A
Total Fluorides	Negligible	Negligible	Negligible	Negligible
Sulfuric Acid Mist	260	1,141	108	27
Hydrogen Sulfide	N/A	N/A	N/A	N/A
Total Reduced Sulfur	N/A	N/A	N/A	N/A
Benzene	Negligible	Negligible	N/A	N/A
Arsenic	0.19	0.83	0.091	0.022
Radionuclides	N/A	N/A	N/A	N/A

Notes:
1. Emission rates are based on performance data for twelve GE Frame 7F CC units operating at 100 percent capacity, 40°F, and 70 percent relative humidity with water injection. Other manufacturers' units may be utilized provided emission rates are equal to or less than those represented.
2. Coal-derived gas emission rates are based on 8,760 hours of operation per year burning an eastern bituminous coal-derived gas.
3. Fuel oil emission rates are based on 500 hours of operation per year, burning No. 2 fuel oil with a sulfur content of 0.05 percent by weight.
4. Worst case annual emissions for some pollutants are a combination of fuel usages.

N/A = Not applicable to this type of system

Source: Black & Veatch, 1992

TABLE 3.4.1-2
COAL GASIFICATION COMBINED CYCLE UNITS (2,000 MW)
POLLUTANT EMISSION RATES
(CASE B)

Pollutant	Coal-Derived Gas		Fuel Oil	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Carbon Monoxide	800	3,504	768	192
Nitrogen Oxides	1,304	5,712	2,544	636
Sulfur Dioxide	1,552	6,798	737	184
Particulate (PM/PM_{10})	288	1,261	136	34
Volatile Organic Compounds	96	420	90	22
Lead	2.2	9.64	0.128	0.032
Asbestos	N/A	N/A	N/A	N/A
Beryllium	0.011	0.048	0.036	0.009
Mercury	0.176	0.77	0.044	0.011
Vinyl Chloride	N/A	N/A	N/A	N/A
Total Fluorides	Negligible	Negligible	Negligible	Negligible
Sulfuric Acid Mist	174	760	72	18
Hydrogen Sulfide	N/A	N/A	N/A	N/A
Total Reduced Sulfur (including H_2S)	N/A	N/A	N/A	N/A
Benzene	Negligible	Negligible	Negligible	Negligible
Arsenic	0.13	0.56	0.061	0.015
Radionuclides	N/A	N/A	N/A	N/A

Notes:
1. Emission rates are based on performance data for eight GE Frame 7F CC units operating at 100 percent capacity, 40°F, and 70 percent relative humidity with water injection. Other manufacturers' units may be utilized provided emission rates are equal to or less than those represented.
2. Coal-derived gas emission rates are based on 8,760 hours of operation per year burning an eastern bituminous coal-derived gas.
3. Fuel oil emission rates are based on 500 hours of operation per year burning No. 2 fuel oil with a sulfur content of 0.05 percent by weight.
4. Worst case annual emissions for some pollutants are a combination of fuel usages.

N/A = Not applicable to type of system

Source: Black & Veatch, 1992

TABLE 3.4.1-3
PULVERIZED COAL UNITS (1,200 MW)
POLLUTANT EMISSION RATES
(CASE B)

Pollutant	Emission Rate (lb/hr)	Annual Emission (tpy)
Carbon Monoxide	1,784	7,814
Nitrogen Oxides	2,021	8,852
Sulfur Dioxide	3,448	15,103
Particulate (PM/PM_{10})	283	1,042
Volatile Organic Compounds	178	780
Lead	0.20	0.87
Asbestos	Negligible	Negligible
Beryllium	0.0013	0.0057
Mercury	0.12	0.52
Vinyl Chloride	Negligible	Negligible
Total Fluorides	0.914	4.00
Sulfuric Acid Mist	520	2,278
Hydrogen Sulfide	Negligible	Negligible
Total Reduced Sulfur (including H_2S)	Negligible	Negligible
Benzene	Negligible	Negligible
Arsenic	0.205	0.898
Radionuclides	1.31μ/Ci/hr	11.5mCi/yr

Notes:
1. Pollutant emission rates are based on two 600 MW PC steam electric power plants (5,945 mmBtu/hr per unit).
2. Pollutant emission rates based on eastern bituminous coal.
3. Emission rates listed are representative of emissions from similar types of facilities.

Source: Black & Veatch, 1992

TABLE 3.4.1-4
COAL GASIFICATION PLANT
THERMAL OXIDATION UNITS
POLLUTANT EMISSION RATES

Pollutant	Case A		Case B	
	Emission Rate (lb/hr)	Annual Emission (tpy)	Emission Rate (lb/hr)	Annual Emission (tpy)
Carbon Monoxide	27	118	18	78
Nitrogen Oxides	342	1,498	228	999
Sulfur Dioxide	153	670	102	447
Particulate	9	39	6	26
Volatile Organic Compounds	Negligible	Negligible	Negligible	Negligible
Lead	0.012	0.052	0.008	0.035
Beryllium	0.0002	0.0009	0.0001	0.0006
Mercury	0.039	0.17	0.026	0.11
Total Fluorides	Negligible	Negligible	Negligible	Negligible
Sulfuric Acid Mist	2.3	10.0	1.5	6.7
Benzene	Negligible	Negligible	Negligible	Negligible
Arsenic	0.007	0.031	0.005	0.021
Radionuclides	Negligible	Negligible	Negligible	Negligible

Notes:
1. Emission rates are based on published performance data from similar types of facilities (EPRI). Unit operation is assumed to be at 100 percent capacity, 8,760 hours per year.
2. Case A is based on six units supporting a 3,000 MW CG facility.
3. Case B is based on four units supporting a 2,000 MW CG facility.

Source: Black & Veatch, 1992

TABLE 3.4.1-5
AUXILIARY BOILER
POLLUTANT EMISSION RATES

Pollutant	FUEL			
	Natural Gas (lb/hr)	Natural Gas (TPY)	Fuel Oil (lb/hr)	Fuel Oil (TPY)
Carbon Monoxide	4.9	0.25	4.9	0.25
Nitrogen Oxides	9.9	0.50	19.8	0.99
Sulfur Dioxide	0.0641	0.0032	5.27	0.26
Particulate	0.50	0.025	4.9	0.25
Volatile Organic Compounds	0.50	0.025	0.99	0.05
Lead	Negligible	Negligible	0.000881	0.000044
Asbestos	Negligible	Negligible	Negligible	Negligible
Beryllium	Negligible	Negligible	0.00025	0.000013
Mercury	Negligible	Negligible	0.000293	0.000015
Vinyl Chloride	Negligible	Negligible	Negligible	Negligible
Total Fluorides	Negligible	Negligible	Negligible	Negligible
Sulfuric Acid Mist	0.00099	0.0000495	0.082	0.0041
Hydrogen Sulfide	Negligible	Negligible	Negligible	Negligible
Total Reduced Sulfur (including H_2S)	Negligible	Negligible	Negligible	Negligible
Benzene	0.0067	0.00033	Negligible	Negligible
Arsenic	Negligible	Negligible	0.000415	0.00002
Radionuclides	Negligible	Negligible	Negligible	Negligible

Notes:
1. Pollutant emission rates are based on one 80,000 lb/hr, 99 mmtu/hr auxiliary boiler. Natural gas is assumed to be the primary fuel. Unit will be in compliance with FDER Rule 17-2.600.
2. Fuel oil sulfur content assumed to be 0.05 percent by weight.
3. Emission rates listed are representative of actual emissions from similar types of facilities.
4. Annual emissions are based on a maximum of 100 hours of operation per year.

Source: Black & Veatch, 1992

TABLE 3.4.1-6
DIESEL GENERATOR
POLLUTANT EMISSION RATES

Pollutant	Emission Rate	
	(lb/hr)	(tpy)
Carbon Monoxide	12	0.60
Nitrogen Oxides	53	2.65
Sulfur Dioxide	0.91	0.044
Particulate	0.48	0.024
Volatile Organic Compounds	0.27	0.014
Lead	0.00016	0.000008
Asbestos	Negligible	Negligible
Beryllium	0.000044	0.0000022
Mercury	0.000052	0.0000026
Vinyl Chloride	Negligible	Negligible
Total Fluorides	Negligible	Negligible
Sulfuric Acid Mist	0.014	0.00065
Hydrogen Sulfide	Negligible	Negligible
Total Reduced Sulfur (including H_2S)	Negligible	Negligible
Benzene	Negligible	Negligible
Arsenic	0.000073	0.0000037

Notes:
1. Pollutant emission rates are based on one 1,300 kW diesel generator operating at 100 percent capacity and a maximum of 100 hours per year.
2. Maximum fuel sulfur content assumed to be 0.05 percent by weight.
3. Emission rates listed are representative of emissions from similar types of facilities.

Source: Black & Veatch, 1992

TABLE 3.4.1-7
EMERGENCY FLARES
POLLUTANT EMISSION RATES

Pollutant	Emission Rate			
	Case A		Case B	
	(lb/h)	(tpy)	(lb/h)	(tpy)
Carbon Monoxide	327	1.3	327	0.87
Nitrogen Oxides	114.5	0.46	114.5	0.31
Sulfur Dioxide	2,874	11.5	2,874	7.7
Particulate (PM/PM_{10})	73	0.29	73	0.19
Volatile Organic Compounds	24	0.096	24	0.064
Lead	0.55	0.0022	0.55	0.0015
Asbestos	Negligible	Negligible	Negligible	Negligible
Beryllium	0.0028	0.000011	0.0028	0.000007
Mercury	0.047	0.00019	0.047	0.00013
Total Fluorides	Negligible	Negligible	Negligible	Negligible
Sulfuric Acid Mist	44	0.18	44	0.12
Hydrogen Sulfide	Negligible	Negligible	Negligible	Negligible
Total Reduced Sulfur (including H_2S)	Negligible	Negligible	Negligible	Negligible
Benzene	Negligible	Negligible	Negligible	Negligible
Arsenic	0.032	0.000128	0.032	0.000085
Radionuclides	Negligible	Negligible	Negligible	Negligible

Notes:
1. Emission rates based on one flare, typical startup/shutdown sequence, normalized to hourly rate.
2. Annual emissions based on one startup sequence per flare per year. Case A based on six flares. Case B based on four flares.
3. Emission rates listed are representative of emission levels from similar types of facilities.
4. Flare efficiency has been assumed at 98 percent.

Source: Black & Veatch, 1992

TABLE 3.4.1-8
BULK MATERIAL HANDLING SYSTEMS
FUGITIVE DUST EMISSION RATES

Dust Type	Total Suspended Particulate Emissions		PM_{10} Emissions	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Coal	13.3	23.4	0.78	1.37
Limestone	1.2	0.47	0.07	0.03

Notes: 1. Emission rates based on worst-case development scenarios of three CG plants and two PC boilers. Emission factors and control efficiencies from EPA reference document AP-42. Hourly rates are based on worst-case emissions. Annual emissions are based on nominal rates, 8,760 hours per year.

Source: Black & Veatch, 1992

TABLE 3.4.1-9
SIGNIFICANT EMISSION RATE THRESHOLDS

Pollutant	Rate (tons per year)
Carbon Monoxide	100
Nitrogren Oxides	40
Sulfur Dioxide	40
Particulate Matter (PM)	
TSP	25
PM_{10}	15
VOC	40
Lead	0.6
Asbestos	0.007
Beryllium	0.0004
Mercury	0.1
Vinyl Chloride	1
Total Fluorides	3
Sulfuric Acid Mist	7
Hydrogen Sulfide	10
Total Reduced Sulfur	10
Benzene	Any
Inorganic Arsenic	Any
Radionuclides	Any

Source: 40 CFR 51.24 Prevention of Significant Deterioration of Air Quality and Table 500-2 contained in F.A.C. 17-2500(2)(e)(2).

TABLE 3.4.2-1
COAL GASIFICATION COMBINED CYCLE UNITS
SUMMARY OF PRELIMINARY BACT ANALYSIS

Pollutant	Emission Rate (CG/FO) (lb/hr)		Control Technology
	Case A	Case B	
Carbon Monoxide	1,200/1,152	800/768	Advanced design combustion control.
Nitrogen Oxide	1,956/3,816	1,304/2,544	Advanced design combustion control and water injection when required while burning coal-derived gas and fuel oil. Limited annual fuel oil operation.
Sulfur Dioxide	2,328/1,106	1,552/737	Good design and operation of CG sulfur recovery process and low fuel oil sulfur content (0.05 percent).
Particulate	432/204	288/136	Advanced design combustion control and good CG facility performance.
Volatile Organic Compounds	144/134	96/90	Advanced design combustion control.
Lead	3.3/0.192	2.2/0.128	Advanced design combustion control and good CG facility performance.
Beryllium	0.0165/0.054	0.011/0.036	Advanced design combustion control and good CG facility performance.
Mercury	0.269/0.066	0.176/0.044	Advanced design combustion control and good CG facility performance.
Sulfuric Acid Mist	260/108	174/72	Good design and operation of CG sulfur recovery process and low fuel oil sulfur content (0.05 percent).
Arsenic	0.19/0.091	0.13/0.06	Advanced design combustion control and good CG facility performance.

Notes:

1. Emission rates based on G.E. Frame 7F CC units operating at 40° F and 80 percent relative humidity. Other manufacturers' units may be utilized provided emission rates are equal to or less than those represented. Case A includes 12 CGCC units. Case B includes 8 CGCC units.
2. The control technologies listed are assumed BACT for the CGCC units. The facility will be subject to actual PSD review at a later date.

Source: Black & Veatch, 1992

TABLE 3.4.2-2 PULVERIZED COAL UNITS SUMMARY OF PRELIMINARY BACT ANALYSIS		
Pollutant	Emission Rate (lb/hr)	Control Technology
Carbon Monoxide	1,784	Advanced design combustion control.
Nitrogen Oxides	2,021	Advanced design combustion control and post-combustion ammonia injection technology.
Sulfur Dioxide	3,448	Post-combustion FGD system.
Particulate	238	Fabric filter.
Volatile Organic Compounds	178	Advanced design combustion control.
Lead	0.20	Advanced design combustion control, post-combustion FGD system, and fabric filter.
Beryllium	0.0013	Advanced design combustion control, post-combustion FGD system, and fabric filter.
Mercury	0.12	Advanced design combustion control, post-combustion FGD system, and fabric filter.
Fluoride	0.914	Advanced design combustion control, post-combustion FGD system, and fabric filter.
Sulfuric Acid Mist	520	Post-combustion FGD system with fabric filter.
Arsenic	0.205	Advanced design combustion control, post-combustion FGD system, and fabric filter.
Radionuclides	1.31 μCi/hr	Advanced design combustion control, post-combustion FGD system, and fabric filter.

Notes: 1. Emission rates based on two 600 MW PC steam electric power plants (5,945 MBtu/hr per unit) burning eastern bituminous coal.
2. Emission rates listed are representative of emissions from similar types of facilities.

Source: Black & Veatch, 1992

TABLE 3.4.2-3
COAL GASIFICATION PLANT
THERMAL OXIDATION UNITS
SUMMARY OF PRELIMINARY BACT ANALYSIS

Pollutant	Emission Rate (lb/hr)		Control Technology
	Case A	Case B	
Carbon Monoxide	27	18	Advanced design combustion control.
Nitrogen Oxides	342	228	Advanced design combustion control.
Sulfur Dioxide	153	102	Good design and operation of CG sulfur recovery process.
Particulate	9	6	Good design and operation of CG facility.
Lead	0.012	0.008	Good design and operation of CG facility.
Beryllium	0.0002	0.0001	Good design and operation of CG facility.
Mercury	0.039	0.026	Good design and operation of CG facility.
Sulfuric Acid Mist	2.3	1.5	Good design and operation of CG sulfur recovery process.
Arsenic	0.007	0.005	Good design and operation of CG facility.

Notes:

1. Emission rates based on published performance data from similar types of facilities.
2. Case A emission rates based on six units supporting a 3,000 MW CG facility.
3. Case B emission rates based on four units supporting a 2,000 MW CG facility.

Source: Black & Veatch, 1992

TABLE 3.4.2-4
AUXILIARY BOILER
SUMMARY OF PRELIMINARY BACT ANALYSIS

Pollutant	Emission Rate (CG/FO) (lb/hr)	Control Technology
Carbon Monoxide	4.9/4.9	Advanced design combustion control.
Nitrogen Oxide	9.9/19.8	Low NO_x burners and advanced design combustion control.
Sulfur Dioxide	0.0641/5.27	Low fuel oil sulfur content (0.05 percent) and limited annual fuel oil operation.
Particulate	0.5/4.9	Advanced design combustion control.
Volatile Organic Compounds	0.5/0.99	Advanced design combustion control.
Lead	Negligible/0.000881	Advanced design combustion control.
Beryllium	Negligible/0.00025	Advanced design combustion control.
Mercury	Negligible/0.0030	Advanced design combustion control.
Sulfuric Acid Mist	0.00099/0.082	Low fuel oil sulfur content (0.05 percent) and limited annual fuel oil operation.
Benzene	0.00673/Negligible	Advanced design combustion control.
Arsenic	Negligible/0.000415	Advanced design combustion control.

Notes:
1. Pollutant emission rates are based on one 80,000 lb/hr, 99 mmBtu/hr auxiliary boiler. Natural gas is assumed to be the primary fuel. Unit will be in compliance with FDER Rule 17-2600.
2. Fuel oil sulfur content assumed to be 0.05 percent by weight.
3. The control technologies listed are assumed BACT for the auxiliary boiler. The facility will be subject to actual PSD review at a later date.

Source: Black & Veatch, 1992

TABLE 3.4.2-5
BULK MATERIAL HANDLING SYSTEMS
SUMMARY OF PRELIMINARY BACT ANALYSIS

Pollutant	Emission Rate (TSP/PM_{10}) (lb/hr)	Control Technology
Particulate		
Coal	13.3/0.78	Good engineering design and operating practice.
Limestone	1.2/0.07	Good engineering design and operating practice.

Notes:

1. Emission rates based on worst-case development scenarios of three CG plants and two PC boilers. Emission factors and control efficiencies from EPA reference document AP-42.

2. The control technologies listed are assumed BACT for the bulk materials handling systems. The facility will be subject to actual PSD review at a later date.

Source: Black & Veatch, 1992

TABLE 3.4.3-1
COAL GASIFICATION COMBINED CYCLE UNITS
OTHER REGULATED AND HAZARDOUS POLLUTANT EMISSIONS
(CASE A)

Pollutant	Coal-Derived Gas		Fuel Oil	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Antimony	0.0762	0.334	0.012	0.0029
Arsenic	0.19	0.83	0.091	0.022
Barium	0.743	3.25	0.00058	0.00015
Benzene	Negligible	Negligible	Negligible	Negligible
Beryllium	0.0165	0.072	0.054	0.0135
Boron	N/A	N/A	1.41	0.352
Cadmium	0.0762	0.334	0.238	0.0594
Chromium	2.76	12.1	1.04	0.259
Cobalt	0.105	0.459	0.35	0.086
Copper	0.733	3.21	6.05	1.51
Formaldehyde	Negligible	Negligible	8.86	2.22
Lead	3.3	14.45	0.192	0.048
Magnesium	N/A	N/A	5.01	1.25
Manganese	0.229	1.00	0.303	0.0757
Mercury	0.269	1.16	0.066	0.0165
Nickel	1.24	5.42	3.67	0.919
Selenium	0.314	1.38	0.526	0.132
Vanadium	N/A	N/A	1.50	0.358
Zinc	8.38	36.7	2.72	0.679

Notes: 1. Coal-derived gas annual emissions based on 12 CC units operating 8,760 hours per year firing coal-derived gas at 40° F and 80 percent relative humidity.

2. Fuel oil annual emissions are based on 12 CC units operating for 500 hours per year firing fuel oil at 40° F and 80 percent relative humidity.

N/A = Not Available

Sources: EPRI (Electric Power Research Institute). 1990. Cool Water Coal Gasification Program: Final Report. Palo Alto, California. December, 1990.

EPA (U.S. Environmental Protection Agency). 1988. Toxic Air Pollutant Emission Factors – A Compilation for Selected Air Toxic Compounds and Sources. EPA/450/2-88/006a. October, 1988.

EPA. 1989. Estimating Air Toxics Emissions from Coal and Oil Combustion Sources. EPA/450/2-89-001. April, 1989.

TABLE 3.4.3-2
COAL GASIFICATION COMBINED CYCLE UNITS
OTHER REGULATED AND HAZARDOUS POLLUTANT EMISSIONS
(CASE B)

Pollutant	Coal-Derived Gas		Fuel Oil	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Antimony	0.051	0.223	0.0078	0.0020
Arsenic	0.13	0.56	0.061	0.015
Barium	0.495	2.17	0.00039	0.00010
Benzene	Negligible	Negligible	Negligible	Negligible
Beryllium	0.011	0.048	0.036	0.009
Boron	N/A	N/A	0.937	0.234
Cadmium	0.0508	0.223	0.158	0.0395
Calcium	N/A	N/A	10.76	2.69
Chromium	1.84	8.06	0.692	0.173
Cobalt	0.0698	0.306	0.23	0.058
Copper	0.489	2.14	4.034	1.009
Formaldehyde	Negligible	Negligible	5.908	1.477
Lead	2.2	9.64	0.128	0.032
Magnesium	N/A	N/A	3.34	0.835
Manganese	0.152	0.667	0.202	0.050
Mercury	0.176	0.77	0.44	0.011
Nickel	0.825	3.62	2.449	0.612
Selenium	0.210	0.918	0.351	0.0877
Vanadium	N/A	N/A	1.00	0.251
Zinc	5.59	24.5	1.81	0.453

Notes:
1. Coal-derived gas annual emissions based on eight CC units operating 8,760 hours per year firing coal-derived gas at 40°F and 80 percent relative humidity.
2. Fuel oil annual emissions are based on eight CC units operating for 500 hours per year firing fuel oil at 40°F and 80 percent relative humidity.

N/A = Not Available

Sources:

EPRI (Electric Power Research Institute). 1990. Cool Water Coal Gasification Program: Final Report. Palo Alto, California. December, 1990.

EPA (U.S. Environmental Protection Agency). 1988. Toxic Air Pollutant Emission Factors -- A compilation for Selected Air Toxic Compounds and Sources. EPA/450/2-88/006a. October, 1988.

EPA. 1989. Estimating Air Toxics Emissions from Coal and Oil Combustion Sources. EPA/450/2-89-001. April, 1989.

TABLE 3.4.3-3
PULVERIZED COAL UNITS
OTHER REGULATED AND HAZARDOUS POLLUTANT EMISSIONS

Pollutant	Emission Rates	
	(lb/hr)	(tpy)
Antimony	0.016	0.070
Arsenic	0.205	0.898
Barium	1.95	8.61
Benzene	Negligible	Negligible
Beryllium	0.0013	0.0057
Boron	N/A	N/A
Cadmium	0.019	0.083
Calcium	N/A	N/A
Chromium	0.025	0.111
Cobalt	0.639	2.80
Copper	0.285	1.248
Formaldehyde	0.302	1.323
Lead	0.20	0.87
Magnesium	N/A	N/A
Manganese	0.547	2.396
Mercury	0.12	0.52
Nickel	0.809	3.541
Selenium	0.449	1.97
Vanadium	1.74	7.62
Zinc	4.91	21.5

Notes: 1. Pollutant emission rates are based on two 600 MW PC steam electric power plants (5,945 MBtu/hr per unit).

2. Pollutant emission rates based on eastern bituminous coal.

N/A = Not Available

Sources: EPA (U.S. Environmental Protection Agency). 1989. Estimating Air Toxics Emissions from Coal and Oil Combustion Sources. EPA-450/2-89-001. April, 1989.

Valkovic, V. 1983. Trace Elements in Coal; Vol. I, CRC Press, Inc. Boca Raton, Florida.

TABLE 3.4.3-4
COAL GASIFICATION PLANT
THERMAL OXIDATION UNITS
OTHER REGULATED AND HAZARDOUS POLLUTANT EMISSIONS

Pollutant	Case A		Case B	
	Emission Rate (lb/hr)	Annual Emission (tpy)	Emission Rate (lb/hr)	Annual Emission (tpy)
Antimony	0.0012	0.0052	0.0008	0.0035
Arsenic	0.007	0.031	0.005	0.021
Barium	0.012	0.052	0.0079	0.035
Benzene	Negligible	Negligible	Negligible	Negligible
Beryllium	0.0002	0.0009	0.0001	0.0006
Boron	N/A	N/A	N/A	N/A
Cadmium	0.0048	0.021	0.0032	0.014
Calcium	N/A	N/A	N/A	N/A
Chromium	1.2	5.3	0.81	3.5
Cobalt	0.0071	0.031	0.0048	0.021
Copper	0.086	0.38	0.057	0.25
Formaldehyde	N/A	N/A	N/A	N/A
Lead	0.012	0.052	0.008	0.035
Magnesium	N/A	N/A	N/A	N/A
Manganese	0.18	0.79	0.12	0.53
Mercury	0.039	0.17	0.026	0.11
Nickel	0.81	3.5	0.54	2.4
Selenium	N/A	N/A	N/A	N/A
Vanadium	0.0095	0.042	0.0063	0.028
Zinc	0.57	2.5	0.38	1.7

Notes: 1. Emission rates are based on published performance data from similar types of facilities (EPRI). Unit operation is assumed to be at 100 percent capacity, 8,760 hours per year.
2. Case A based on six units supporting a 3,000 MW CG facility. Case B based on four units supporting a 2,000 MW CG facility.

N/A = Not Available

Source: Black & Veatch, 1992

TABLE 3.4.3-5

AUXILIARY BOILER

OTHER REGULATED AND HAZARDOUS POLLUTANT EMISSIONS

Pollutant	Emission Rates	
	(lb/hr)	(tpy)
Antimony	0.0022	0.00011
Arsenic	0.00042	0.000021
Barium	0.0019	0.000097
Benzene	0.0064	0.00032
Beryllium	0.00025	0.000012
Boron	0.0064	0.00032
Cadmium	0.00104	0.000052
Calcium	0.074	0.0037
Chromium	0.0048	0.00024
Cobalt	0.0009	0.000045
Copper	0.028	0.0014
Formaldehyde	0.022	0.0011
Lead	0.000881	0.000044
Magnesium	0.023	0.0011
Manganese	0.0014	0.00007
Mercury	0.0003	0.000015
Nickel	0.017	0.00084
Selenium	0.00023	0.000012
Vanadium	0.00689	0.00034
Zinc	0.0676	0.00338

Notes: 1. Pollutant emission rates are based on one 80,000 lb/hr 99 mmBtu/hr auxiliary boiler firing fuel oil, except for benzene and formaldehyde, which are based on natural gas.

2. Annual emissions are based on a maximum of 100 hours of operation per year.

Sources: EPA (U.S. Environmental Protection Agency). 1989. Estimating Air Toxics Emissions from Coal and Oil Combustion Sources. EPA-450/2-89-001. April, 1989.

Valkovic, V. 1978. Trace Elements in Petroleum. The Petroleum Publishing Company. Tulsa, Oklahoma.

3.9 MATERIALS HANDLING

3.9.1 Site Facilities

Major components to be constructed at the Polk County Site include the following:

- Combustion turbines
- Combustion turbine electrical generators
- Heat recovery steam generators
- Steam turbines
- Steam turbine electrical generators
- Transformers
- Bridge cranes
- Water treatment facilities
- Stacks
- Pulverized coal boilers (later phases)
- Gasifiers (later phases)
- Coal storage and handling system (later phases)
- Limestone storage and handling system (later phases)
- PC precipitator or baghouse/scrubber (later phases)

These components are expected to be delivered to the site by rail or truck. No off-site upgrading of either rail or road facilities is expected to be necessary to facilitate delivery of construction materials. However, as shown on Figure 3.2.1-2, which presents the typical proposed rail and road facilities, the site will require the installation of extensive on-site rail and road improvements. These improvements will facilitate delivery of construction components, as well as future maintenance and replacement components, if required.

Once on site, materials will be unloaded and transported by using mobile cranes and trucks. Some of the heaviest items will require rail delivery, multi-axle transport haul trailers, and special rigging for on-site handling.

Fuels for construction vehicles will be stored in fuel storage drums within a bermed area in accordance with regulations. Gasoline and diesel fuel for cars and trucks used during construction and operation will be stored in tanks. See Vehicular Fuel Storage on Figure 3.2.1-1. Spent lubricants, paints, and solvents will be removed from the site for recycling or for disposal.

The construction sanitary wastewater system will consist of portable, self contained chemical toilets until completion of the site sewage treatment plant. Wastes from these chemical toilets will be removed periodically, as needed. The sewage treatment plant described in Section 3.5.2 will be constructed early and will be utilized during the construction period.

Fugitive dust, surface water runoff, and waste disposal associated with material handling during construction will be controlled using the following techniques:

- Dust suppression will be accomplished by watering the roads, parking lots, and laydown areas, as needed.
- A stormwater retention pond described in Section 3.2 will be used to settle suspended sediment from rainfall runoff.
- A burn pit will be located on the power block site. Organic waste created by the clearing and grubbing of these areas will be burned as the site is cleared. Burn pits for construction wastes will be regulated in accordance to F.A.C. 17-256.
- Construction trash and other nonhazardous debris will be recycled, or will be collected for off-site disposal by a licensed disposal contractor.
- Commercial salvage of metal wastes will be implemented. If salvage is not feasible, these wastes will be removed from the site by a licensed contractor for recycling or disposal.

3.9.2 Operational Materials

The handling and storage of fuels and fuel additives (natural gas, fuel oil, coal-derived gas, coal, and limestone) are discussed in Section 3.3. Handling and storage of coal gasification and combustion by-products (slag, fly ash, bottom ash, sludge, and sulfur), wastewater treatment sludges, and other lesser-volume waste streams are discussed in Section 3.7.

Other operational materials include gaseous and liquified oxygen, sulfur removal and tail gas treating solvents, water and wastewater treatment chemicals, lubrication oils, combustion and ST coolant and purge gases, and HRSG blanketing gas.

Water and wastewater treatment chemicals (e.g., sulfuric acid, sodium hydroxide, and sodium hypochlorite) will be stored in tanks adjacent to the water and wastewater treatment buildings, respectively. The chemicals will be stored within a curbed area with drains routed to the neutralization basin.

Lubrication oil and greases will be stored in lube oil storage drums. The drums will be located within an enclosed curbed area designed to detain 110 percent of the stored material. A (normally closed) emergency drain system will route any spills within the curbed area to the plant oil/water separator.

Lubricating oil will be stored in equipment-associated lube oil tanks and system piping. This equipment and piping will either be enclosed in a containment area or will be within an area protected by a drain system to the oil/water separator.

Hydrogen, oxygen, nitrogen and carbon dioxide gases may be stored in bottles adjacent to the gas distribution system which serves the units.

4.5 AIR IMPACT

4.5.1 Air Quality Impacts

During the construction period, unavoidable air pollutant emissions are likely to occur from various construction-related activities. The most prevalent construction emissions are fugitive dust. However, minor emissions of nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter, and volatile organic. compounds (VOCs) are also likely during construction. Emissions of these pollutants generally are minimized through standard control measures.

4.5.1.1 Fugitive Dust

Fugitive dust is generally defined as natural and/or man-associated dusts that become airborne due to the forces of wind or human activity. Construction-phase fugitive dust emissions will be generated during site clearing, grubbing and grading, excavation, vehicular activity, and production activities at an on-site concrete batch plant.

The quantities of fugitive dust emitted by the site construction vehicular traffic will be dependent on a number of factors, including the frequency of operations, specific operations being conducted, weather, and soil conditions. During the earthwork operations, dust control measures will be in force and will typically require moisture conditioning of the soils in the excavation and compaction areas and along the defined roadways between these areas.

4.5.1.2 Other Air Pollutant Emissions

It is anticipated that total gaseous emissions during construction will be extremely small. Potential sources of VOC emissions include evaporative losses associated with on-site painting, refueling of construction equipment, and the application of adhesives and waterproofing chemicals. The frequency and extent of these activities are limited and they will have minimal impact on air quality.

Exhaust emissions from construction equipment will also contain small amounts of NO_x, SO_2, CO, particulate matter, and VOCs resulting from incomplete combustion of fuel. However, due to the nature of heavy-duty diesel-powered construction vehicles, which allow for more complete combustion and less volatile fuels than spark-ignited engines, these emissions are relatively low.

Open burning will emit particulate matter, CO, hydrocarbons, sulfur oxides, and NO_x. The open burning of cleared land debris will be conducted for short periods. Open burning of construction debris is expected to occur if the composition of that debris consists of wood products and other relatively clean-burning components. Pollutant emissions from debris burning will depend upon the amount and moisture content of the debris.

4.5.2 Air Quality Control Methods

The impact of heavy construction activities and site preparation on air quality will be short term and confined to the immediate vicinity of the construction activity. This is primarily because most of the fugitive dust created by construction traffic and earth-moving operations consists of relatively large particles. These large particles tend to settle quickly rather than remain suspended for transport over long distances.

Job site guidelines for minimizing emissions of fugitive dust from identifiable construction sources will include a combination of the following techniques:

- Contractors will be instructed to comply with any applicable state and local regulations governing open-bodied trucks hauling sand, gravel, or soil between on-site and off-site areas. This could include providing covers or moistening the load with water and wheel washing to reduce dusting.
- Areas disturbed during construction will be stabilized by mulching or seeding as soon as practicable.
- When construction occurs on bare ground, water (possibly together with wetting agents) will be used as necessary to suppress dust.
- Temporary vehicular surfaces of crushed rock may be used in high traffic areas. Areas not subject to heavy traffic or continual disturbance will be wetted down using nontoxic substances to suppress dust.
- On-site concrete batch plants will be equipped with dust control systems which effectively mitigate off-site impacts.

- Sandblasting operations will be located in isolated areas to minimize effects on adjacent work areas. Protective covers will also be utilized where practicable.

Only minor short-term air quality impacts are expected to result from open burning since these operations will be conducted in compliance with Florida Division of Forestry air pollution control regulations (Chapter 51-2 F.A.C.) which are applicable in rural areas.

Because of the mitigative measures which will be employed, it is not expected that vehicular emissions, fugitive dust, or smoke from open-burning operations will present any significant air quality problems during the construction period.

4.5.3 Ambient Air Quality Monitoring Program

Air quality monitoring for construction-related fugitive dust or other air pollutants is not being proposed. Periodic visual inspections of the job site will be conducted to ensure compliance with guidelines for minimizing emissions of fugitive dust during construction of the proposed facility.

5.6 AIR QUALITY IMPACTS

5.6.1 Impact Assessment

5.6.1.1 Introduction

This section provides an air quality impact assessment of the worst-case possibility for the site described in Section 3.1; that is, Case B consisting of eight CTs with associated HRSGs, STs, and coal gasification (CG) units, plus two PC units, each of nominal 600 MW size, for a total site capacity of 3,200 MW. This case would have higher emissions of air pollutants than the other possible case presented (Case A - 3,000 MW of CGCC) and is therefore considered to be the worst-case possibility from an air quality standpoint. The initial 940 MW, consisting of four natural gas fired CC units (with fuel oil as back-up fuel) is analyzed in detail in the PSD application provided in Appendix 10.1.5, and that analysis is not repeated in this section. Thus, this section focuses exclusively on the ultimate site capacity and is provided to demonstrate that the site is capable of supporting 3,200 MW after the application of best available control technology (BACT) to limit air pollutant emissions.

This section provides a discussion of the pollutants analyzed and provides the rationale for not considering certain pollutants in the analyses. The modelling methodology is described along with the meteorological data used as input. The emission parameters for the proposed units are provided as are listings of other sources included in the analyses. The receptor grids used in the modelling are presented and the background concentrations used in the ambient air quality standards (AAQS) analyses are specified. Finally, the results of the modelling analyses are provided, with comparisons to the allowable Prevention of Significant Deterioration (PSD) increments, AAQS, and draft No Threat Levels (for air toxics). A supplementary analysis is provided of projected impacts on the nearest PSD Class I area and an additional impacts analysis is included which summarizes air quality impacts due to induced growth; air quality impacts on vegetation, soils, and wildlife; and air quality impacts on visibility.

5.6.1.2 Air Quality Regulatory Requirements Applicability

AMBIENT STANDARDS/PSD INCREMENTS

The applicable national and Florida AAQS are presented in Table 5.6.1-1. The primary NAAQS/FAAQS were promulgated to protect the public health, and the secondary NAAQS/FAAQS were promulgated to protect the public welfare from any known or anticipated adverse effects associated with the presence of certain "criteria" pollutants in the ambient air. Areas of the country in violation of the NAAQS are designated by EPA as non-attainment areas. Any new or modified existing sources to be located in or near a non-attainment area may be subject to stringent air quality permitting requirements. Polk County is an attainment area for all criteria pollutants.

In promulgating the 1977 Clean Air Act (CAA) Amendments, Congress specified that certain incremental increases above air quality "baseline concentration" levels for SO_2 and TSP would constitute "significant deterioration." The magnitude of the allowable increment depends on the classification of the area in which a new or modified source will be located or have an impact. Three classifications were designated based on criteria established in the CAA Amendments. Initially, Congress designated PSD areas as Class I (international parks, national wilderness areas, and memorial parks larger than 5,000 acres, and national parks larger than 6,000 acres) or as Class II (all areas not designated as Class I). No Class III areas, which would allow greater deterioration than Class II areas, were designated. EPA subsequently incorporated the requirements for classifications and area designation into the PSD regulations.

On October 17, 1988, the EPA promulgated additional regulations to prevent significant deterioration due to NO_X emissions and established PSD increments for NO_2 concentrations. The allowable PSD increments for SO_2, TSP, and NO_2 are also presented in Table 5.6.1-1. The FDER has adopted the EPA PSD classification scheme and the allowable PSD increments for SO_2, TSP, and NO_2.

Polk County is designated as Class II from a PSD standpoint. The nearest Class I area to the proposed site is the Chassahowitzka National Wilderness Area (NWA), located between 118 km to 137 km to the northwest. The NWA is that portion of the Chassahowitzka National Wildlife Refuge which has been officially designated as wilderness. There are no other Class I areas within 200 km of the proposed site.

POLLUTANT APPLICABILITY

According to the SCA guidelines (DER Form 17-1.211(1)), the air quality impact assessment must demonstrate that the operation of the proposed project will not cause or contribute to a violation of any PSD increment or AAQS pursuant to Rules 17-2.500(5)(d) and (e), F.A.C., which cover the ambient impact analysis and additional impact analyses, respectively. The pollutants subject to new source review, and thus these analyses, are covered by Rule 17-2.500(2)(f), F.A.C., "Pollutants Subject to New Source Review," which indicates that pollutants emitted in quantities greater than those listed in FDER Table 500-2 must be analyzed. A comparison of the maximum emission levels for Case B with the significant emission rates of FDER Table 500-2 is provided in Table 5.6.1-2. As indicated in the table, the proposed facility will exceed the significant emission rates for CO, NO_X, SO_2, PM_{10}, TSP, VOC, Pb, Be, Hg, fluorides, sulfuric acid mist, arsenic, and radionuclides.

As indicated in Table 5.6.1-2, there will be a significant increase in VOC emissions, triggering air quality review for ozone. However, ozone formation cannot be simulated with a simple Gaussian dispersion model. The U.S. EPA Guideline on Air Quality Models (EPA, 1990a) indicates that "the use of models incorporating complex chemical mechanisms should be considered only on a case-by-case basis with proper demonstration of applicability. These are generally regional models not designed for the evaluation of individual sources but used primarily for region-wide evaluations." The proposed facility is located in an attainment area for ozone. Thus, it is not subject to a VOC emissions impact assessment and an ozone modelling analysis is not appropriate.

The proposed source emissions of Be, Hg, fluorides, sulfuric acid mist, benzene, arsenic, and radionuclides are shown in Table 5.6.1-2 to be above the specified significant emission rates. However, the PSD regulations and FDER do not define significant impact levels for some of these pollutants (see Table 5.6.1-3), nor are ambient air quality standards established for these pollutants. Hence, the air quality impact assessment for these pollutants is limited to prediction of the maximum impacts from the proposed facility alone.

Some additional pollutants that are not subject to PSD review (and not regulated under the Clean Air Act) are included in the air quality impact analysis in order to provide additional information for the air toxics analysis, and to serve as input to the additional impacts analysis. The additional noncriteria pollutants for which emission estimates were available for this project (mainly trace elements) are: antimony, barium, boron, cadmium, calcium, chromium, cobalt, copper, formaldehyde, magnesium, manganese, nickel, selenium, vanadium, and zinc. Emission estimates for these substances are presented in Table 5.6.1-4.

5.6.1.3 Modelling Approach

The air quality impact assessment consists of a proposed source worst-case operating scenario analysis, a significant impact area analysis, a PSD increment consumption analysis, an ambient air quality standards impact analysis, an air toxics analysis, and an additional impacts analysis. These analyses are discussed in greater detail in the following paragraphs under specific modelling methodologies. The modelling approach followed EPA and FDER modelling guidelines for determining compliance with applicable PSD increments and ambient air quality standards. A modelling protocol was prepared by the applicant as a part of the Plan of Study (FPC, 1991) and submitted to FDER for review. The FDER approved the modelling protocol prior to commencement of the air quality impact assessment. A separate protocol was submitted for the supplementary PSD Class I area analysis (FPC, 1992b); that protocol and model are described in Section 5.6.1.10.

The Polk County Site has been determined to be a rural area based upon the technique for urban/rural determinations documented in the EPA "Guideline on Air Quality Models" (U.S. EPA, 1990a) which applies land use criteria. Based upon this determination, the refined Industrial Source Complex Short-Term (ISCST) dispersion model (Version 90346) was selected for application in the air quality impact analysis used to support the PSD permit application. The ISCST model (U.S. EPA, 1987a) is a referenced EPA dispersion model recommended for use in rural areas, and for application to point, area, and volume sources. The ISCST model can predict the maximum as well as the highest, second-highest concentration and period of occurrence for 1-hour, 3-hour, 8-hour, 24-hour, and annual averaging periods at each receptor for each full year of hourly meteorological data used.

The program control parameter data used in the ISCST model are consistent with running the model in the regulatory default mode. The model was applied without terrain adjustment data because the area in which the Polk County Site is located has very little relief (e.g., a net change in ground level elevation in the range of only 10 feet). The ISCST model's building downwash options were applied because the stacks for some of the proposed sources will be less than the GEP stack heights.

Based on a discussion with FDER personnel, the decision was made to collocate several stacks for the proposed facility in the modelling analysis, which is a conservative (worst-case) approach. The decision was also made to separately model emissions from the diesel generator and auxiliary boiler, since they are small compared to the main units' emissions and will not occur when the main units are in normal operation, except for very brief periods of testing. The ISCST model was run separately for the existing PSD sources and the existing baseline sources to determine those source impacts in combination with the proposed source impacts.

The air quality impact assessment for PM assumed that all PM emissions were PM_{10} emissions (i.e., PM = TSP = PM_{10}). This assumption simplified the PM modelling analysis and makes for a conservative approach to modelling PM impacts.

5.6.1.4 Meteorological Data

The air quality modelling analysis used hourly preprocessed National Weather Service (NWS) surface meteorological data from Tampa, Florida, and concurrent twice-daily upper air soundings from Ruskin, Florida, for the years 1982-1986. The meteorological data were supplied by FDER in the preprocessed format required by the ISCST model. The preprocessed hourly meteorological data file for each year of record used in the analysis contains randomized wind direction, wind speed, ambient temperature, atmospheric stability using the Turner (1970) stability classification scheme, and mixing heights. The anemometer height of 6.7 meters, used in the modelling analysis, was obtained from NWS Local Climatological Data summaries for Tampa (NOAA, 1989). A joint frequency distribution of wind directions and speeds by atmospheric stability class is provided in Appendix 10.5.6.1.

The supplementary PSD Class I area analysis used an additional meteorological data set. It is described separately in Section 5.6.1.10.

5.6.1.5 Proposed Source Emissions/Stack Parameters

FPC's philosophy for the construction, operation, and maintenance of generating facilities is to focus on safety, reliability, and cost effectiveness, while maintaining an environmentally responsible posture. In keeping with this philosophy and examining the worst-case scenario (Case B) for the ultimate site capacity, this section presents the emission levels and stack parameters associated with the CC units, PC units, and CG units. In addition, this section presents emission levels and modelling parameters for the auxiliary boiler, diesel generator, and the fugitive dust sources.

COMBINED CYCLE UNITS

Estimated emission levels and stack parameters for a CC unit are presented in Tables 5.6.1-5 and 5.6.1-6, when fired on coal gas and fuel oil (back-up), respectively. Information is presented at ambient temperatures of 40°F, 72°F, and 95°F for full load operation. Emission levels are based on the application of BACT as discussed in Section 3.4. Modelling analyses (Section 10.1.5 - PSD Application) revealed the 40°F temperature scenario as being worst case from the standpoint of air quality impacts, and emission rates at this temperature have been used in subsequent modelling analyses. During any given year, brief excursions below the 40°F temperature may occur at the site resulting in slightly higher emissions.

PULVERIZED COAL UNITS

Estimated emission levels and stack parameters for a PC unit are presented in Table 5.6.1-7. Information is presented at unit loads of 50 percent, 75 percent, and 100 percent. Emission levels are based on the application of BACT as discussed in Section 3.4. Modelling analyses revealed the 100 percent load scenario as being worst case from the standpoint of air quality impacts (Section 5.6.1.9).

GASIFICATION UNITS

Estimated emission levels and stack parameters from the exhaust of the thermal oxidation units used to control tail gas emissions from the gasification units are presented in Table 5.6.1-8. Emission levels are based on the application of BACT as discussed in Section 3.4. The modelling analysis was conducted using emission rates representative of an ambient temperature of 40°F. This was chosen as the worst-case scenario since maximum fuel input rates for the CC units correspond to this temperature.

AUXILIARY BOILER/DIESEL GENERATOR

Estimated emission levels and stack parameters for the auxiliary boiler and diesel generator are presented in Tables 5.6.1-9 and 5.6.1-10, respectively. Emission levels for the auxiliary boiler are based on the maximum heat input rate of 99 mmBTU/hr when fired on natural gas or fuel oil and the application of BACT as described in Section 3.4. Emission levels for the diesel generator are based on full load. Worst-case emissions from both the auxiliary boiler and diesel generator are associated with the firing of low sulfur fuel oil. Both sources were modelled separately from the CC units, PC units, and thermal oxidation units.

FUGITIVE DUST SOURCES

Estimated emission levels and modelling parameters associated with the coal and limestone handling systems are presented in Table 5.6.1-11. Emission levels have been established for four fugitive dust sources based on the application of BACT as discussed in Section 3.4. All fugitive dust sources were modelled as area sources using TSP rather than PM_{10} emission factors. This approach is conservative and is consistent with the worst-case modelling methodology utilized.

A preliminary material handling conceptual design study was performed to develop approximate fugitive dust source modelling parameters for the worst-case plant scenario of two coal gasification plants and two PC boilers. The throughput rates developed for various aspects of the plant material handling systems are based on current estimates of maximum hourly fuel burn rates for each combustion source, daily fuel and limestone consumption, and the annual plant capacity factor. It should be noted that results of the conceptual design study indicate that two coal stacker/reclaimer devices may be required so that coal receiving/stockout and coal reclaiming can take place simultaneously.

Both maximum hourly and annual average emission rates for each source are shown in the tables. The hourly (worst-case) emission rate is based on material handling at the design operating capacity of the device, such as the belt capacity. The annual emission rate is based on the estimated annual material throughput, which accounts for the plant capacity factor.

Both TSP and PM_{10} emission estimates were developed by applying an appropriate emission factor and control efficiency to each potential material handling particulate emission source. The emission factors used are those found in EPA's emission factor reference document, AP-42 (EPA, 1988a). Standard control efficiencies applicable to the various planned mitigation measures are also based on standard EPA reference documents. It is assumed that baghouse particulate collectors will be utilized at all material drop points except for coal and limestone railcar unloading, coal stacker/reclaimer, and limestone reclaiming. Wet suppression will be utilized at the coal railcar unloading and stacker/reclaimer. All other sources such as conveying and limestone receiving and reclaiming will be controlled through total or partial enclosure.

GEP STACK HEIGHT CONSIDERATIONS

GEP stack heights for the CC units, PC units, and CG units were determined by use of the Breezewake computer model (Trinity Consultants, 1989). The Breezewake computer model output specified a GEP stack height of approximately 625 feet (190.5 m) for all stacks. As proposed, the CC units (213 feet), the PC units (625 feet) and the CG units (353 feet) stacks have been designed at or below GEP stack height.

AIR TOXICS

Estimated maximum short-term emission rates and annual emission rates for the CC units, PC units, and thermal oxidation units are contained in Table 5.6.1-4. Emission levels are based on the application of BACT as discussed in Section 3.4. The short-term emission rates were used in the Air Quality Related Values (AQRV) analysis and the FDER No Threat Level (NTL) analysis. Trace metal emission estimates not specifically addressed by the BACT analysis were obtained from emission factors for fuel oil combustion and coal combustion (EPA, 1988 and 1989) and from Cool Water Project data (Black & Veatch, 1992).

5.6.1.6 Existing Source Emission Inventories

The results of the proposed source significant impact area analysis (described in Section 5.6.1.9) indicated that the proposed facility's air quality impacts could be above the significant impact levels for NO_2, SO_2, and PM at off-site locations. The ISCST model projected significant impact areas as 33, 50, and 12 km radius circles centered on the proposed source for these three pollutants, respectively. Therefore, the PSD and background source emission inventories for these pollutants were prepared from available databases considering these areas of impact.

The FDER Air Pollutant Information System (APIS) computer printouts of the emissions for facilities located within approximately a 100 km radius of the proposed source location were searched. This information was supplemented with data from air quality permits, PSD permit applications, and previous air quality modelling analyses to identify all significant sources (emissions greater than 25 tons/year) within the areas of impact and 50 km wide annual rings outside of the areas of impact.

A screening technique known as the "Screening Threshold" method (North Carolina DNR, 1985) was applied to sources located within the 50 km wide annular rings. The method is designed to objectively eliminate from the emission inventory those sources which are not likely to have a significant interaction with the source undergoing evaluation. According to the method, sources that should be considered in the modelling analyses are those with emissions greater than Q (in tons/year), which is calculated by the following equation:

$$Q = 20 X D$$

where:

D = the distance in kilometers from the particular source to the source undergoing evaluation.

Those sources with maximum allowable emissions below the calculated "screening threshold" were eliminated from consideration in the modelling analysis. The remaining sources not screened out comprised the existing source emission inventory to be used in the modelling analysis.

The resulting existing source emission inventories were also established separately for PSD increment consuming sources and all sources for the AAQS analysis. In general, the PSD regulations define PSD sources as those sources which commenced construction after the baseline date for a specified pollutant. Baseline sources are defined as those sources which commenced construction prior to the baseline date for a specified pollutant. In a discussion with FDER (Linn, 1992), the PSD baseline date for major sources (greater than 100 tons/year) of SO_2 and PM was indicated as January 6, 1975, and the minor source (less than 100 tons/year) PSD baseline date for this pollutant is December 27, 1977. For NO_2, the major and minor source baseline date is February 8, 1988.

The completed existing source emission inventories were submitted to FDER for review and were determined to be acceptable for input to the ISCST model (Linn, 1992a&b). The existing source emission inventories used in the Class II area PSD modelling analyses are presented in Tables 5.6.1-12, 5.6.1-13, and 5.6.1-14 for NO_X, SO_2 and PM, respectively. The emissions for all applicable pollutants in those tables are in terms of maximum allowable or potential emissions in order to evaluate a worst-case emissions scenario for those sources from a PSD increment standpoint. Sources with negative emission rates are increment expanding sources (i.e., baseline sources which reduced emissions or shut down, thereby expanding the available PSD increment).

Separate source inventories were used for the analysis of NO_2 and SO_2 impacts on the NWA, which is the nearest Class I PSD area. The source inventories for the Class I PSD analysis (Tables 5.6.1-15 and 5.6.1-16) consisted of not only the PSD sources near the proposed source but also a large number of additional PSD increment consuming sources in the area. They were compiled from a source list provided by FDER and augmented with additional sources. The resulting inventories were reviewed and approved by FDER (Linn, 1992a&b). Two minor changes were made in the SO_2 inventory after these FDER approvals. These involved the elimination of Source #63, which has been dismantled, and changes in stack parameters for Source #4 based on stack tests more representative of full load conditions. These changes were also discussed with and verbally approved by FDER.

Source inventories were also established for the AAQS analyses for NO_X, SO_2, and PM. These are presented in Tables 5.6.1-17, 5.6.1-18, and 5.6.1-19, respectively. They were compiled in the same manner as the PSD sources and were similarly reviewed and approved by FDER (Linn, 1992a&b). Again, a few minor changes were made in emission rates and stack parameters after these FDER approvals which involved corrections to erroneous emission rates for several particulate sources.

The existing PSD source and AAQS source emission inventories were based on combined stack collocation wherever reasonable. Multiple-stack facility emissions were combined and assumed to be emitted from the stack with the lowest "*K*" factor, an arbitrary parameter accounting for the relative influence of stack height, plume rise, and emission rate on concentrations (U.S. EPA, 1977). The parameter, *K*, was computed using the following formula:

$$K = hVT_s / Q$$

where:

h = stack height (m)
V = stack gas volume flow rate = $(\pi/4)d^2 V_S$ (m^3/sec)
d = stack exit diameter (m)
V_S = stack gas exit velocity (m/sec)
T_S = stack gas exit temperature ($°K$)
Q = pollutant emission rate (g/sec)

For example, application of this method to Source No. 7 on Table 5.6.1-18 provided the following "*K*" factors, indicating that the stack parameters for the third source listed would be used for modelling that facility.

K FACTOR EXAMPLE					
Stack Height (*m*)	**Stack Diameter (*m*)**	**Stack Temperature (°*K*)**	**Exit Velocity (*m/sec*)**	**Emission Rate (*g/sec*)**	**"*K*" Factor**
23.2	1	349.7	20.1	11.5	11,137
20.7	1	458	11.3	8.3	10,137
18.9	1.1	458	9.5	8	9,769

5.6.1.7 Receptor Locations

The general modelling approach discussed previously included a worst-case operating scenario analysis, an area of impact analysis, a coarse grid analysis, and a refined modelling analysis to assess air quality impacts on the applicable ambient air quality standards and PSD increments. Descriptions of the receptor grids used in these modelling analyses are presented below.

RECEPTOR GRID FOR PROPOSED SOURCE WORST-CASE OPERATING SCENARIO

The worst-case operating scenario analysis used the same combination polar/Cartesian grid consisting of 455 receptors described below for the coarse grid analysis receptors.

SIGNIFICANT IMPACT AREA ANALYSIS RECEPTOR GRIDS

The significant impact area modelling analyses initially used a polar receptor grid with rings beginning at 2.5 km and extending out to cover a 50 km radius area centered over the proposed source. The polar grid consisted of 36 radials, each separated by 10-degree increments and extending outward at ring distances of 2.5, 5.0, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 45.0, and 50.0 km with respect to the proposed source location. This receptor grid consisted of a total of 396 receptors and is shown in Figure 5.6.1-1.

When the modelling exercise with this grid indicated no significant impact for selected pollutants at or beyond the 2.5 km ring, additional rings were added at a finer grid resolution moving towards the closest plant boundary (at 500 meters to the south). Additional runs were completed at 1.0 km increments to identify significant impact areas to the nearest 1.0 km when significant impacts were noted within the 50 km radius grid.

COARSE GRID ANALYSIS RECEPTORS

A coarse grid analysis is used to identify the maximum impacts for the long-term (annual) averaging times and to identify the short-term impact areas that require further investigation with a fine grid. The coarse grid utilized consisted of a Cartesian coordinate grid with a 500 m spacing between points surrounded by three rings of a polar grid out to a maximum of 14 km from the proposed source. This grid was reviewed and approved by FDER (Linn, 1992a) and is depicted in Figure 5.6.1-2. As indicated in the figure, on-site locations are not included in the grid since access to the site by the public will be restricted.

FINE GRIDS

For areas of maximum short-term impacts predicted by the model using the coarse receptor grid described above, a series of fine grids were employed to obtain the final maximum predicted concentrations. These grids consisted of a maximum of 11 rows and 11 columns of points (i.e., 121 points) spaced 100 meters apart and centered over the maximum impact points from the coarse grid. Again, points within the site boundaries were excluded from consideration.

RECEPTOR GRID FOR CLASS I PSD ANALYSIS

The modelling for the PSD Class I area analysis used a 13-point receptor grid. This grid consisted of a series of regularly spaced points (approximately 2 km apart) located along the boundary of the Class I area. The coordinates of these points are listed in Table 5.6.1-20.

5.6.1.8 Background Concentrations

The background concentrations were determined according to the procedure documented at Section 9.2.3 in the Guideline on Air Quality Models (U.S. EPA 1990a). This procedure calls for a determination of a modelled background concentration component and an ambient air quality monitoring data-derived background concentration component. The modelled background concentration component was derived from the modelled impact for all applicable background sources identified in Tables 5.6.1-17, 5.6.1-18, and 5.6.1-19 for NO_X, SO_2, and PM, respectively.

The ambient air quality monitoring data-derived background concentration component was based on ambient air quality monitoring data from the on-site PSD monitoring program discussed in Section 2.3.7.2. Initially, the highest or second-highest monitored concentration for each applicable criteria air pollutant and averaging time was selected based on the four months of on-site monitoring data summarized in Table 2.3.7-7, Section 2.3.7.2. The total background concentrations for NO_X and SO_2 were determined by modelling all applicable background sources, and adding the monitored concentration as discussed above. This approach may result in "double counting" the impacts of the existing sources since their impacts are also accounted for in the monitoring data. This simple approach is conservative and was approved by the FDER (Linn, 1991). The total background concentrations are summarized under the results of the modelling analysis in Section 5.6.1.9.

For PM, this simple approach was determined to be too conservative, and an alternative approach described in the modelling protocol (FPC, 1991) and approved by FDER (Linn, 1992c) was employed. To avoid double counting, only PM data collected during days when on-site winds were not from directions including sources within 20 miles upwind for at least 18 out of 24 hours were selected. Figure 5.6.1-3 depicts the locations of nearby modelled PM sources and the wind direction sector considered to be not overly influenced by emissions from these sources. Upon application of this method to the four months of on-site data, the revised monitored components of the background concentrations for PM were determined to be 13 $\mu g/m^3$ as the second-highest 24-hour average and 12 $\mu g/m^3$ as the long-term average.

5.6.1.9 Air Quality Modelling Results

This section summarizes the results of the modelling analyses conducted as described in Section 5.6.1.3. It is organized into subsections dealing with the predicted impacts of the proposed project by itself, predicted PSD increment consumption, predicted concentrations with respect to the AAQS, and predicted concentrations of air toxics versus FDER's draft No Threat Levels.

WORST-CASE OPERATION ANALYSIS

As indicated in Section 5.6.1.5, the proposed CGCC facility was evaluated for both the primary fuel, coal gas, and the back-up fuel, fuel oil, to determine the worst-case impacts. Since the emissions on coal gas are higher for most of the criteria pollutants than for fuel oil, the analysis of short-term impacts focused on the coal gas case. Based on previous experience in modelling CGCC units, it was assumed that 100 percent load would produce the maximum ground-level impacts. Therefore, no partial load cases were run for the CGCC units.

Based upon previously conducted modelling for the CC units in the Phase I analysis (see Appendix 10.1.5 - PSD application), the 40°F case was selected as the "worst-case" scenario since it typically produces the greatest impact for CC units. Parameters associated with this scenario were utilized in all further modelling. Subsequent runs for annual averages were made using the coal gas emissions and stack parameters associated with the 40°F case. However, for selected pollutants with worst-case emissions on fuel oil, the modelling took into account the maximum of 500 hours per year of fuel oil firing and added 8,260 hours per year of emissions from coal gas firing.

Unlike the CGCC units, the PC units may be run at reduced loads and, due to lower plume rise, it is possible that the worst-case ambient impacts might be associated with lower loads. This was evaluated by modelling the emissions from the PC units at 50 percent, 75 percent, and 100 percent loads. The results for one year of meteorological data are presented in Table 5.6.1-21. As indicated, maximum impacts clearly occurred with the 100 percent load emission parameters. As a result, all subsequent runs were based on the 100 percent load scenario for the PC units.

Since the proposed auxiliary boiler and emergency diesel generator will not be operated simultaneously with the CGCC units or PC units, except for brief periods of testing, the emissions from these sources have not been considered as a part of the worst-case operating scenario. The auxiliary boiler and emergency diesel generator have been modelled by themselves and their maximum off-site impacts are summarized in Table 5.6.1-22. These sources will be used only during cold start conditions to help limit the emissions from the CGCC units in this mode. Thus, ignoring the emissions from these facilities in the main units' air quality impact analysis does not compromise the conservative, worst-case nature of the analysis.

SIGNIFICANT IMPACT AREA ANALYSIS

Once the worst-case operating scenario was determined, the next step in the analysis was to determine the significant impact area for each pollutant with an associated PSD increment or AAQS. The significant impact area is defined in the EPA Guidance Manual (EPA, 1990b) as the circular area whose radius is equal to the greatest distance from the proposed source to which modelling shows that the proposed source will have a significant impact, based upon EPA defined significance values which are pollutant specific. The significant impact areas are important because they define the distances beyond which the impacts from the proposed source will be insignificant and need not be analyzed in conjunction with existing sources.

The results of the significant impact area analyses are presented in Table 5.6.1-23. For simplicity, all eight CGCC unit stacks and both PC unit stacks were assumed to be collocated for this analysis. The receptor grids used were as described in Section 5.6.1-7. As indicated in Table 5.6.1-23, the only pollutants for which there were predicted significant impacts off of plant property were NO_2, SO_2, and PM. They have significant impact areas of radius 33 km, >50 km, and 12 km, respectively. Because of insignificant off-site impacts, no further analysis was required for any of the other pollutants. Thus, the remainder of this section, with the exception of the air toxics and vegetation/soils analyses, focuses on NO_2, SO_2, and PM.

SUMMARY OF IMPACTS - PROPOSED SOURCE ONLY

In addition to providing the significant impact areas, Table 5.6.1-23 also provides a summary of maximum predicted impacts due to the proposed sources alone. For SO_2 and PM, the predicted highest short-term concentrations are not relevant for comparison with PSD increments and AAQS. A summary of maximum off-site impacts using highest annual and highest, second-highest short-term concentrations for the proposed source alone is presented in Table 5.6.1-24. As indicated, predicted source impacts are small compared to PSD increments and AAQS.

The locations and areas of the maximum predicted plant impacts for SO_2 are depicted in Figures 5.6.1-4, 5.6.1-5, and 5.6.1-6 for the 3-hour, 24-hour, and annual averaging periods, respectively.

CLASS II AREA PSD INCREMENT ANALYSES

Coarse grid analyses were run for Class II PSD increment consumption for NO_2, SO_2, and PM (TSP). The analyses included the worst-case emissions from the proposed FPC sources, described in Section 5.6.1.5, and the existing PSD increment consuming (and increment expanding) sources described in Section 5.6.1.6. The results of these analyses are presented in Table 5.6.1-25.

For short-term concentrations of SO_2 and PM (TSP), the maximum values were investigated in greater detail using more closely spaced receptors (fine grids). The results of the short-term fine grid analyses revealed that the locations of the maximum impacts did not change from those of the coarse grid analyses. As a result, no further fine grid analyses were conducted. As indicated in Table 5.6.1-25, all concentrations are within the allowable increments.

CLASS I AREA PSD INCREMENT ANALYIS

Although the proposed project will be located approximately 118 km from the nearest boundary of the NWA, the impacts of the proposed project were initially modelled with ISCST to determine if the project would have a significant impact on the area. The PSD regulations and guidelines do not contain specific significance values for use in determining whether a detailed analysis of Class I PSD increment consumption is warranted. EPA is only now in the process of developing such values. However, in the interim, EPA has indicated that significance values developed by the Virginia Department of Air Pollution Control represent "a reasonable interpretation of the relevant statutory and regulatory requirements..." and can be used as interim guidance by each state (EPA, 1991). The Virginia values are based taking the ratio of the minimum Class II significance values to the Class II increments and applying that to the Class I increments. Since FDER is still considering its options in this regard, the interim EPA values are being used in this application as a basis for determining the significance of the project's predicted impacts on the Class I area with respect to PSD increment consumption.

A summary of the project's predicted impact on the Class I area receptors (see Table 5.6.1-20) is presented in Table 5.6.1-26. As indicated, the predicted maximum impacts are below the significance values for TSP and no further analysis is warranted for that pollutant. Predicted maximum project impacts are above the significance values for NO_2 and SO_2, and additional analyses were performed for these pollutants.

For NO_2, an analysis was conducted with the ISCST model of Class I area impacts using the NO_2 emission inventory in Table 5.6.1-15 together with the NO_2 emissions from the proposed FPC project. The results indicated that the maximum annual average increment consumption is 0.73 $\mu g/m^3$ at receptor # 1 in 1985. This is well below the allowable Class I NO_2 increment of 2.5 $\mu g/m^3$ and no further analysis is required.

For SO_2, an analysis was conducted with the ISCST model of Class I area impacts using the entire emission inventory contained in Table 5.6.1-16 in addition to the proposed project. The results of that analysis indicated that the maximum annual average increment consumption is 1.24 $\mu g/m^3$ at receptor # 5 in 1986, which is below the allowable increment of 2 $\mu g/m^3$. However, the short-term PSD Class I increments are predicted to be exceeded on several days per year at many of the Class I area receptor points. The impacts of the proposed FPC project were modelled with ISCST to determine if they were above the significance values during the specific periods and at the specific receptors with predicted violations. There were 71 days in the five-year period modelled where this was the case and, thus, a more detailed analysis was performed using a model more appropriate for long-range transport. This analysis and its results are described in Section 5.6.1.10.

AAQS ANALYSIS

The AAQS analysis consisted of modelling the impacts of the proposed source together with background concentrations to determine if the totals will be within the allowable NAAQS and FAAQS. Background concentrations consist of a modelled component (modelled impacts of significant existing sources) and a monitored component (as described in Section 5.6.1.8). The existing sources which were included in the modelling were identified in Tables 5.6.1-17, 5.6.1-18, and 5.6.1-19 for NO_X, SO_2, and PM, respectively. The results of the analysis using a coarse receptor grid are summarized in Table 5.6.1-27.

As was the case with PSD, the locations and magnitudes of maximum predicted short-term concentrations were investigated in greater detail using more closely spaced receptor points (fine grids). The results of the short-term fine grid analyses indicated that the SO_2 values were once again at the same locations as indicated by the coarse grid analyses. For the 24-hour PM_{10} concentration, a fine grid was not run as modelling indicated that the proposed FPC sources had zero contribution to the concentration for the day and receptor shown. As indicated in Table 5.6.1-27, all concentrations are within the allowable standards.

AIR TOXICS ANALYSIS

Ambient concentrations for each of the pollutants identified in Table 5.6.1-4 were estimated using the ISCST dispersion model. Because of the large number of pollutants involved in the analysis separate computer runs for each pollutant were not completed. Instead a more conservative approach to estimating ambient concentrations was taken. This approach consisted of modelling the CC units, PC units and thermal oxidation units separately based on meteorology for the years 1982 through 1986. Highest predicted impacts for the 8-hour, 24-hour and annual averaging periods from each source group were identified. It is important to note that for most cases, the highest predicted impact from the different source groups did not occur at the same receptor, nor on the same day. However using this conservative approach, receptor locations and days were ignored. Maximum predicted pollutant impacts from each source group were scaled based on emission levels and summed. The results of the analysis are presented in Table 5.6.1-28. With the exception of arsenic and total chromium, all predicted impacts are below the FDER's draft No Threat Levels (FDER, 1992).

The maximum predicted 8-hour and 24-hour ambient impacts for arsenic were below the FDER's draft No Threat Levels. The maximum predicted annual ambient impact was 0.00047 $\mu g/m^3$ which is approximately twice that of the FDER's draft No Threat Level of 0.00023 $\mu g/m^3$.

The draft No Threat Level for arsenic was established based on an EPA unit risk value of 0.0043 and a cancer risk of 1 in a million. Unit risk values are expressed in terms of a person's probability of acquiring a cancer related illness if continuously exposed to 1 $\mu g/m^3$ of a pollutant for a period of seventy years. In this case the proposed project is estimated to pose a cancer risk of 0.87 in a million based on the project's economic life of thirty years. This assumes continuous outdoor exposure for 30 years at a point just beyond the site boundary, which is over 2 miles from the nearest residence. The conservative modelling also indicates that the maximum annual arsenic concentration (and correspondingly the risk) drops to about half of FDER's draft No Threat Level at the location of the nearest resident even without taking into account the plant lifetime. More refined modelling would undoubtedly reduce this impact further.

The maximum predicted 8-hour and 24-hour ambient impacts for total chromium were below the FDER's draft No Threat Levels. The maximum predicted annual impact was 0.010 $\mu g/m^3$ which is approximately five times that of the FDER's draft No Threat Level of 0.002 $\mu g/m^3$.

As was the case with arsenic, the annual No Threat Level was based on an EPA unit risk value. However, in this case the unit risk value was established for chromium VI which is a subset of the total chromium emission estimates used for the analysis. Total chromium was used as a conservative approach since the Cool Water Gasification project reported total chromium emissions. A review of EPA emission factors (EPA, 1988) for total chromium (1.88×10^{-3} lb/mmBtu) and chromium VI (4.25×10^{-6} lb/mmBtu) from bituminous coal combustion revealed that chromium VI emissions were approximately 0.23 percent of the total chromium emissions. In this case, speciating the chromium VI emissions produces a predicted annual ambient impact of 0.000023 $\mu g/m^3$ which is approximately 100 times lower than the draft No Threat Level.

Accordingly the air pollutant emissions from the project are not expected to pose any significant health threats.

5.6.1.10 Supplementary PSD Class I Area Analyses

INTRODUCTION

A long-range transport modelling analysis was used as a supplemental air quality evaluation to determine compliance with the PSD Class I increment consumption for sulfur dioxide (SO_2) concentrations at the NWA. This modelling analysis used a long-range transport model, MESOPUFF II, to address impacts from the proposed FPC facility as well as other PSD increment consuming sources. The analysis is based on the Mesopuff II Modelling Protocol submitted to FDER, EPA Region IV, and the National Park Service (NPS) for review in

March 1992 (FPC, 1992b). Based upon comments by the NPS and the U.S. Fish and Wildlife Service (FWS) to FDER in May 1992 (NPS,1992), clarifications were made to the protocol by FPC (FPC, 1992c). The NPS and the FWS provided final approval for the modelling protocol in June, 1992 (FWS, 1992).

As discussed in Sections 5.6.1.9, ambient air quality analyses have been performed to demonstrate the compliance of the proposed project with AAQS and PSD Class I and II increments. The air dispersion model used in these analyses was the ISCST model, which is intended to predict impacts out to 50 km from a source. This model is referenced in Appendix A ("Appendix A" model) of the modelling guidelines (EPA, 1990a), which means that the model may be used without justifying the use of technical methods and procedures provided the recommended regulatory options are selected. Because the proposed FPC facility is more than 100 km from the Class I area, the ISCST model may not be appropriate for addressing impacts at the Class I area. However, the modelling guideline does not specify a preferred model or protocol for long-range transport beyond 50 km.

Based on discussions with and approval of the protocol by FDER, NPS, and the FWS, the reviewing agencies recommended the use of a long-range transport model, such as the MESOPUFF II model, to address impacts for this application. Although the MESOPUFF II model is not an "Appendix A" model, it is referenced in Appendix B ("Appendix B" model) of the modelling guidelines and can be used on a case-by-case basis provided it can perform critical calculations or routines that are not available from an "Appendix A" model. In this case, the ISCST model, an "Appendix A" model, does not have the necessary dispersion and transport routines to adequately address long-range transport of plumes from emission sources. Since the proposed facility is more than 50 km from the critical receptors, the MESOPUFF II model is an appropriate method for addressing impacts at the NWA.

The modelling methods and assumptions used in the MESOPUFF II model, which conform with those presented in the modelling protocol for this project, and the model results are presented in the following sections.

GENERAL DESCRIPTION OF MESOPUFF II MODEL

MESOPUFF II is a long-range transport model that is currently recommended by EPA for determining source impacts at distances greater than 100 km. Based on discussions with FDER, EPA and NPS, this model can be used for the PSD Class I increment consumption analysis in support of air permit applications for emission sources located more than 50 km from a Class I area. The MESOPUFF II model has two preprocessor programs, READ56 and MESOPAC II, and one postprocessor program, MESOFILE II. The READ56 program is a preprocessor program to MESOPAC II, which is designed to read upper air (i.e., sounding) data obtained from the National Climatic Data Center (NCDC) in Asheville, North Carolina, and to reformat the data for use in the MESOPAC II program. The READ56 program also identifies missing data records. Missing data identified by READ56 must be filled in manually before input to the MESOPAC II program.

The MESOPAC II program is the meteorological preprocessor program for MESOPUFF II. The MESOPAC II program reads the upper air data file output from the READ56 program, as well as hourly surface meteorological data and hourly precipitation data collected at stations within the modelling area. Other data required for the MESOPUFF II model include land use and surface roughness lengths for each receptor grid point to be modelled.

The MESOPUFF II model provides concentration results for user-specified averaging times. The results can be processed by the MESOFILE II program to obtain additional statistical information about the concentrations produced from MESOPUFF II (e.g., annual average values). Postprocessor programs are used to produce highest, second-highest short-term concentrations from MESOPUFF II model's output. The annual average and highest, second-highest concentrations for the 3-hour and 24-hour averaging periods can be compared directly to allowable PSD Class I increments.

METEOROLOGICAL DATA

The general grid in which the meteorological data were prepared and processed consisted of a model domain that covered an area of 78,400 km^2, extending a total of 280 km in the east-west and north-south directions. There are a total of 196 cells within the grid, with each cell covering a 400-km^2 area or 20 km in the east-west and north-south directions. The southwest corner of the model domain is located at UTM coordinates of 250 km, East, and 3,000 km, North in UTM Zone 17. The Class I area and emission sources are located within the grid and generally are 100 km or more from the grid's edges.

The upper air data used in the analysis were read by the READ56 program to identify missing soundings and missing data for specific levels within a sounding. The program was modified to account for the data format changes that have occurred since the program originally was developed. The options selected for this program are presented in Table 5.6.1-29.

Meteorological data for the 5-year period of 1982 to 1986 from the NWS stations located within or near the grid were used in the analysis. This time period corresponds to the same period which was used for the ISCST modelling analysis (see Section 5.6.1.4).

Upper air rawinsonde data from the following upper air NWS stations were used:

1. Ruskin, Florida (located within the grid);
2. West Palm Beach, Florida (located to the southeast of the grid); and
3. Waycross, Georgia (located to the north of the grid).

These stations were selected because they are the nearest upper air stations to the study area. The data were reduced into 1-year records suitable for input to the READ56 program. Each station-year was run with the READ56 model to determine any missing data. The missing data were filled in by assuming data persistence from the previous valid observation (e.g., if data for the 12Z sounding were missing, the 00Z sounding from the previous day was used) or data from a lower level. Because the program expects data from the mandatory levels of 850, 700, and 500 millibars (mb), data were inserted at these levels by persisting wind data from a lower level or temperature data for the same level from the previous sounding.

The MESOPAC II program was run to process the surface and upper air meteorological data for a format acceptable to the MESOPUFF II model. The options selected for this program are presented in Table 5.6.1-30. The program was modified to account for the data format changes that have occurred since the program originally was developed. The surface meteorological data were obtained for the 5-year period of 1982 to 1986, when available, from the following NWS stations, all located within the grid:

1. Tampa (located in the southwestern quadrant);

2. Orlando (located near the center of the grid); and

3. Gainesville (located in the northern portion of the grid) for 1984 to 1986, and Jacksonville (located to the northeast of the grid) for 1982 and 1983, because digitized data were not available from Gainesville for 1982 or 1983.

Hourly precipitation data were also obtained for each surface meteorological station. However, the wet deposition option which uses the precipitation data was not considered in the initial model runs. Land use data were developed for this grid from existing data developed by Argonne National Laboratory (Sheih, et al., 1979). Since the model allows only a single land use type to be specified for each grid square, the land use category covering the greatest fraction of the total area within each grid square was selected.

MESOPUFF II MODELLING APPROACH

The MESOPUFF II model was used to predict ambient concentrations at the same PSD Class I receptor locations in the NWA described in Section 5.6.1.7. The model was run for selected periods identified by the ISCST model as having potential impacts greater than the allowable PSD Class I increment and for which the proposed project impacts were significant (see Section 5.6.1.9). The options selected for the MESOPUFF II model are presented in Table 5.6.1-31. Based on recommendations by the NPS and EPA, the distance to which the Turner dispersion parameters apply was set to 50 km (the model default distance is 100 km). After that distance, the dispersion parameters are based on time-dependent equations.

Emission and stack parameters for all SO_2 PSD increment consuming sources were processed into the MESOPUFF II model input format. This inventory consisted of the most current inventory available (see Section 5.6.1.6) with concurrence from FDER for the NWA airshed plus the proposed FPC source. Concentrations were predicted at 13 discrete receptors along the boundary of the PSD Class I area which have been approved for use by FDER. Predicted highest and highest, second-highest SO_2 concentrations for each year were determined from a postprocessor program.

As indicated in Section 5.6.1.9, for PSD Class I increment consumption purposes, an emission source is deemed not to have a significant impact in the Class I area if the predicted impacts are less than the interim EPA significance levels for Class I areas. These interim levels for SO_2

concentrations are 1.23, 0.275, and 0.1 ug/m^3 for the 3-hour, 24-hour, and annual averaging periods, respectively. If a source's impacts are predicted to be less than the Class I significance levels, then a source's emissions are assumed to not cause or contribute to a predicted exceedance and the source can be permitted regardless of the impacts from other sources.

The modelling approach consisted of the following parts, steps, and cases:

1. Concentrations were calculated at the Class I area using the ISCST model for the 5-year period of meteorological data collected at the NWS station in Tampa (see Section 5.6.1.9).

2. Based on the results of the ISCST model, concentrations that were predicted to be greater than the PSD Class I increment were identified at specific receptors and during specific time periods. The sources that contributed to these predicted exceedances were identified and grouped into two categories based on the distance from the applicable receptor. The first category included those sources at or within 50 km of the Class I area while the second category included those sources greater than 50 km from the Class I area. The proposed source's contribution was also identified and compared to EPA's significance levels. If the proposed source's impacts were predicted to be less than significant, no additional modelling was necessary. If the proposed source's predicted impacts were significant, additional modelling was performed with the MESOPUFF II model.

3. The MESOPUFF II model calculations were performed in this part of the analysis without using chemical transformation processes, or wet or dry deposition. This is referred to as the **inert mode** of model operation.

   Step 1 of the MESOPUFF II modelling involved predicting concentrations for the FPC source for those periods identified in Part 2. Concentrations were calculated with the MESOPUFF II model for the specific periods identified in Part 2 and at least 3 days before and 2 days after those periods. Concentrations were not evaluated for averaging times or receptors during which predicted impacts by the ISCST model were less than the allowable increments. For example, if the ISCST model predicted impacts greater than the allowable Class I increment for a specific receptor location and 24-hour averaging period in 1986, the MESOPUFF II model results were evaluated for that receptor location and 24-hour averaging period.

   These predicted concentrations for the proposed source were substituted for the ISCST model results and added to the predicted impacts produced for all other sources with the ISCST model. If the proposed source's impacts using MESOPUFF II model were less than the significant impact levels or the total predicted concentrations were less than the Class I increment, no additional modelling was required.

If exceedances were predicted after Step 1, **Step 2** of the MESOPUFF II modelling was performed, which involved using the results from Step 1 and performing additional modelling with the MESOPUFF II model for those sources located more than 50 km from the Class I area. These predicted concentrations were substituted for the ISCST model results for those sources. These MESOPUFF II model concentrations were added to those produced with the ISCST model for sources located at or within 50 km of the Class I area and MESOPUFF II model results from the proposed source to determine the total PSD Class I increment consumption. If the total predicted concentrations were less than the Class I increment, no additional modelling was required.

4. Additional model runs were performed for selected periods during which potential impacts were still above the Class I increments after Step 2. These model runs incorporated the use of chemical transformation processes, wet and dry deposition, and vertical concentration distributions. This is referred to as the **enhanced mode** of model operation.

The following four cases were considered in the modelling which incorporated additional model features with each subsequent modelling analysis:

> Case 1 - chemical transformation, dry deposition, and Gaussian vertical concentration distribution; ok
>
> Case 2 - included model features in Case 1 plus wet deposition; ok
>
> Case 3 - included model features in Case 2 plus the feature allowing for 3 vertical layers used for deposition; and not ok
>
> Case 4 - included model features in Case 3 plus the feature allowing for uniform vertical concentration distribution instead of Gaussian. not ok

Similar to Steps 1 and 2 presented in Part 3, the analysis in this part also involved two steps. **Step 3** of the MESOPUFF II modelling involved predicting concentrations for the FPC source using the features identified in Cases 1 through 4 for those periods for which a predicted impact above the allowable Class I increment remained after Step 2. After application of the MESOPUFF II model, if the proposed source's impacts were less than the significant impact levels or the revised total predicted concentrations were less than the Class I increment, no additional modelling was required.

Step 4 of the MESOPUFF II modelling involved using the results from Step 3 and performing additional modelling with the MESOPUFF II model using features in Cases 1 through 4 for those sources located more than 50 km from the Class I area. These predicted concentrations were substituted for the MESOPUFF II model results presented in Step 2.

MESOPUFF II MODEL RESULTS - INERT MODE

Summaries of the potential impacts greater than the allowable PSD Class I increments for SO_2 concentrations predicted using the ISCST model for 1982 through 1986 and for which the proposed source's impacts were greater than the significant impact levels are presented in Tables 5.6.1-32 through 5.6.1-36. These summaries also contain the predicted concentrations from Steps 1 and 2 of the MESOPUFF II modelling in the inert mode. As indicated, most of the predicted impacts greater than allowable increments using the ISCST model occurred for the 24-hour averaging period when the proposed source had a predicted significant impact; there was only one predicted impact greater than the allowable 3-hour average increment when the proposed source had a significant impact.

Step 1 of the MESOPUFF II modelling predicted many of the total PSD concentrations to be less than the Class I increment or the proposed source's impacts to be less than significant. Step 2 of the MESOPUFF II modelling predicted a total of 25 potential incidents at various receptors when the impacts were greater the allowable 24-hour PSD Class I increment and the proposed source had a significant impact. None of these impacts occurred during 1982 and, as such, no further steps were taken for this year. These predicted impacts occurred for seven 24-hour periods over the 5 years of meteorological data used in the modelling. The highest 24-hour average concentration was predicted to be 7.64 ug/m^3 of which nearly 40 percent was due to predicted impacts using the ISCST model from sources within 50 km of the Class I area. In many instances, sources within 50 km of the Class I area were predicted to consume 1 to 2 ug/m^3 of the 24-hour average PSD Class I increment of 5 ug/m^3.

MESOPUFF II MODEL RESULTS - ENHANCED MODE

Summaries of the maximum SO_2 concentrations predicted using Steps 3 and 4 of the MESOPUFF II modelling approach for 1983 through 1986 are presented in Tables 5.6.1-37 through 5.6.1-43. These analyses included model features that incorporated chemical transformation processes, wet and dry deposition, and Gaussian or uniform vertical concentration distribution. These features are identified as Cases 1 through 4 and are applied to assess their effects on predicted concentrations. As shown in these tables, after Step 4, Case 3 of the MESOPUFF II modelling was performed, a total of 8 potential impacts greater than the 24-hour PSD Class I increment were predicted during which the proposed source had a significant impact. These predicted impacts occurred during three 24-hour periods (i.e., two in 1983 and one in 1985). The highest 24-hour average concentration was predicted to be 7.16 ug/m^3 of which nearly 40 percent was due to predicted impacts using the ISCST model from sources within 50 km of the Class I area. The uniform vertical concentration distribution model feature (Case 4, Tables 5.6.1-38 and 5.6.1-41) predicts that the maximum concentrations are less than the 24-hour average PSD Class I increment of 5 ug/m^3 for all of those periods.

These results demonstrate that, based on modelling methods approved by FDER, EPA, and NPS, it can be shown that the proposed project does not cause or contribute to a violation of the Class I PSD increment. Therefore, the project can be permitted as proposed in this ultimate site capacity analysis.

5.6.1.11 Additional Impacts Analysis

The SCA guidelines indicate that, in addition to demonstrating that the proposed source will neither cause nor contribute to violations of the applicable PSD increments and AAQS, an additional impacts analysis must be conducted for those pollutants subject to PSD review. As indicated in Table 5.6.1-2, those pollutants include CO, NO_X, SO_2, PM, VOC (O_3), Pb, Be, Hg, sulfuric acid mist, inorganic arsenic and radiouclides. The additional impacts analysis presented in this section includes an analysis of air quality impacts due to growth induced by the project, an analysis of air quality impacts on soils and vegetation, and an analysis of project impacts on visibility.

The focus of the visibility, vegetation, and soils portions of the additional impacts analysis section is typically on any nearby Class I area. As has been demonstrated in Sections 5.6.1.9 and 5.6.1.10 of this application, the proposed project will neither cause nor contribute to violations of the Class I PSD increments (nor the AAQS) at the NWA, located from 118 to 135 km from the proposed source. In spite of this distance, FPC has agreed to provide an impact on air quality-related values (AQRV) analysis as a part of the application. The FWS has identified some vegetation, wildlife, and visibility considerations for the NWA (FWS, 1992). Therefore, the additional impacts analysis section has been broadened to cover these AQRV issues as well as the traditional issues. Furthermore, consideration is given to a wide range of pollutants that will be emitted by the project in small quantities rather than restricting the analyses to those pollutants subject to PSD review.

IMPACTS DUE TO GROWTH

The growth analysis considers air quality impacts due to emissions resulting from the industrial, commercial, and residential growth associated with the project. Only impacts related to permanent growth are considered; emissions from temporary sources and mobile sources are not addressed in the growth analysis. The analysis of socioeconomic effects, presented in Chapter 7.0, serves as the basis for this growth analysis.

Up to 1,200 people will be employed at the Polk County Site during one year of construction. Approximately 510 permanent jobs will be created at buildout for a CGCC facility. Assuming that 55 to 60 percent of these employees are new to the area, and that each employee represents an average household, 291 new households would be formed. This would result in an additional 736 people, which is less than 1 percent of the population increase expected in Polk County between 1990 and 2020.

A considerable amount of residential and commercial development will be associated with this population influx (construction of new homes and rental property; establishment of new businesses to provide goods and services). However, the permanent, nonmobile source emissions and impacts of this development will likely be small and have impacts on different areas than those affected by emissions of the new facilities at the Polk County Site.

Development of industries supporting the new facilities are expected to be negligible. Raw materials consumed by the facility (fuels, supplies, etc.) will be delivered to the site in usable form from outside of the region. Further processing, such as water treatment, will be accomplished entirely on-site.

Electricity sales, on the other hand, will be spread out over a large region as part of FPC's generating capacity that will serve to meet increasing residential, commercial, and industrial demand throughout its system, which covers a large portion of the state of Florida.

In summary, there will be residential growth associated with the FPC project, but there is little potential for new industrial development nearby as a result of the new facility. Although it is not possible to reliably quantify the emissions and impacts resulting from the new development, they are expected to be small and well-distributed throughout the area. Any large industries proposed will be subject to the most stringent requirements associated with locating a PSD facility near another existing PSD source.

IMPACTS ON VEGETATION

Except for visibility, AQRVs have not been specifically defined by the FWS for the NWA. However, soil, flora, fauna, cultural resources, geological features, water, and climate often have been identified by land managers as AQRVs to be addressed in these types of analyses. Since specific AQRVs have not been identified for the NWA, this AQRV analysis evaluates the effects of air quality on general vegetation types found in the NWA.

Vegetation type AQRVs and their representative species types have been defined as:

- Marshlands - black needlerush, saw grass, salt grass, and salt marsh cordgrass
- Marsh Islands - cabbage palm and eastern red cedar
- Estuarine Habitat - black needlerush, salt marsh cordgrass, wax myrtle
- Hardwood Swamp - red maple, red bay, sweet bay and cabbage palm
- Upland Forests - live oak, scrub oak, longleaf pine, slash pine, wax myrtle and saw palmetto
- Mangrove Swamp - red, white and black mangrove

A screening approach was used which compared the maximum predicted ambient concentrations of air pollutants in the NWA with effect threshold limits for both vegetation and wildlife as reported in the scientific literature. A literature search was conducted which specifically addressed the effects of air contaminants on plant species reported to occur in the NWA. While the literature search focused on such species as cabbage palm, eastern red cedar, lichens and species of the hardwood swamplands and mangrove forest, no specific citations that addressed these species were found. It was recognized that effect threshold information is not available for all species found in the NWA, although studies have been performed on a few of the common species and on other similar species which can be used as models. In conducting the assessment, both direct (fumigation) and indirect (soil accumulation/uptake) exposures were considered for flora, and direct exposure (inhalation) was considered for wildlife. Maximum (worst-case) concentrations and depositions were predicted using the ISCST model (and without using the refined MESOPUFF results) and 5 years of meteorological data as described in Sections 5.6.1.3 and 5.6.1.4.

Predicted project impacts for the various averaging times and estimated annual average background concentrations at the NWA are presented in Table 5.6.1-44. Predicted impacts and background concentrations for the site vicinity are presented in Table 5.6.1-45, since air quality impacts on vegetation in the site vicinity are also addressed.

Since background air quality monitoring data are not available for the NWR, background values for the criteria pollutants were estimated (Table 5.6.1-44) based on data from regional air quality monitoring locations (a conservative approach since the monitors are either near point sources or in more urban areas). The SO_2 and TSP data were averages from two Crystal River Power Plant monitors (FPC, 1992a). The O_3 data are from Gainesville for 1987 and 1988 (ESE, 1988, 1989). The NO_2 data are an average from Gainesville (ESE, 1987, 1988). Values for CO (annual) were estimated based on short-term monitoring data for the Tampa area (FDER, 1991) and the lead values were from Tampa (FDER, 1991). Background data for the site vicinity (Table 5.6.1-45) were from the more appropriate of these sources or the on-site monitoring data.

The effects of air contaminants on vegetation occur primarily from sulfur dioxide, nitrogen dioxide, ozone, fluoride, and particulates. Effects from minor air contaminants such as chlorine, hydrogen chloride, ethylene, ammonia, hydrogen sulfide, carbon monoxide, and pesticides have been reported in the literature. However, most of these air contaminants have not resulted in major effects (i.e., crop damage). Some air contaminants, such as ethylene, are widely distributed but, due to low concentrations, do not result in injury to plants. Others such as CO do not cause damage at concentrations normally found under ambient concentrations.

The effects of contaminants are dependent both on the concentration of the contaminant and the duration of the exposure. The term "injury," as opposed to damage, is commonly used to describe all plant responses to air contaminants and will be used in the context of this analysis. Air contaminants are thought to interact primarily with plant foliage which is considered to be the major pathway of exposure. For purposes of this analysis, it was assumed that 100 percent of each air contaminant of concern is accessible to the plants.

Injury to vegetation from exposure to various levels of air contaminants can be termed acute, physiological or chronic. Acute injury occurs as a result of a short-term exposure to a high contaminant concentration and is typically manifested by visible injury symptoms ranging from chlorosis (discoloration) to necrosis (dead areas). Physiological or latent injury occurs as the result of a long-term exposure to contaminant concentrations below that which results in acute injury symptoms, while chronic injury results from repeated exposure to low concentrations over extended periods of time, often without any visible symptoms, but with some effect on the overall growth and productivity of the plant.

NITROGEN DIOXIDE. Acute nitrogen dioxide (NO_2) injury symptoms are manifest as water-soaked lesions, which first appear on the upper surface, followed by rapid tissue collapse. Low-concentration, long-term exposures as frequently encountered in polluted atmospheres often do not induce the lesions associated with acute exposures but may still result in some growth suppression.

The maximum ground-level NO_2 concentration (annual average) predicted to occur in the NWA during the operation of the proposed project is 10.18 $\mu g/m^3$ (10 $\mu g/m^3$ estimated background plus 0.18 $\mu g/m^3$ project impact). This maximum concentration is $2.2x10^{-2}$ the estimated threshold values (Tables 5.6.1-46 and 5.6.1-47), assuming a value of 470 $\mu g/m^3$ as the threshold value for an annual average. The 1-hour, 3-hour, 8-hour, and 24-hour predicted NO_2 project impacts at the point of maximum impact in the NWA are 33.4, 16.2, 7.5 and 2.9 $\mu g/m^3$, respectively. Even when combined with annual average background concentration of 10 $\mu g/m^3$, these values are approximately $9.2x10^{-4}$ to $4.7x10^{-5}$ of the levels reported in the literature (Table 5.6.1-47) as resulting in minimal effects on relatively sensitive species.

The maximum ground-level NO_2 concentration (annual average) predicted to occur in the vicinity of the proposed project is 29.6 $\mu g/m^3$ (25 $\mu g/m^3$ estimated background plus 4.6 $\mu g/m^3$ project impact). This maximum concentration is $6.3x10^{-2}$ the estimated threshold values (Tables 5.6.1-46 and 5.6.1-47), assuming a value of 470 $\mu g/m^3$ as the threshold value for an annual average. The maximum 1-hour and 8-hour predicted NO_2 project impacts are 1,517 and 315 $\mu g/m^3$, respectively. Together with the estimated background of 25 $\mu g/m^3$ the totals are $3.3X10^{-3}$ and $9.0X10^{-4}$ of the levels reported in the literature (Table 5.6.1-47) as resulting in minimal effects.

SULFUR DIOXIDE. The predicted maximum ground level 1-hour, 3-hour, 8-hour, 24-hour and annual mean concentrations in the NWA resulting from operation of the proposed project, are

29.5, 12.7, 6.0, 2.4, and 0.22 $\mu g/m^3$, respectively (Table 5.6.1-44). Combining the predicted maximum ground-level concentration with an annual SO_2 value of 3 $\mu g/m^3$ results in total concentrations that are $2.5x10^{-2}$, $3.9x10^{-2}$, and $6.9x10^{-2}$ of the lowest 1-hour, 3-hour, and 8-hour injury threshold concentrations (1,300, 400, and 131 $\mu g/m^3$) for sensitive vegetation as reported in the literature (Table 5.6.1-48). The annual average of 3.22 $\mu g/m^3$ (3 $\mu g/m^3$ estimated background plus 0.22 $\mu g/m^3$ project impact) is $2.7x10^{-2}$ of the value (118 $\mu g/m^3$) reported as resulting in no foliar injury on maples during a growing season (Table 5.6.1-49). The 1-hour and 3-hour predicted concentrations in the NWA (32.5 and 15.7 $\mu g/m^3$) are $1.2x10^{-2}$ and $9.9x10^{-3}$ of the 1-hour and 3-hour SO_2 concentrations used to identify southern pines as sensitive to SO_2. Under these predicted ambient concentrations, no injury symptoms could be expected in the areas of maximum concentration in the NWA. The potential for physiological or chronic injury occurring cannot be predicted with certainty. The predicted maximum annual increment from operation of the proposed project is 0.22 $\mu g/m^3$. Most evidence in the literature suggests that levels around 118 $\mu g/m^3$ may be responsible for physiological or chronic injury. Since there is a 114.8 $\mu g/m^3$ difference between the predicted ambient concentration (3.22 $\mu g/m^3$) and the reported threshold concentration, the probability of physiological or chronic injury is low.

The predicted maximum ground-level 1-hour, 3-hour, 8-hour, 24-hour and annual mean concentrations in the vicinity of the proposed project resulting from operation of the proposed project, are 1,044, 263, 219, 65.5 and 4.8 $\mu g/m^3$, respectively (Table 5.6.1-45). Combining the predicted maximum ground level concentration with an annual SO_2 value of 5 $\mu g/m^3$ results in total concentrations that are $8.1x10^{-1}$, $6.7x10^{-1}$, and 1.7 of the lowest 1-hour, 3-hour, and 8-hour injury threshold concentrations (1,300, 400, and 131 $\mu g/m^3$) for sensitive vegetation as reported in the literature (Table 5.6.1-48). While the maximum 8-hour average is above the lowest end of the range for sensitive vegetation, it is less than half the threshold values reported by Jacobsen (1977) and Linzon (1973) for this averaging period and only $1.7x10^{-1}$ of the higher end of the range of threshold values reported in EPA (1973). The annual average of 9.8 $\mu g/m^3$ (5 $\mu g/m^3$ estimated background plus 4.8 $\mu g/m^3$ project impact) is $8.3x10^{-2}$ of the value (118 $\mu g/m^3$) reported as resulting in no foliar injury on maples during a growing season (Table 5.6.1-49). The 1-hour and 3-hour predicted concentrations in the vicinity of the proposed project (1,049 and 268 $\mu g/m^3$) are $4.0x10^{-1}$ and $1.7x10^{-1}$ of the 1-hour and 3-hour SO_2 concentrations used to identify southern pines as sensitive to SO_2. Under these predicted ambient concentrations, injury symptoms are unlikely in the areas of maximum concentration in the vicinity of the proposed project.

The potential for physiological or chronic injury occurring cannot be predicted with certainty. The predicted maximum annual increment from operation of the proposed project is 4.8 $\mu g/m^3$. Most evidence in the literature suggests that levels around 118 $\mu g/m^3$ may be responsible for physiological or chronic injury. Since there is a 108 $\mu g/m^3$ difference between the predicted ambient concentration (9.8 $\mu g/m^3$) and the reported threshold concentration, the probability of physiological or chronic injury is low.

Sulfur can also be added to soil through washout of atmospheric SO_2 by precipitation. In a study in Minnesota, annual sulfur additions from atmospheric SO_2 washout were found to range from 100 lbs/acre in urban areas to 5 lbs/acre in rural areas. In southern states, the annual average is about 5 lbs/acre (Kamprath, 1972). In some cases, the amount of sulfur deposition is sufficient to meet crop requirements, although in rural areas, the amount of sulfur deposition is sufficient to meet only about 20 to 30 percent of crop needs.

OZONE. Ozone (O_3) will not be a direct by-product from the combustion of fuel at the proposed project, but instead results from a complex photochemical reaction involving nitrogen oxides and hydrocarbons. Ozone formation is not well understood, although it is generally believed that it is a phenomenon occurring at long downwind distances from, but not in the immediate vicinity of a source, such as the proposed project. This is attributed to the kinetics and time-dependent nature of the necessary photochemical reaction.

It is difficult to predict what effect the proposed project emissions will have on ambient ozone concentrations at local or regional scales. It is anticipated that any potential increase in ozone concentration would be more detectable on a regional scale as opposed to a local one. The estimated annual average background ozone concentration in the area is 55 $\mu g/m^3$ based on monitoring by FDER and the Florida Acid Deposition Study (ESE, 1988, 1989). This value is below the range of threshold concentrations reported to be injurious to vegetation sensitive to O_3 (Tables 5.6.1-50 and 5.6.1-51).

Since it is not possible to model how the emissions from the proposed project will affect the ambient O_3 concentration in the NWA or in the vicinity of the proposed project, it was assumed for purposes of this analysis that the levels potentially occurring in the NWA and in the vicinity of the proposed project would be equal to the ambient concentrations monitored at Gainesville, FL (ESE, 1988-89). This approach is based on the assumption that the levels monitored at Gainesville are representative of O_3 concentrations in rural locations as influenced by emissions from urban areas, and that this would be similar to the potential influence from the proposed project and all other sources. The average O_3 concentration monitored at Gainesville is 55 $\mu g/m^3$ (28 ppb) for an annual average, and the second highest 1-hour concentration was 176 $\mu g/m^3$ (90 ppb). These values fall within the levels that would allow permitting in the absence of evidence of actual or predicted effects to the resource. Currently, there are no studies indicating actual harm to the resources of the NWA or vegetation in the vicinity of the of the proposed project (Shaw, 1992). Given the location and distance of the proposed project and its relatively small contribution of O_3 precursors to regional totals, it can reasonably be predicted that the addition of the proposed project would not cause any harm to the resources in the NWA or vegetation in the vicinity of the proposed project.

PARTICULATES. The maximum predicted concentration of particulates (in the form of TSP) at the NWA from the proposed project is 0.03 $\mu g/m^3$ for annual average. The existing background concentration in the vicinity of the proposed project based on data from the FPC Crystal River monitoring program, is 29 $\mu g/m^3$ for an annual average. Combined with existing background, the predicted maximum concentrations will be 29.03 $\mu g/m^3$ on an annual basis. By comparing predicted concentrations with the few injury threshold values reported in the literature (Darley, 1966; Krause and Kaiser, 1977), no potential effects on vegetation are predicted, because this concentration is below the values reported to adversely affect plants.

In the vicinity of the proposed project, the predicted maximum annual contribution from the stacks of the proposed project is 0.91 $\mu g/m^3$. Combined with the existing background of 12, the predicted maximum concentration will be 12.91 $\mu g/m^3$, which is below the values reported to adversely affect plants.

CARBON MONOXIDE. Concentrations of carbon monoxide even in polluted atmospheres are not detrimental to vegetation (EPA, 1976). Carbon monoxide has not been found to produce detrimental effects on plants at concentrations below 100 ppm (114,500 $\mu g/m^3$) for exposures from one to three weeks (EPA, 1976). Existing background concentrations (1,700 $\mu g/m^3$) plus contribution of the proposed project to CO concentrations in the NWA (0.1 $\mu g/m^3$) or an annual average would be 1.5×10^{-2} of values reported to cause detrimental effects.

In the vicinity of the proposed project, the annual CO concentration is predicted to be 3.4 $\mu g/m^3$ which combined with an estimated background of 1,700 would be 1.48×10^{-2} of the values reported to cause detrimental effects.

FLUORIDE. The toxicity of atmospheric fluorides depends on how readily it is absorbed into the plant tissue. Gaseous forms such as hydrogen fluoride are thought to be primarily responsible for fluoride injury to vegetation (Treshow and Pack, 1970). Fluoride injury results from the gradual accumulation of fluoride in the plant tissue over time. Accordingly, the duration of exposure as well as the atmospheric concentrations are important in determining the severity of injury. Different plant species, varieties or clones of a single variety or plants from different seed lots differ in sensitivity to fluoride. Extremely sensitive plants (Chinese apricot and certain varieties of gladiolus) may be marked by exposure to hydrogen fluoride (HF) concentrations below 0.1 ppb. Most species will show no effects from concentrations several times higher than 0.1 ppb (Treshow and Pack, 1970).

MacLean et al. (1968) exposed six citrus varieties and six ornamental species of economic importance to central Florida to high-concentration-short-duration exposures of gaseous HF. Hamlin and Valencia oranges were fumigated with 18 exposures of HF ranging from 0.5 ppm for one hour to 10 ppm for four hours. The lowest exposure was not injurious to Valencia, but tip and marginal necrosis was observed in 20 percent of the young leaves of Hamlin oranges. The most acute exposure resulted in injury on all species tested.

Pack (1972) fumigated strawberry plants in growth chambers to HF at concentrations averaging 0.55, 2.0, 5.0, and 10.4 $\mu g/m^3$ throughout flowering and fruiting. At 2.0 $\mu g/m^3$ and higher, the average fruit weights were reduced. At 5.0 and 10.4 $\mu g/m^3$, the proportion of flowers that turned into fruit was smaller. No foliar injury symptoms were observed at 0.5$\mu g/m^3$ and only mild symptoms at 2.0 $\mu g/m^3$. Brewer (1960) reports that citrus foliage was injured when fluorine was in excess of 50 ppm in leaves. Matsushima and Brewer (1972) did not find any injury symptoms even though 144 fluoride ppm was found in leaves of Koethan oranges. Concentrations of 1 or 2 ppb in the air are thought to result in accumulations of several hundred ppm in leaf tissue.

Taylor (undated) reports that HF has been identified as an important air pollutant in the citrus region of central Florida where it is a by-product of the phosphate industries. Leonard and Graves (1970) report that phosphate manufacturing plants in Polk, Hillsborough and Manatee Counties scrub waste gases to remove fluorine, but fluoride releases from surfaces of waste ponds are not controlled and add to problems observed in citrus groves near the ponds. Treshow, et al. (1970) have found that commercial species of citrus are generally classified as intermediate in sensitivity to fluoride injury. Taylor (undated) suggests that long-term exposure (growing season) to 0.5 to 1 ppm (409 to 818 $\mu g/m^3$) HF may result in yield reduction due to excessive accumulations in the leaf.

The maximum ground-level fluoride concentration predicted to occur in the NWA on an annual basis is 0.000029 $\mu g/m^3$. Assuming all fluoride emissions are transformed into HF, this value is 1.6×10^{-5} of the lowest level reported to cause injury to vegetation (2 $\mu g/m^3$). The maximum predicted ground-level fluoride concentration (annual average) for the vicinity of the proposed project is 0.00075 $\mu g/m^3$. This value, again assuming all fluorides are transformed to HF, is 1.9×10^{-6} of the lowest value reported to cause phytotoxicity in citrus (409 $\mu g/m^3$). Thus, no injury to vegetation would be expected from fluoride emissions.

SYNERGISTIC RESPONSES

SO_2 - NO_2 Synergism. It has been demonstrated in the literature (Tingey et al., 1971) that NO_2 in combination with certain concentrations of SO_2 can result in synergistic plant responses (i.e., leaf injury is observed at concentrations below the injury thresholds for each of these air contaminants in isolation). Maximum annual SO_2 and NO_2 concentrations are predicted to be 3.22 and 10.18 $\mu g/m^3$, respectively in the NWA. Maximum annual SO_2 and NO_2 concentrations in the vicinity of the proposed project are predicted to be 9.8 and 29.6 $\mu g/m^3$, respectively. Considered in isolation, the maximum predicted annual concentrations for both SO_2 and NO_2 are well below the threshold level for sensitive vegetation. Maximum short-term concentrations are in the range of concentrations where SO_2-NO_2 synergistic effects have been reported to occur for certain species, none of which occur on or adjacent to the NWA (Table 5.6.1-52).

There is not significant evidence in the literature to either support or negate the possibility that synergistic effects may occur within the NWA as a result of the predicted annual ambient concentrations of SO_2 and NO_2. However, the predicted SO_2 and NO_2 concentrations (annual average) for both the NWA and the vicinity of the proposed project appear to be much less than that resulting in a synergistic response over longer exposure periods. Tingey et al. (1971) report that the concentrations of SO_2 and NO_2 found to cause injury in their studies were similar to those found in urban areas and may result in reduced yields of crops grown under field conditions. However, it should be noted that synergistic effects from SO_2-NO_2 have rarely been observed in the field. In addition, data on the effects on vegetation due to mixtures of SO_2 and NO_2 are limited and the general consensus of most investigators is that more research is required before SO_2-NO_2 synergism is completely understood and potential effects predicted for field situations with any degree of certainty.

SO_2 - O_3 Synergism. Tingey et al. (1973a and 1973b) have observed that mixtures of SO_2 and O_3 at concentrations typically found in urban areas have resulted in synergistic or additive plant responses (i.e., plant leaf injury is observed at concentrations below the injury threshold levels for each of these air contaminants in isolation). There are no generalized injury threshold concentrations of SO_2-O_3 (in mixture) listed in the literature that would apply specifically to those species characteristic of the NWA. However, Jensen and Dochinger (1989) have exposed red maple to low concentrations of both SO_2 and O_3 and determined that red maple is sensitive and exhibits some growth reduction (Table 5.6.1-53) when exposed to these levels.

The maximum annual SO_2 concentration is predicted to be 3.22 $\mu g/m^3$ at the NWA and 9.8 $\mu g/m^3$ in the vicinity of the proposed project (background plus proposed project contribution). The annual O_3 concentration was assumed to be 55 $\mu g/m^3$ (based on monitoring by FDER and the Florida Acid Deposition Study (ESE, 1988, 1989). Since it is not possible to model how the emissions from the proposed project will affect the ambient O_3 concentration in either the NWA or the vicinity of the proposed project, it was assumed for purposes of this analysis that the levels potentially occurring in the NWA and the vicinity of the proposed project would be equal to the ambient concentrations monitored at Gainesville, Florida (ESE, 1988, 1989).

As a result of this inability to predict ambient O_3 concentrations, it is difficult to predict with certainty that synergistic effects may or may not occur on all species in the NWA as a result of the proposed project. However, the SO_2 and O_3 concentrations (3.22 and 55 $\mu g/m^3$, respectively) in the NWA and (9.6 and 55 $\mu g/m^3$, respectively) in the vicinity of the proposed project, are below the concentrations reported as causing growth reductions in red maple (52 and 137 $\mu g/m^3$), a species found within the NWA. In addition, the anticipated SO_2 and O_3 values in the NWA are a only small percentage of the SO_2-O_3 synergism values reported in the literature (Table 5.6.1-53).

SULFUR AND NITROGEN DEPOSITION. Due to the growing awareness of decline in the health and vigor of forests, current research is focusing upon the effects of the addition of sulfur and nitrogen and associated generally pollutants to forest ecosystems. Sulfur and nitrogen additions are thought to affect forests through soil influences, foliar leaching, carbon allocation, winter injury, reproduction and regeneration, and insect and pathogen influences (Fox et al., 1989). The U.S. Forest Service (Fox et al., 1989) in developing a model for evaluating proposed new source contributions to pollution loadings in Class I areas, has considered the soil influence effects of sulfur and nitrogen deposition, expressed in kilograms per hectare per year (kg/ha/yr).

The maximum predicted annual SO_2 concentration of 3.22 $\mu g/m^3$ (background plus proposed project contribution) and maximum predicted annual NO_2 concentration of 10.18 $\mu g/m^3$ (background plus proposed project contribution) yields a total sulfur and nitrogen contribution of 3.3 and 6.4 kg/ha/yr, respectively. These values are equal to or below the green line values developed by Fox et al. (1989), which enables the land manager of the Class I area to recommend that a permit be issued. It should be noted that these values are based on total concentrations (background values plus proposed project contribution) and that the proposed project contribution is several orders of magnitude lower than the background values used.

In the vicinity of the proposed project, the maximum predicted annual SO_2 concentration is 9.8 $\mu g/m^3$ (background of 5 plus proposed project contribution of 4.8) and the maximum predicted annual NO_2 concentration is 29.6 $\mu g/m^3$ (background of 25 plus proposed project contribution of 4.6). These values would yield a total sulfur and nitrogen contribution of 10.2 and 18.7 kg/ha/yr, respectively.

IMPACTS ON SOILS

Air contaminants can affect soils through fumigation by gaseous forms, accumulation of compounds transformed from the gaseous state, or by the direct deposition of particulate matter or particulate matter to which certain contaminants are absorbed. Gaseous fumigation of soils does not directly affect the soil but rather the organisms found in the soil. Concentrations several orders of magnitude higher than the predicted values are required before any adverse effects from fumigation are observed. It is more likely that effects on soils and the organisms (plants and animals) found in the soils could occur from the deposition of trace elements over the life of the project. Thus, this analysis of effects on soils specifically addresses the deposition of trace elements and potential pathways for movements into the vegetation.

The contribution to the ambient concentrations of lead, beryllium, mercury, arsenic, antimony, barium, boron, cadmium, calcium, chromium, cobalt, copper, manganese, nickel, selenium, vanadium, and zinc in the NWA and in the vicinity of the proposed project from the proposed project has been estimated by the ISCST dispersion model. Assuming a deposition velocity of 0.66 cm/sec (Edgerton and Lavery, 1990), the deposition flux is the product of this deposition velocity and the ambient trace element concentration. The deposition velocity assumed equal fractions for wet and dry depositions. Further assuming that the trace elements deposited on the soil surface accumulate within the first 25 cm, a basis is provided for predicting average annual increases in soil trace element levels that could potentially result in the NWA and in the proposed plant vicinity from operation of the proposed project. A summary of the analysis of soil concentration increases is presented in Tables 5.6.1-54 and 5.6.1-55. In order to provide some perspective for the comparison of trace element concentration increases in soils of both the NWA and the vicinity of the proposed project, and lacking specific trace element concentration data for these soils, typical background trace element concentrations for soils of the eastern U.S. as reported by Shacklette and Boerngen (1984) and Dvorak et al. (1978) were used. In each reference, mean values were used with Shacklette and Boerngen (1984) as the primary data source and Dvorak et al. (1978) used to supplement data not found in Shacklette and Beorngen (1984).

Studies of model power plants by Dvorak et al. (1978), Dvorak and Pentecost et al. (1977), and Vaughan et al. (1975) predicted increases in soil trace element levels of less than 10 percent of the total endogenous concentrations over the life of the model plant. It was concluded that uptake by vegetation could not increase dramatically unless the forms of the deposited trace elements were considerably more available than the endogenous forms (Dvorak and Lewis et al., 1978; Environmental Research and Technology, 1978).

The estimated percent increases over the anticipated 30 years of plant operation, assuming that the elements remained in the top 25 cm of soil over this period, ranged from 4.8×10^{-6} to 0.58 percent for the NWA and 1.6×10^{-4} to 21.5 percent in the vicinity of the proposed project. The assessment of these estimated increases was based on a number of worst case conditions, which are not likely to occur during typical operation of the proposed project. Accordingly, an increase in the levels of all the evaluated trace elements in soil should not be perceptible on an annual basis in the NWA or in the general vicinity of the proposed project.

ARSENIC. Arsenic toxicity in plants is dependent on the concentration of soluble arsenic and not the total arsenic concentration in soils (Valkovic, 1975). Most plants can tolerate arsenic concentrations in soils ranging from 1 to 40 ppm. Soil arsenic concentrations greater than 2 ppm, soluble form, have been shown to cause damage to alfalfa and barley (Van de Caveye et al., 1936). Naturally occurring levels of arsenic in plants range from 0.01 to 5.0 mg/kg (EPA, 1989). The estimated soil concentration increases of 1.37×10^{-5} and 4.38×10^{-4} mg/yr per kg of soil should not increase the existing soil arsenic levels to toxic concentrations in the NWA or the vicinity of the proposed project.

ANTIMONY. Studies have indicated that plants can contain antimony levels ranging from 7 to 50 mg/kg without any symptoms of phytotoxicity (Gough et al., 1979). The annual deposition of antimony (4.62×10^{-6} and 1.52×10^{-4} mg/yr per kg of soil for the NWA and vicinity of the proposed project, respectively) even when combined with typical soil background levels should not result in phytotoxicity symptoms.

BARIUM. Lawrey (1978) reports that naturally occurring levels of barium in plants range from 7.5 to 165 mg/kg. The estimated soil concentration increases of 8.59×10^{-5} and 2.48×10^{-3} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) should not elevate the soil concentrations of barium to levels where plants are affected adversely.

BERYLLIUM. Beryllium is considered very toxic to plants. Toxic beryllium levels for bush beans were found to range from 3 to 5 ppm in nutrient solutions and in excess of 1 ppm in soil (Romney et al., 1962). The estimated soil concentration of 8.24×10^{-7} and 2.74×10^{-5} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) would be an insignificant increase and would not result in a soil concentration that exceeds the levels toxic to plants.

BORON. Boron is an essential element for plant growth. The difference between essential and toxic amounts of boron is relatively small. Boron concentrations of 0.05 to 0.10 ppm in solution culture are reported as safe for plants, while concentrations of 0.5 to 1 ppm are toxic for boron sensitive plants (Kothny, 1973). Corn exhibits boron injury symptoms when the boron concentration is 25 ppm, while cotton leaves can accumulate 1,625 ppm boron before symptoms are manifest (Kothny, 1973). The estimated soil concentration increase of 3.35×10^{-6} and 1.10×10^{-4} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) is insignificant and should not result in concentrations that would prove toxic to plants.

CADMIUM. Cadmium is not an essential element for plant growth. Cadmium concentrations of 1 ppm are considered to be non-toxic (Valkovic, 1975 and Hutchinson and Czyrska, 1972). It is reported that 3 to 5 mg/kg retards the growth of plants (Gough et al., 1979). The estimated soil concentration increase of 4.25×10^{-6} and 1.49×10^{-4} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) should not result in a soil concentration that limits plant growth.

CALCIUM. Calcium is an essential element for plant growth. The addition of 3.84×10^{-5} and 1.26×10^{-3} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) should not result in either a positive or negative effect on plant growth. It is recognized that there is a growing concern that a supply of essential nutrients outside of the normal growing season may actually extend the growing season to the extent that the plant becomes more susceptible to disease or insect damage. The insignificant amount to be added from the operation of the proposed project should not be sufficient to result in any nutrient imbalances.

CHROMIUM. Chromium toxicity of plants is a function of the chemical form, solubility, and concentration. Chromium, as chromic or chromate, in concentrations of 8 to 16 ppm has been found to cause chlorosis in sugar beets (Chapman, 1966). Chromate at concentrations between 0.03 and 64 ppm have been observed to inhibit the growth of algae, while some mosses or bryophytes have been observed to accumulate amounts of chromate as high as 12,000 ppm without exhibiting injury symptoms (NAS, 1974). Gough et al. (1979) report that a soil concentration of 1,370 to 2,740 mg/kg chromium caused chlorosis in citrus, while liquid cultures that contained 150 mg/kg were toxic to seedlings. The estimated soil concentration increase of 1.71×10^{-4} and 8.86×10^{-3} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) will not result in soil concentrations toxic to plants.

COBALT. Cobalt is not an essential element for plant growth and is reported to be extremely toxic to plants (Bowen, 1966). Allen et al. (1990) reports that black gum (Nyssa slyvatica) and broomsedge (Andropogon spp.) are sensitive to excess cobalt concentrations as small as 1 to 216 mg/kg and 0.05 to 0.91 mg/kg, respectively. Other plants from other families can accumulate large concentrations of cobalt (2,500 to 17,700 mg/kg) through cobalt tolerance. The addition of 2.28×10^{-5} and 6.46×10^{-4} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) will not result in soil concentrations that exceed the plant toxicity level.

COPPER. Copper is commonly regarded as a micronutrient, that which is essential for plant growth. Typically the problems encountered with copper pertain to deficiencies rather than toxicities. Gough et al. (1979) report that citrus seedlings exhibited chlorosis when exposed to approximately 150 mg/kg of copper. Toxic symptoms have been observed when tissue concentrations reach 20 ppm (Chapman, 1966 and Valkovic, 1975). In comparison, the annual estimated soil concentration increase of 5.46×10^{-5} and 1.97×10^{-3} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) will not result in a soil concentration toxic to plants.

LEAD. Lead is found naturally occurring in all plants, although it is nonessential for growth (Chapman, 1966; Valkovic, 1975; Gough and Shacklette, 1976). Plants vary in their sensitivity to lead. Many plants tolerate high concentrations of lead, while others exhibit retarded growth at 10 ppm in solution culture (Valkovic, 1975). Orange seedlings grown on soils with lead concentrations ranging from 150 to 200 ppm did not exhibit adverse effects (Chapman, 1966). Gough et al. (1979) reported that a lead soil concentration of 30 to 100 mg/kg generally retarded the growth of plants. In comparison, the estimated soil concentration increase of 1.41×10^{-4} and 4.63×10^{-3} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) will not result in a soil concentration toxic to plants.

MANGANESE. Manganese is an essential element for plant growth. It can be toxic in high concentrations, although it is less toxic than a number of other trace elements. Reuther et al. (1949) found that 1,000 ppm manganese in leaves of valencia oranges was toxic. Alfalfa grown in acid soil with more than 50 ppm exchangeable manganese exhibited toxicity symptoms (Foy, 1964). Gough et al. (1979) found that manganese toxicity occurs at levels of 400 to 500 mg/kg. The estimated soil concentration increase of 3.22×10^{-5} and 1.45×10^{-3} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) is a minute amount compared to the levels reported to be toxic.

MERCURY. Mercury is not an essential element for plant growth. It is typically used as a seed fungicide. In general, mercury is not concentrated in plants grown on soils containing normal levels. Soil bound mercury is typically not available for plant uptake, although many plants cannot prevent the uptake of gaseous mercury through the roots (Huckabee and Jansen, 1975). Most higher vascular plants are resistant to toxicity from high mercury concentrations even though high concentrations are present in plant tissue. Concentrations of 0.5 to 50 ppm, as mercuric chloride, were found to inhibit the growth of cauliflower, lettuce, potato, and carrots (Bell and Rickard, 1974). Gough et al. (1979) noted apparently healthy spanish moss plants with a mercury content of 0.5 mg/kg. The estimated soil concentration increase of 1.57×10^{-5} and 5.85×10^{-4} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) will not result in concentrations toxic to plants.

NICKEL. Nickel is not an essential element for plant growth. Nickel enters plants primarily through the root system and is deposited in leaf tissue (Chapman, 1966; Tiffin, 1971). It has been reported that nickel concentrations in excess of 50 ppm in plants are toxic, although some plants endemic to serpentine soils may contain up to 6,100 ppm (NAS, 1975). Concentrations of nickel reported to result in yield reductions are 60 ppm for oats (500 ppm in the soil), 28 ppm in oat straw, and 44 ppm in alfalfa (NAS, 1975). The estimated soil concentration increase of 1.12×10^{-4} and 5.76×10^{-3} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) will not result in the soil concentrations that are toxic to plants.

SELENIUM. Selenium is a nonessential element for plant growth, although it has been reported to stimulate the growth of a few plants at very low concentrations (Chapman, 1966). The absorption and accumulation of selenium by plants is dependent upon the concentration and distribution of selenium in the soil, chemical nature, seasonal variation in rainfall, plant species, growth stage, physiological condition of the plant, and the presence of other soil components. The primary indication of excess selenium in plants is growth inhibition. In grains, toxicity symptoms may be manifested by a chlorosis of some or all the leaves. It is reported in the literature that cereal grains and onions may accumulate 30 ppm selenium without toxic effects, although grasses, clovers, and vegetables have a much lower tolerance (5 ppm) (Lisk, 1972). The estimated annual increase in soil concentrations (2.57×10^{-5} and 7.56×10^{-4} mg/yr per kg of soil for the NWA and vicinity of the proposed project, respectively) will not result in toxic soil concentrations.

VANADIUM. Vanadium can accumulate to high levels (50 ppm) in plants without the plants exhibiting toxicity symptoms (Gough and Shacklette, 1976). The addition of 10 ppm vanadium (calcium vanadate) to sandy soil was found to result in a decrease in the growth of orange seedlings (Chapman, 1966). All plants died when concentrations were increased to 150 ppm. Aller et al. (1990) reported phytotoxic responses in plants grown in soils containing 140 mg/kg. The estimated annual soil concentration increase of 5.24×10^{-5} and 1.42×10^{-3} mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) will not result in soil concentrations of vanadium reported to be toxic to plants.

ZINC. Zinc is an essential element for plant growth, although toxicity symptoms can occur at elevated levels reported to be as high as 300 mg/kg. Gough and Shacklete (1976) report that 12.5 percent total zinc in soil will stunt most vegetation. However, toxicity levels were found to vary considerably between species. Toxicity symptoms were observed in oat leaves when

ZINC. Zinc is an essential element for plant growth, although toxicity symptoms can occur at elevated levels reported to be as high as 300 mg/kg. Gough and Shacklete (1976) report that 12.5 percent total zinc in soil will stunt most vegetation. However, toxicity levels were found to vary considerably between species. Toxicity symptoms were observed in oat leaves when concentrations ranged from 1,700 to 7,500 ppm, and in tomato leaves when concentrations ranged from 526 to 1,489 ppm (Chapman, 1966). Zinc toxicity has also been found to vary with soil type, with sandy soils as the most toxic and clay-loam soils as the least (Chapman, 1966). The estimated soil concentration increase of $5.24x10^{-4}$ and $1.79x10^{-2}$ mg/yr per kg of soil (for the NWA and vicinity of the proposed project, respectively) will not result in soil concentrations toxic to plants.

In each case, the projected soil concentration increase is at least an order of magnitude less than reported soil concentrations. These small additions from the proposed project should not increase existing soil concentrations to levels toxic to plants.

IMPACTS ON WILDLIFE

Compared with other threats to wildlife, such as pesticides, the toxicological relationships between air pollution and effects on wildlife are not well understood (Newman and Schreiber, 1988). The limited understanding is based primarily on reports of symptoms observed in the field and on information extrapolated from laboratory studies. Information on controlled wildlife studies is limited in the scientific literature. Most studies report symptoms of various air pollutants but do not provide toxicity levels. Those studies that do provide toxicity levels are limited to four air contaminants, SO_2, NO_2, O_3, and particulates. Accordingly, this analysis addresses only those air contaminants for which sufficient data exist.

Effects on wildlife from air pollutants are summarized in Table 5.6.1-56. It should be noted that most of the effects noted occur below the national secondary ambient air quality standards. In comparison to information in Table 5.6.1-56, the predicted annual SO_2 concentration of 3.22 $\mu g/m^3$ (estimated background plus predicted increment in the NWA) is less than 25 percent of the concentration (13 to 157 $\mu g/m^3$, continually for 5 months) that resulted in a decreased abundance of deer mice. The predicted annual NO_2 concentration of 10.18 $\mu g/m^3$ (estimated background plus predicted increment in the NWA) is less than 15 percent of the concentration (96 to 958 $\mu g/m^3$, 8 hours per day for 122 days) reported to cause respiratory stress in guinea pigs. The estimated annual O_3 concentration in the NWA (55 $\mu g/m^3$), based on existing background levels in the vicinity of the NWA, cannot be assessed as there are no commensurate data for an annual averaging period. The estimated annual particulate concentration in the NWA (29.03 $\mu g/m^3$), based on the estimated background plus predicted increment in the NWA, is approximately one third of the concentration reported to cause respiratory stress. In conclusion, it is highly unlikely, given the small predicted increment from the proposed project, that ambient levels would increase to those where effects in wildlife would be noted.

In comparison to information in Table 5.6.1-56, the predicted annual SO_2 concentration of 9.8 $\mu g/m^3$ (estimated background plus predicted increment in the vicinity of the proposed project) is 6-75 percent of the concentrations (13 to 157 $\mu g/m^3$, continually for 5 months) that resulted in a decreased abundance of deer mice. The predicted annual NO_2 concentration of 29.5 $\mu g/m^3$ (estimated background plus predicted increment in the vicinity of the proposed project) is 3 to 31 percent of the concentration (96 to 958 $\mu g/m^3$, 8 hours per day for 122 days) reported to cause respiratory stress in guinea pigs. The estimated annual O_3 concentration in the vicinity of the proposed project (55 $\mu g/m^3$), based on existing background levels in Gainesville, cannot be assessed as there are no commensurate data for an annual averaging period. The estimated annual particulate concentration in the vicinity of the proposed project (12.88 $\mu g/m^3$), based on the estimated background plus predicted increment due to stack emissions in the vicinity of the proposed project, is approximately one eighth of the concentration reported to cause respiratory stress. In conclusion, it is unlikely, given the relatively small predicted increment from the proposed project, that ambient levels would increase to those where effects in wildlife would be noted.

In addition to the impacts on wildlife from the primary pollutants, the FWS is concerned about the effects on wildlife resulting from acid deposition (FWS, 1992). Existing acid deposition conditions in Florida were investigated during the five year Florida Acid Deposition Study (ESE, 1986 and 1987) and the two year follow-on program called the Florida Acid Deposition Monitoring Program (ESE, 1988 and 1989). The data collected in these programs indicate that Florida precipitation is only about two-thirds as acidic as precipitation across the southeastern United States and less than half as acidic as precipitation in the midwestern and northeastern United States (ESE, 1988). There is no evidence of a temporal trend in precipitation acidity since the late 1970s (ESE, 1989). The Clean Air Act Amendments of 1990 require significant reductions in SO_2 and NO_2 emissions from existing uncontrolled utility plants nationwide and some of these reductions will occur at plants in the general vicinity of the NWA. TECO's Big Bend plant will have significant reductions by 1995 and other plants, including FPC's Crystal

River plant, will reduce emissions by the year 2000. These emission reductions will undoubtedly improve on the already relatively good estimated acid deposition conditions in the NWA, although the extent of the improvement is not readily quantifiable.

It is not possible at this time to accurately quantify the impacts of the proposed project on acid deposition conditions in the NWA and the resulting impacts on aquatic organisms. As indicated in the "National Acid Precipitation Assessment Program 1990 Integrated Assessment Report" (NAPAP, 1991), it is very difficult to determine explicitly which sources are influencing specific receptors due to the many physical and chemical process which occur simultaneously in the atmosphere. Regional models have been developed which has improved the overall understanding of these processes. However, as stated in "Acid Deposition: State of the Science and Technology" (NAPAP, 1991a), ". . . we are not yet in a position to make reliable estimates of the relationships between hydrogen ion deposition and the precursor emissions." On a qualitative basis, it can be said that due to the small emission increases that will be caused by the proposed project, increases, if any, in acid deposition will be very small.

IMPACTS ON VISIBILITY

Section 169A of the CAA Amendments of 1977 provide for implementation of guidelines to prevent visibility impairment in mandatory PSD Class I areas. The guidelines are intended to project the aesthetic quality of these pristine areas from reduction in visual range and atmospheric discoloration due to various pollutants. Potential project impacts on visibility in the nearest Class I area were estimated using the VISCREEN Version 1.01 (88341) model (U.S. EPA, 1988b). Impacts were calculated for particulates and nitrogen dioxide. Impacts were not calculated for sulfur dioxide because, according to the model, sulfur dioxide conversion to sulfates that can impact visibility is not significant at distances less than 200 km, and the NWA is located between 118 and 135 km from the proposed project. The results of the VISCREEN analysis are presented in Table 5.6.1-57 Based on these results, the project will not significantly impair visibility in the NWA.

5.6.2 Monitoring Programs

5.6.2.1 Preconstruction Ambient Air Quality Monitoring

The preconstruction ambient air quality monitoring program is described in Section 2.3.7. There are no plans to resume ambient air quality monitoring after construction is complete, unless representative data are not available from the FDER or other air quality monitoring stations, in accordance with Special Condition 20 of the Polk County Conditional Use Permit. The monitoring data from the PSD preconstruction monitoring program quarterly reports indicate that the maximum short-term concentrations for SO_2, PM_{10}, and O_3 are well below the applicable NAAQS/FAAQS.

EPA's Ambient Monitoring Guidelines for PSD (U.S. EPA, 1987) indicate that the permit granting authority may require postconstruction air quality monitoring if:

- The proposed facility is a major source for purposes of new source review
- There is an apparent threat to the ambient air quality standards
- The proposed source impact is uncertain or unknown (e.g., source located in complex terrain, presence of fugitive emissions, or uncertain characteristics in source or emissions)
- There is a potential adverse impact on a Class I PSD area.

Each of these issues is addressed in the following paragraphs.

MAJOR SOURCE CONCERN

The proposed FPC project is a major source for new source review. However, the implementation of BACT is expected to minimize air quality impacts.

THREAT TO AMBIENT AIR QUALITY STANDARDS

The EPA considers the ambient air quality standards threatened if the projected air quality in the vicinity of the proposed source is equal to or greater than 90 percent of the AAQS after construction. The Polk County Site is located in an attainment area for all criteria air pollutants. The air quality impact analyses described in Section 5.6.1 indicate that the emissions produced by the proposed project, combined with the various existing and proposed source emissions, produce air quality impacts that do not exceed the NAAQS/FAAQS although impacts from existing sources were predicted by the model to be relatively high in some cases. However, the applicable AAQS are unlikely to be threatened by construction of the proposed units.

UNCERTAINTY OF CGCC AND PC UNIT EMISSIONS CHARACTERISTICS

The proposed CGCC and PC units will be well-defined point sources based on a known fuel scenario and vendor(s) design specifications. Fugitive emissions of air pollutants are not expected to be a major concern. Therefore, the proposed CGCC and PC unit emissions characteristics will be well defined.

IMPACT ON CLASS I PSD AREAS

The Polk County Site is located approximately 118 km from the NWA. As demonstrated in Section 5.6.1.10, the proposed source will not cause or contribute to a violation of the allowable Class I increments.

For the reasons in the above paragraphs, postconstruction air quality monitoring should not be required at the FPC Polk County Site. However, it is recognized that the ultimate site capacity will be developed over a period of approximately 25 years, and that potential future monitoring requirements will need to be addressed in supplemental applications.

5.6.2.2 Continuous Emissions Monitoring

This section describes the proposed continuous emission monitoring system for the proposed project. The proposed CGCC monitoring program is consistent with the requirements of 40 CFR 60, Subpart GG, Standards of Performance for Stationary Gas Turbines and the Florida Air Pollution Rules for new sources, Rule 17-2.660, F.A.C., which adopts 40 CFR 60, Subpart GG, by reference. For the gasification plant, the requirements associated with 40 CFR 60, Subpart J, Standards of Performance for Petroleum Refineries, will be used as a guideline, even though these standards do not directly apply to the project. For the PC units, the requirements associated with 40 CFR 60, Subpart Da, Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978, and the Florida Air Pollution Rules for New Sources, Rule 17-2.660, F.A.C., will be met.

CGCC CONTINUOUS MONITORING

NO_x. A continuous monitoring system for NO_2 will be operated. The nitrogen content of the back-up fuel (No. 2 oil) being fired in the turbine will be determined on each occasion that this fuel is transferred to the storage tank from any other source (40 CFR 60, Subpart GG). Since there will be four storage tanks, it may be possible to isolate a tank until it has received an entire delivery in order to minimize the number of samples that must be taken.

SO_2. The sulfur content of coal-derived gas will initially be determined and recorded daily. Since the amount of sulfur in the gas is expected to be consistently low, it should be possible to develop a less frequent program of gas monitoring after the quality and consistency of the gas has been demonstrated.

The sulfur content of the back-up fuel (No. 2 oil) being fired in the turbine will be determined following completion of each delivery or shipment of fuel to the storage tank.

OTHER POLLUTANTS. Since the CGCC units do not include particulate collection devices or CO and VOC control systems, continuous monitoring of these pollutants and opacity is inappropriate.

SULFUR RECOVERY INCINERATOR CONTINUOUS MONITORING

SO_2. The SO_2 concentration in gases discharged from the sulfur recovery incinerator (tail gas treating) will be monitored using the requirements associated with 40 CFR 60, Subpart J, Standards of Performance for Petroleum Refineries, as a guideline.

OTHER POLLUTANTS. Since the sulfur recovery process does not include NO_X, particulates, CO, and VOC control systems, continuous monitoring of these pollutants is not required.

PULVERIZED COAL CONTINUOUS MONITORING

OPACITY. A continuous opacity monitor is not planned to be installed on either PC unit since interference due to water droplets may exist in the stack. Instead, alternate parameters such as pressure drop across the scrubbing modules, scrubber liquor flow rate and feed pressure will be measured (40 CFR 60.47a(b)).

SO_2. A continuous emission monitor for SO_2 will be installed and operated on both the PC units. The system will be capable of monitoring the inlet and outlet SO_2 concentrations of the FDG system. In lieu of the inlet monitors, an "as fired" fuel monitoring system may be employed (40 CFR 60.47a(b)).

NO_x. A continuous emission monitor for NO_x will be installed and operated on both PC units (40 CFR 60.47a(c)).

O_2 or CO_2. A continuous emission monitor for either 0_2 or CO_2 will be installed and operated on both PC units (40 CFR 60.47a(d)).

OTHER PENDING REQUIREMENTS. In addition to the current requirements of 40 CFR 50 Subpart Da, the EPA has proposed additional monitoring requirements in Part 75. A review of these proposed requirements reveals that continuous monitoring of the volumetric flow may be required in addition to the monitoring requirements above. Once these proposed requirements are promulgated, any additional monitoring requirements applicable to the PC units will be met.

PERFORMANCE TESTS

NO_X, fuel sulfur content, particulates, CO, O_2, and VOC performance emission tests will be performed after plant startup and testing in accordance with Florida Air Pollution Rule 17-2.700, F.A.C., which requires sampling for those pollutants for which a BACT analysis is required.

Test methods to be used for the performance testing will be determined by mutual agreement between FDER and FPC. The performance monitoring equipment used will be temporary in nature and removed upon conclusion of the testing program.

5.6.3 References

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TABLE 5.6.1-1
AMBIENT AIR QUALITY STANDARDS
AND PSD INCREMENTS

Pollutant	Averaging Time	Federal NAAQS ($\mu g/m^3$)	Florida FAAQS ($\mu g/m^3$)	Class I PSD Increment ($\mu g/m^3$)	Class II PSD Increment ($\mu g/m^3$)
CO	1-hour	40,000	40,000	NA	NA
	8-hour	10,000	10,000	NA	NA
NO_2	Annual	100	100	2.5	25
SO_2	3-hour	1,300[1]	1,300[1]	25	512
	24-hour	365	260	5	91
	Annual	80	60	2	20
PM[2]	24-hour	150	150	10	37
	Annual	50	50	5	19
O_3[3]	1-hour	235	235	NA	NA
Pb	Calendar Quarter	1.5	1.5	NA	NA

(1) The 3-hour average SO_2 ambient air quality standard is a secondary (welfare-related) standard. All of the other federal and Florida ambient air quality standards are primary (health-related) standards.

(2) Ambient air quality standards are for PM_{10} and PSD increments are for total suspended particulates (TSP) until such a time as EPA promulgates PM_{10} PSD increments. On October 5, 1989, EPA proposed increments of 8 $\mu g/m^3$ (24-hr) and 4 $\mu g/m^3$ (annual) for Class I areas and 30 $\mu g/m^3$ (24-hr) and 17 $\mu g/m^3$ (annual) for Class II areas (FR, 1989). PM_{10} ambient standard and TSP PSD increment impacts were evaluated based on TSP modelled impacts.

(3) Ozone values are associated with emissions of VOCs.

Note: Short-term standards (i.e., those with averaging times less than annual) and increments can be exceeded once per year.

NA = No PSD increments exist for these pollutants.

Sources: Federal Register, 1989; 40 CFR 50, Rules 17-2.300 and 310, F.A.C.

TABLE 5.6.1-2
COMPARISON OF CASE B EMISSIONS WITH SIGNIFICANT EMISSION RATES [1]

Pollutant	8 CTs [2] (TPY)	2 PCs (TPY)	4 TOUs (TPY)	Auxiliary Boiler [3] (TPY)	Diesel Generator [3] (TPY)	Totals (TPY)	Significant Emission Rate (TPY)
CO	3,504	7,814	78	0.25	0.6	11,396	100
NO_X	6,022	8,852	999	0.99	2.65	15,873	40
SO_2	6,798	15,102	447	0.264	0.044	22,347	40
PM (TSP)	1,261	1,042	26	0.25	0.024	2,329	25
PM (PM_{10})	1,261	1,042	26	0.25	0.024	2,329	15
VOC	420	780	Neg.	0.05	0.014	1,200	40
Pb	9.45	0.87	0.035	0.000044	0.000008	10.355	0.6
Asbestos	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	0.007
Beryllium	0.054	0.0057	0.0006	0.000013	0.0000022	0.0603	0.004
Mercury	0.77	0.52	0.11	0.000015	0.0000026	1.400	0.1
Vinyl Chloride	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	1
Fluorides	Neg.	4.00	Neg.	Neg.	Neg.	4.00	3
Sulfuric Acid Mist	762	2,277.6	6.7	0.0041	0.00065	3,046	7
H_2S	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Any
Total Reduced Sulfur	Neg.	Neg.	Neg.	Neg.	Neg.	10	10
Benzene [4]	Neg.	Neg.	Neg.	0.00034	Neg.	0.00034	Any
Inorganic Arsenic	0.56	0.898	0.021	0.00002	0.0000037	1.479	Any
Radionuclides	Neg.	11.5 mC_i/yr	Neg.	Neg.	Neg.	11.5 mC_i/yr	Any

Notes:
(1) Emission rates based on the application of BACT as discussed in Section 3.4.
(2) Emission rates based on worst-case scenario for combination of fuel usage (i.e., coal gas 8,260 hrs/yr and fuel oil 500 hrs/yr).
(3) Auxiliary boiler and diesel generator totals are not included in the totals column (except for benzene) since these sources will not be operated simultaneously with the CTs or PCs, except during startup and for brief periods of testing.
(4) Emission rate based on natural gas combustion (EPA, 1989).

CTs = Combustion Turbines PCs = Pulverized Coal Units TOUs = Thermal Oxidation Units Neg. = Negligible

Source: Black & Veatch, 1992

TABLE 5.6.1-3
PSD *DE MINIMIS* AMBIENT AIR QUALITY
IMPACT LEVELS

Pollutant	Air Quality Impact *De Minimis* Level ($\mu g/m^3$) and Averaging Time
Carbon Monoxide	575 (8-hour)
Nitrogen Dioxide	14 (Annual)
Sulfur Dioxide	13 (24-hour)
Particulate Matter (PM_{10})	10 (24-hour)
Particulate Matter (TSP)	10 (24-hour)
Volatile Organic Compounds (Ozone)	(1)
Lead	0.1 (3-month)
Beryllium	0.001 (24-hour)
Mercury	0.25 (24-hour)
Vinyl Chloride	15 (24-hour)
Total Fluorides	0.25 (24-hour)
Hydrogen Sulfide	0.2 (1-hour)

(1) No specific air quality impact *de minimis* level is prescribed for ozone. An impact analysis including monitoring is not required when a proposed source's VOC emissions are less than 100 tons/year.

Source: U.S. EPA, 1987c; FDER Table 500-3

TABLE 5.6.1-4
AIR TOXICS
ESTIMATED MAXIMUM SHORT-TERM AND ANNUAL EMISSION RATES (CASE B)[1]

Pollutants	Emission Rate 8-CTs		Emission Rate 2-PCs		Emission Rate 4-TOUs		Total Annual Emissions (TPY)
	(g/s)	(TPY)	(g/s)	(TPY)	(g/s)	(TPY)	
Trace Metals:							
Antimony	0.0064	0.289	0.002	0.07	0.0001	0.0105	0.37
Arsenic	0.016	0.556	0.026	0.898	0.0006	0.139	1.59
Barium	0.0624	2.167	0.246	8.61	0.001	0.0347	10.81
Beryllium	0.0045	0.0544	0.00016	0.0057	0.0000126	0.000438	0.061
Boron	0.118	0.234	Neg.	Neg.	Neg.	Neg.	0.234
Cadmium	0.0199	0.247	0.0024	0.083	0.0004	0.0139	0.345
Calcium	1.357	2.689	Neg.le	Neg.	Neg.	Neg.	2.689
Chromium	0.232	8.058	0.032	1.111	0.102	3.543	12.712
Cobalt	0.029	0.321	0.081	2.80	0.0006	0.0208	3.142
Copper	0.508	3.025	0.036	1.248	0.0072	0.250	4.523
Lead	0.277	9.447	0.025	0.87	0.001	0.0347	10.35
Magnesium	0.421	0.835	Neg.	Neg.	Neg.	Neg.	0.835
Manganese	0.0254	0.679	0.069	2.396	0.0152	0.528	3.60
Mercury	0.055	0.764	0.015	0.52	0.0033	0.114	1.40
Nickel	0.309	4.018	0.102	3.541	0.068	2.36	9.92
Selenium	0.044	0.834	0.057	1.97	Neg.	Neg.	2.804
Vanadium	0.126	0.251	0.219	7.62	0.0008	0.0278	7.9
Zinc	0.705	24.5	0.619	21.5	0.048	1.67	47.67
Volatile Organic Compounds:							
Formaldehyde	0.745	1.49	0.038	1.323	Neg.	Neg.	2.813

(1) Emission estimates based on the application of BACT as discussed in Section 3.4.
(2) Emission rates based on highest rate for CTs depending upon fuel type.

Source: Black & Veatch, 1992 Neg. = Negligible

TABLE 5.6.1-5
COMBUSTION TURBINE (235MW)
ESTIMATED[1] PERFORMANCE ON COAL-DERIVED GAS

CONDITIONS			
Ambient Temperature (°F)	40	72	95
Ambient Relative Humidity (%)	70	80	48
Load Condition (%)	100	100	100
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (mmBtu/hr)	1,779.9	1,661.3	1,569.7
EMISSIONS (lb/hr)			
Carbon Monoxide (30 ppm)	100	92	88
Nitrogen Oxides (at 15% O_2) (25 ppm)[2]	163	152	144
Sulfur Dioxide	194	181	171
Particulate Matter (PM_{10})	36	34	32
Volatile Organic Compounds	12	11.2	10.4
Lead	0.27	0.25	0.24
Asbestos	Neg.	Neg.	Neg.
Beryllium	0.0014	0.0013	0.0012
Mercury	0.022	0.021	0.019
Vinyl Chloride	Neg.	Neg.	Neg.
Total Fluorides	Neg.	Neg.	Neg.
Sulfuric Acid Mist	21.75	20.30	19.18
Hydrogen Sulfide	Neg.	Neg.	Neg.
Total Reduced Sulfur	Neg.	Neg.	Neg.
Benzene	Neg.	Neg.	Neg.
Inorganic Arsenic	0.016	0.0152	0.0143
Radionuclides	Neg.	Neg.	Neg.
STACK PARAMETERS			
Stack Height (ft)	213	213	213
Stack Diameter (ft)	13.5	13.5	13.5
Stack Gas Temperature (°F)[3]	200	200	200
Stack Gas Exit Velocity (ft/sec)	125	117	111

Notes: (1) Emission estimates based on application of BACT as discussed in Section 3.4.
(2) Not corrected to ISO reference conditions.

MSL = Mean Sea Level Neg. = Negligible

Source: Black & Veatch, 1992

TABLE 5.6.1-6
COMBUSTION TURBINE (235MW)
ESTIMATED[1] PERFORMANCE ON FUEL OIL

CONDITIONS			
Ambient Temperature (°F)	40	72	95
Ambient Relative Humidity (%)	70	80	48
Load Condition (%)	100	100	100
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (mmBtu/hr)	1,799.8	1,644.5	1,532.8
EMISSIONS (lb/hr)			
Carbon Monoxide (30 ppm)	96	89	84
Nitrogen Oxides (at 15% O_2) (42 ppm)[2]	318	291	271
Sulfur Dioxide	98	90	83
Particulate Matter (PM_{10})	17	17	17
Volatile Organic Compounds	12	11.2	10.4
Lead[3]	0.016	0.0146	0.0136
Asbestos	Neg.	Neg.	Neg.
Beryllium[3]	0.0045	0.0041	0.00383
Mercury[3]	0.0054	0.0049	0.0046
Vinyl Chloride	Neg.	Neg.	Neg.
Total Fluorides	Neg.	Neg.	Neg.
Sulfuric Acid Mist	10	9	8
Hydrogen Sulfide	Neg.	Neg.	Neg.
Total Reduced Sulfur	Neg.	Neg.	Neg.
Benzene	Neg.	Neg.	Neg.
Inorganic Arsenic[3]	0.00756	0.00691	0.00644
Radionuclides	Neg.	Neg.	Neg.
STACK PARAMETERS			
Stack Height (ft)	213	213	213
Stack Diameter (ft)	13.5	13.5	13.5
Stack Gas Temperature (°F)	260	260	260
Stack Gas Exit Velocity (ft/sec)	133	125	117

Notes: [1] Emission estimates based on application of BACT as discussed in Section 3.4.
[2] Not corrected to ISO reference conditions.

MSL = Mean Sea Level   Neg. = Negligible

Source: Black & Veatch, 1992

TABLE 5.6.1-7
PULVERIZED COAL UNIT (600MW)
ESTIMATED[1] PERFORMANCE

CONDITIONS			
Ambient Temperature (°F)	40	40	40
Ambient Relative Humidity (%)	70	70	70
Load Condition (%)	50	75	100
Elevation (ft) (above MSL)	163	163	163
Maximum Heat Input Rate (mmBtu/hr)	3,272.68	4,780.99	5,945
EMISSIONS (lb/hr)			
Carbon Monoxide	491	717	892
Nitrogen Oxides	556	813	1,011
Sulfur Dioxide	949.1	1386.5	1,724
Particulate Matter (PM_{10})	66	96	119
Volatile Organic Compounds	49	72	89
Lead	0.054	0.08	0.10
Asbestos	Neg.	Neg.	Neg.
Beryllium	0.00036	0.00053	0.00065
Mercury	0.033	0.048	0.06
Vinyl Chloride	Neg.	Neg.	Neg.
Total Fluorides	0.252	0.368	0.457
Sulfuric Acid Mist	143.1	209.1	260
Hydrogen Sulfide	Neg.	Neg.	Neg.
Total Reduced Sulfur	Neg.	Neg.	Neg.
Benzene	Neg.	Neg.	Neg.
Inorganic Arsenic	0.056	0.0820	0.102
Radionuclides (mCi/hr)	0.3605	0.527	0.655
STACK PARAMETERS			
Stack Height (ft)	625	625	625
Stack Diameter (ft)	21.5	21.5	21.5
Stack Gas Temperature (°F)	160	160	160
Stack Gas Exit Velocity (ft/sec)	80	80	80.0

Notes: [1] Emission estimates based on the application of BACT as discussed in Section 3.4

MSL = Mean Sea Level   Neg. = Negligible

Source: Black & Veatch, 1992

TABLE 5.6.1-8
THERMAL OXIDATION UNIT
ESTIMATED[1] PERFORMANCE

CONDITIONS	
Ambient Temperature (°F)	40
Ambient Relative Humidity (%)	70
Load Condition (%)	N/A
Elevation (ft) (above MSL)	163
Maximum Heat Input Rate (mmBtu/hr)	N/A
EMISSIONS (lb/hr)	
Carbon Monoxide	4.5
Nitrogen Oxides	57.00
Sulfur Dioxide	25.50
Particulate Matter (PM_{10})	1.5
Volatile Organic Compounds	Neg.
Lead	0.002
Asbestos	Neg.
Beryllium	0.000033
Mercury	0.0065
Vinyl Chloride	Neg.
Total Fluorides	Neg.
Sulfuric Acid Mist	0.38
Hydrogen Sulfide	Neg.
Total Reduced Sulfur	Neg.
Benzene	Neg.
Inorganic Arsenic	0.0012
Radionuclides	Neg.
STACK PARAMETERS	
Stack Height (ft)	352.6
Stack Diameter (ft)	7.54
Stack Gas Temperature (°F)	1,200.2
Stack Gas Exit Velocity (ft/sec)	27.88

Note: [1] Emission estimates based on application of BACT as discussed in Section 3.4.

MSL = Mean Sea Level
N/A = Not Applicable
Neg. = Negligible

Source: Black & Veatch, 1992

TABLE 5.6.1-9
AUXILIARY BOILER
ESTIMATED[1] PERFORMANCE ON NATURAL GAS & FUEL OIL

CONDITIONS	Natural Gas	Fuel Oil
Ambient Temperature (°F)	72	72
Ambient Relative Humidity (%)	80	80
Load Condition (%)	100	100
Elevation (ft) (above MSL)	163	163
Maximum Heat Input Rate (mmBtu/hr)	99.0	99.0
EMISSIONS (lb/hr)		
Carbon Monoxide	4.9	4.9
Nitrogen Oxides	9.9	19.8
Sulfur Dioxide	0.0641	5.27
Particulate Matter (PM_{10})	0.5	4.9
Volatile Organic Compounds	0.5	0.99
Lead	Neg.	0.000881
Asbestos	Neg.	Neg.
Beryllium	Neg.	0.00025
Mercury	Neg.	0.00030
Vinyl Chloride	Neg.	Neg.
Total Fluorides	Neg.	Neg.
Sulfuric Acid Mist	0.00099	0.082
Hydrogen Sulfide	Neg.	Neg.
Total Reduced Sulfur	Neg.	Neg.
Benzene	0.00673	Neg.
Inorganic Arsenic	Neg.	0.000415
Radionuclides	Neg.	Neg.
STACK PARAMETERS		
Stack Height (ft)	60	60
Stack Diameter (ft)	2.5	2.5
Stack Gas Temperature (°F)	332	329
Stack Gas Exit Velocity (ft/sec)	109	106

Notes: [1] Emission estimates based on application of BACT as discussed in Section 3.4.

MSL = Mean Sea Level Neg. = Negligible

Source: Black & Veatch, 1992

TABLE 5.6.1-10
DIESEL GENERATOR
ESTIMATED[1] PERFORMANCE ON FUEL OIL

CONDITIONS	
Ambient Temperature (°F)	72
Ambient Relative Humidity (%)	80
Load Condition (%)	100
Elevation (ft) (above MSL)	163
Maximum Heat Input Rate (mmBtu/hr)	17.38
EMISSIONS (lb/hr)	
Carbon Monoxide	12
Nitrogen Oxides	53
Sulfur Dioxide	0.91
Particulate Matter (PM_{10})	0.48
Volatile Organic Compounds	0.27
Lead	0.00016
Asbestos	Neg.
Beryllium	0.000044
Mercury	0.000052
Vinyl Chloride	Neg.
Total Fluorides	Neg.
Sulfuric Acid Mist	0.014
Hydrogen Sulfide	Neg.
Total Reduced Sulfur	Neg.
Benzene	Neg.
Inorganic Arsenic	0.000073
Radionuclides	Neg.
STACK PARAMETERS	
Stack Height (ft)	25
Stack Diameter (ft)	1.5
Stack Gas Temperature (°F)	980
Stack Gas Exit Velocity (ft/sec)	143

Notes: [1] Emission estimates based on application of BACT as discussed in Section 3.4.

MSL = Mean Sea Level   Neg. = Negligible

Source: Black & Veatch, 1992

TABLE 5.6.1-11
FUGITIVE DUST SOURCES MODELLED AS AREA SOURCES

Source	Emission Rate[1] (g/sec/m^2)	Location[2] (x,y) (m)	Size (m)	Drop Height (m)
Stacker Reclaim 1	.0008305	-1573, -10	27.4 x 27.4	21.34
Stacker Reclaim 2	.0005515	-1624, -37.8	27.4 x 27.4	18.29
Coal Car Unloading Building	.0001240	-1207, -622	38.2 x 38.2	1.5
Limestone Pile Stacker/Reclaim Hopper	.0001040	-1122, 37	68.1 x 68.1	9.4

Notes: (1) Emission estimates obtained from AP-42 (EPA 1988a)
(2) With respect to zero point of 414.30 kmE; 3073.88 kmN

Source: Black & Veatch, 1992

TABLE 5.6.1-12
CLASS II PSD SOURCE INVENTORY - NO_x

No.	County	Source Name	UTM Coordinates		Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
			East (km)	North (km)					
1	Glades	ER Janna Lime Dryer (No PSD #)	386.7	3155.8	86.5	0.3	1730	No	No No_x
2	Hardee	TECO Hardee Station (#140)	404.8	3057.4	19.0	1419	380	Yes	
3	Hillsborough	Cargill (Gardinier) (#178)	363.4	3082.5	52.0	0	1040	No	No No_x
4	Hillsborough	CF Industries (#155)	388.0	3116.0	49.6	0	992	No	No No_x
5	Hillsborough	CLM Chloride Metals (Closed)	361.8	3088.3	54.3	0	1087	No	Closed
6	Hillsborough	Hillsborough County Resource Recovery (#104)	368.2	3092.7	49.7	Not PSD	994	No	Date<88
7	Hillsborough	IMC - Ft. Lonesome (#88)	389.6	3067.9	25.3	Not PSD	506	No	Date<88
8	Hillsborough	McKay Bay Res. Rec. (#86)	360.0	3091.9	57.1	Not PSD	1142	No	Date<88
9	Hillsborough	TECO Big Bend 4 (#40)	361.9	3075.0	52.3	Not PSD	1046	No	Date<88
10	Orange	Orlando Utilities Stanton #1	483.5	3150.6	103.0	Not PSD	2060	No	Date<88
11	Orange	Orlando Utilities Stanton #2	483.5	3150.6	103.0	3188	2060	Yes	
12	Osceola	FPC Intercession City 7EA and 7FA Turbine (#180)	446.3	3126.0	61.2	1748	1224	Yes	
13	Osceola	Kissimmee Util (#182)	460.1	3129.3	71.9	0	1439	No	PSD for SO_2
14	Pasco	Couch Const - Odessa (No PSD #)	340.7	3119.5	86.5	251	1730	No	
15	Pasco	Couch Const - Zephyrhills (No PSD #)	390.3	3129.4	60.4	69	1209	No	
16	Pasco	DRIS Paving (Asphalt) (No PSD #)	340.6	3119.2	86.4	Approx. 100	1728	No	
17	Pasco	Evans Packing (Shutdown)	383.3	3135.8	69.2	0	1384	No	Shut Down
18	Pasco	NP Richy Hosp Boiler 1 (No PSD #)	331.2	3124.5	97.2	Too far	1944	No	Too far
19	Pasco	Overstreet Paving (No PSD #)	355.9	3143.7	90.9	Too far	1819	No	Too far
20	Pasco	Pasco CoGen (#177)	385.6	3139.0	71.1	405	1422	No	
21	Pasco	Pasco Co. RRF. (#127)	347.1	3139.2	93.6	Too far	1873	No	Too far
22	Pinellas	Pinellas Co. RRF (#11)	335.2	3084.1	79.7	Not PSD	1593	No	Date<88
23	Pinellas	Pinellas Co. RRF (#98)	335.2	3084.1	79.7	Not PSD	1593	No	Date<88
24	Pinellas	Stauffer (Shut Down) (Increment Expanding)	325.6	3116.7	98.4	Too far	1968	No	Too far
25	Polk	Agrico - S. Pierce - New SAP 10,11 (#179)	407.5	3071.3	7.2	118.2	142	Yes	

TABLE 5.6.1-12
CLASS II PSD SOURCE INVENTORY - NO_x

No.	County	Source Name	UTM Coordinates		Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
			East (km)	North (km)					
26	Polk	Agrico - S. Pierce - Old SAP 10,11 (#179)	407.5	3071.3	7.2	-102.4	142	Yes	
27	Polk	AMAX (Mobil Big 4) (#1)	394.8	3067.7	19.7	Not PSD	395	No	Date<88
28	Polk	AMAX (Mobil Big 4) (#94)	394.9	3069.8	19.7	Not PSD	395	No	Date<88
29	Polk	CF Bartow - SAP 4	408.5	3083.0	10.7	0	215	No	No No_x
30	Polk	CF Bartow - SAP 3,4 (Shutdown)	408.5	3083.0	10.7	0	215	No	Shut Down
31	Polk	Conserve (#76)	398.7	3084.2	18.6	Not PSD	372	No	Date<88
32	Polk	Farmland SAP 5	409.5	3079.5	7.3	52	156	Yes	
33	Polk	Farmland #143 SAP 1,2 (Shutdown)	409.5	3079.5	7.3	0	156	No	
34	Polk	IMC New Wales (#170)	396.7	3078.9	18.3	190.5	367	Yes	
35	Polk	Lakeland CT's	409.2	3102.8	29.3	1860	584	Yes	
36	Polk	Lakeland Power McIntosh 3 (#008)	408.5	3105.8	32.4	Not PSD	648	No	Date<88
37	Polk	Mobil (#102)	398.4	3085.3	19.5	Not PSD	390	No	Date<88
38	Polk	Royster (#106)	406.8	3085.1	13.4	Not PSD	268	No	Date<88
39	Polk	Seminole (WR Grace) (#157)	409.7	3086.0	12.9	35	258	Yes	
40	Polk	Seminole (WR Grace) (#68)	409.3	3086.9	13.4	Not PSD	269	No	Date<88
41	Polk	US Agrichem - Fort Meade (#107)	416.2	3068.7	5.6	Not PSD	111	No	Date<88
42	Polk	US Agrichem - Fort Meade (#64)	416.2	3068.7	5.6	Not PSD	111	No	Date<88
43	Sumter	FDOC Boiler #3 (No PSD #)	382.2	3166.1	97.6	Too far	1952	No	Too far

TABLE 5.6.1-13
CLASS II PSD SOURCE INVENTORY - SO_2

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)
1	Pasco	Pasco CoGen	385.6	3139.0	71	175	1420	No
2	Hardee	TECO Hardee Station	404.8	3057.4	19.0	9641	380	Yes
3	Pinellas	Pinellas Co Resource Recovery Facility (2 Sources)	335.2	3084.1	79.7	2162	1593	Yes
4	Hillsborough	CF Industries (Cent. Phos) (4 Sources)	388.0	3116.0	49.6	292	992	No
5	Hillsborough	Cargill (Gardinier) (3 Sources)	362.9	3082.5	52.0	-7304	1040	Yes
6	Hillsborough	TECO - Big Bend (3 Sources)	361.9	3075.0	52.3	-104176	1046	Yes
7	Hillsborough	McKay Bay Resource Recovery Facility (2 Sources)	360.0	3091.9	57.1	372	1142	No
8	Hillsborough	Hillsborough County Resource Recovery Facility	368.2	3092.7	49.7	743	994	No
9	Hillsborough	IMC - Ft. Lonesome (2 Sources)	389.6	3067.9	25.3	1375	506	Yes
10	Polk	Conserv (2 Sources)	398.7	3084.2	18.6	931	372	Yes
11	Polk	Agrico - S. Pierce (2 Sources)	407.5	3071.5	7.1	1316	142	Yes
12	Polk	Farmland (3 Sources)	409.5	3080.1	7.8	1896	156	Yes
13	Polk	Seminole (WR Grace) (2 Sources)	409.7	3086.0	12.9	-4946	258	Yes
14	Polk	Seminole (WR Grace)	409.5	3086.5	13.4	2501	269	Yes
15	Polk	IMC - New Wales (10 Sources)	396.7	3079.4	18.3	4869	367	Yes
16	Polk	Royster (2 Sources)	406.8	3085.1	13.4	-7707	268	Yes
17	Polk	Mobil - Nichols	398.4	3085.3	19.5	85	390	No
18	Osceola	FPC Intercession City 7EA Turbine (2 Sources)	446.3	3126.0	61.2	20387	1224	Yes
19	Pasco	Pasco Co Resource Recovery Facility	347.1	3139.2	93.6	490	1873	No
20	Osceola	Kissimmee Utilities (Existing)	460.1	3129.3	71.9	1115	1439	No
21	Pinellas	Stauffer (Shut Down)	325.6	3116.7	98.4	-1808	1968	No
22	Polk	City of Lakeland - McIntosh 3	408.5	3105.8	32.4	17369	648	Yes
23	Pasco	Evans Packing	383.3	3135.8	69.2	7	1384	No
24	Polk	City of Lakeland - Combustion Turbines	409.2	3102.8	29.3	1011	587	Yes
25	Polk	CF Bartow (3 Sources)	408.5	3083.0	10.7	-1858	215	Yes

TABLE 5.6.1-13
CLASS II PSD SOURCE INVENTORY - SO_2

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)
26	Hillsborough	CLM Chloride Metals	361.8	3088.3	54.3	729	1087	No
27	Polk	US Agrichem - Fort Meade (3 Sources)	416.2	3068.7	5.6	1639	111	Yes
28	Polk	AMAX (Mobil) Big 4 Mine (2 Sources)	394.9	3069.8	19.7	589	395	Yes
29	Sumter	FDOC boiler #3	382.2	3166.1	97.6	104	1952	No
30	Glades	ER Janna Lime Dryer	386.7	3155.9	86.5	28	1730	No
31	Pasco	DRIS Paving (asphalt)	340.6	3119.2	86.4	8	1728	No
32	Pasco	Overstreet Paving	355.9	3143.7	90.9	127	1819	No
33	Pasco	New Port Richy Hospital Boiler 1 (2 Sources)	331.2	3124.5	97.2	3	1944	No
34	Pasco	Couch Construction - Odessa	340.7	3119.5	86.5	252	1730	No
35	Pasco	Couch Construction - Zephyrhills	390.3	3129.4	60.4	123	1209	No

TABLE 5.6.1-14
CLASS II PSD SOURCE INVENTORY - PM

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
1	Glades	ER Janna Lime Dryer (No PSD #)	386.7	3155.9	86.5	Too far	1730	No	Too far
2	Hardee	TECO Hardee Station (#140)	404.8	3057.4	19.0	131	380	No	
3	Hillsborough	Cargill (Gardinier) (#178)	362.9	3082.5	52.0	0	1040	No	No PM
4	Hillsborough	CF Industires (#155)	388.0	3116.0	49.6	84	992	No	
5	Hillsborough	CLM Chloride Metals (Closed)	361.8	3088.3	54.3	0	1087	No	Closed
6	Hillsborough	Hillsborough County Resource Recovery (#104)	368.2	3092.7	49.7	90	994	No	
7	Hillsborough	IMC - Fort Lonesome (#88)	389.6	3067.9	25.3	175	506	No	
8	Hillsborough	McKay Bay Resource Recovery (#86)	360.0	3091.9	57.1	244	1142	No	
9	Hillsborough	TECO Big Bend 4 (#40)	361.9	3075.0	52.3	1897	1046	Yes	
10	Orange	Orlando Utilities Stanton #1	483.5	3150.6	103.0	548	2060	No	Too far
11	Orange	Orlando Utilities Stanton #2	483.5	3150.6	103.0	375	2060	No	Too far
12	Osceola	FPC Intercession City 7EA Turbine (#180)	446.3	3126.0	61.2	108	1224	No	
13	Osceola	Kissimmee Utility (#182)	460.1	3129.3	71.9	Too far	1439	No	Too far
14	Pasco	Couch Construction - Odessa (No PSD #)	340.7	3119.5	86.5	Too far	1730	No	Too far
15	Pasco	Couch Construction - Zephyrhills (No PSD #)	390.3	3129.4	60.4	45	1209	No	
16	Pasco	DRIS Paving (Asphalt) (No PSD #)	340.6	3119.2	86.4	Too far	1728	No	Too far
17	Pasco	Evans Packing (Shutdown)	383.3	3135.8	69.2	Too far	1384	No	Too far
18	Pasco	NP Richy Hosp Boiler 1 (No PSD #)	331.2	3124.5	97.2	Too far	1944	No	Too far
19	Pasco	Overstreet Paving (No PSD #)	355.9	3143.7	90.9	Too far	1819	No	Too far
20	Pasco	Pasco CoGen (#177)	385.6	3139.0	71.1	27	1422	No	
21	Pasco	Pasco Co. RRF. (#127)	347.1	3139.2	93.6	Too far	1873	No	Too far
22	Pinellas	Pinellas Co RRF (#11)	335.2	3084.1	79.7	Too far	1593	No	Too far
23	Pinellas	Pinellas Co RRF (#98)	335.2	3084.1	79.7	Too far	1593	No	
24	Pinellas	Stauffer (Shut Down) (Increment Expanding)	325.6	3116.7	98.4	Too far	1968	No	Too far
25	Polk	Agrico - S. Pierce (#61)	407.5	3071.5	7.1	0	142	No	No PM

TABLE 5.6.1-14
CLASS II PSD SOURCE INVENTORY - PM

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
26	Polk	AMAX (Mobil Big 4) (#1, #94)	394.9	3069.8	19.7	38	395	No	
27	Polk	CF Bartow - DAP 4	408.5	3083.0	10.7	171	215	Yes	
28	Polk	CF Bartow - SAP 3,4 (Shutdown)	408.5	3083.0	10.7	-42	215	Yes	
29	Polk	Conserve (#76)	398.7	3084.2	18.6	1004	372	Yes	
30	Polk	Farmland SAP 3,4	409.5	3080.1	7.8	30	156	Yes	
31	Polk	Farmland #143 SAP 1,2 (Shutdown)	409.5	3080.1	7.8	-764	156	Yes	
32	Polk	IMC New Wales (#114)	396.7	3079.4	18.3	56	367	Yes	
33	Polk	IMC New Wales (#170)	396.7	3079.4	18.3	222	367	Yes	
34	Polk	IMC New Wales (#34)	396.7	3079.4	18.3	129	367	Yes	
35	Polk	City of Lakeland - CT (#166)	409.2	3102.8	29.2	74.0	584.0	No	
36	Polk	Lakeland Power McIntosh 3 (#008)	408.5	3105.8	32.4	1420	648	Yes	
37	Polk	Mobil (#102)	398.4	3085.3	19.5	108	390	No	
38	Polk	Royster (#106)	406.8	3085.1	13.4	135	268	No	
39	Polk	Seminole (WR Grace) (#157)	409.7	3086.0	12.9	0	258	No	No PM
40	Polk	Seminole (WR Grace) (#68)	409.5	3086.5	13.4	157	269	No	
41	Polk	US Agrichem - Ft. Meade (#107)	416.2	3068.7	5.6	0	111	No	Not PSD-PM too small
42	Polk	US Agrichem - Ft. Meade (#64)	416.2	3068.7	5.6	0	111	No	Not PSD-PM too small
43	Sumter	FDOC Boiler #3	382.2	3166.1	97.6	Too far	1952	No	Too far

TABLE 5.6.1-15
CLASS I PSD SOURCE INVENTORY - NO_X

No.	Name	UTM Coordinates East	UTM Coordinates North	Distance to Polk Site (km)	Nearest Class I Recept. (km)	NO_X Emissions (TPY)	Comments
1	FPC/Debary Prop Turbines (No PSD #)	467.5	3197.2	134.3	125.2	4794	
2	FPC Intercession City Prop. Turbines 7 EAs (#180)	446.3	3126.0	61.2	113.2	616	
3	FPC Intercession City Prop. Turbines 7 FAs (#180)	446.3	3126.0	61.2	113.2	1132	
4	Florida Crushed Stone Kiln 1 * changed 12/26/91 (#90, #91)	360.0	3162.4	103.8	20.0	--	Date <88
5,7	CF Ind. Baseline C, D (Increment Expanding)	388.0	3116.0	49.6	68.9	--	
6,8	CF Ind. Proposed C, D (#155)	388.0	3116.0	49.6	68.9	0	No NO_X
9	Florida Mining & Materials Kiln 2 (#124)	356.2	3169.9	112.2	14.6	711	
10	TECO Big Bend - Unit 4 (#040)	361.9	3075.0	52.3	93.2	--	Date <88
11	TECO Big Bend - Units 1 & 2 (24-hr) * combined 1/3/92 (Increment Expanding)	361.9	3075.0	52.3	93.2	0	
12	TECO Big Bend- Unit 3 (24-hr) (Increment Expanding)	361.9	3075.0	52.3	93.2	0	
13	Pasco County Resource Recovery Facility (#127)	347.1	3139.2	93.6	27.4	1183	
14,15	FPC - Crystal River 4, 5 (#33)	334.2	3204.5	153.2	21.1	--	Date <88
16	FPC - Crystal River 1 (#007)	334.2	3204.5	153.2	21.1	--	Date <88
17	FPC - Crystal River 2 (#007)	334.2	3204.5	153.2	21.1	--	Date <88
18	Orlando Utility Stanton 1 (#84)	483.5	3150.6	103.4	142.5	--	Date <88
19	Orlando Utility Stanton 2	483.5	3150.6	103.4	142.5	3188	
20	Kissimmee Utility Existing (#182)	460.1	3129.3	71.9	125.2	0	PSD for SO_2 only
21	TECO Hardee Station (#140)	404.8	3057.4	19.0	126.1	1419	
22	Stauffer (Shut Down) (Increment Expanding)	325.6	3116.7	98.4	51.2	-28	
23	City of Lakeland - McIntosh 3 (#008)	408.5	3105.8	32.4	90.8	--	Date <88
24	Hillsborough County Resource Recovery Facility (#104)	368.2	3092.7	49.7	78.1	--	Date <88
25	Pinellas County Resource Recovery Facility (#098, #11)	335.3	3084.4	79.6	81.5	--	Date <88
26	Evans Packing (Shut Down)	383.3	3135.8	69.2	52.4	0	

TABLE 5.6.1-15
CLASS I PSD SOURCE INVENTORY - NO_x

No.	Name	UTM Coordinates East	UTM Coordinates North	Distance to Polk Site (km)	Nearest Class I Recept. (km)	NO_x Emissions (TPY)	Comments
27	Asphalt Pavers No. 4 * changed 1/3/92 * changed 12/26/91 (Not PSD)	361.4	3168.4	108.3	20.0	Approx. 40	Estimated
28	Asphalt Pavers No. 3 * changed 1/3/92 * added 12/26/91 (Not PSD)	359.9	3162.4	103.8	19.9	Approx. 40	Estimated
29	City of Lakeland - Combustion Turbines (#166)	409.2	3102.8	29.3	93.3	1860	
30	IMC - New Wales SAP #1, 2, 3 Baseline	396.6	3078.9	18.3	103.5	–	
31	IMC - New Wales SAP #1, 2, 3 Projected (#170)	396.6	3078.9	18.3	103.5	190.5	
32	IMC - New Wales SAP #4, 5 Projected (#170)	396.6	3078.9	18.3	103.5	–	Date <88
33	IMC - New Wales DAP (#114)	396.6	3078.9	18.3	103.5	–	Date <88
34	Proposed Pasco County Cogeneration Facility (#177)	385.6	3139.0	71.1	52.6	404.7	
35	Proposed Lake County Cogeneration Facility (#176)	434.0	3198.8	126.5	92.6	404.7	
36	CF Bartow Retired SAP (Increment Expanding)	408.5	3083.0	10.7	107.2	0	
37	CF Bartow DAP (#155)	408.5	3083.0	10.7	107.2	0	
38	CF Bartow #7 SAP (#155)	408.5	3083.0	10.7	107.2	0	
39	CLM Chloride Metals (Closed)	361.8	3088.3	54.3	80.3	–	
40	Conserve (Increment Expanding)	398.4	3084.2	18.9	100.1	–	
41	Conserve No. 1 SAP (#076)	398.4	3084.2	18.9	100.1	–	Date <88
42	Farmland SAP 1, 2 (Increment Expanding)	409.5	3079.5	7.3	110.5	0	
43	Farmland SAP 3, 4 (No PSD #)	409.5	3079.5	7.3	110.5	–	Date <88
44	Farmland SAP 5 (#143)	409.5	3079.5	7.3	110.5	52.2	
45	IMC - Lonesome Mine Dry 1 (#088)	389.6	3067.9	25.4	109.5	–	Date <88
46	IMC - Lonesome Mine Dry 2 (#088)	389.6	3067.9	25.4	109.5	–	Date <88
47	Royster #1 (#106)	406.7	3085.2	13.6	104.4	–	Date <88
48	Royster #2 (#106)	406.7	3085.2	13.6	104.4	–	Date <88
49,50	US Agrichem Fort Meade SAP 1, 2 (#107)	416.1	3068.6	5.6	123.2	–	Date <88

TABLE 5.6.1-15
CLASS I PSD SOURCE INVENTORY - NO_X

No.	Name	UTM Coordinates East	UTM Coordinates North	Distance to Polk Site (km)	Nearest Class I Recept. (km)	NO_X Emissions (TPY)	Comments
51	US Agrichem Fort Meade SAP X (Increment Expanding)	416.2	3068.7	5.5	123.1	–	
52	Seminole (WR Grace) Retired SAP (Increment Expanding)	409.7	3086.0	12.9	105.7	0	
53	Seminole (WR Grace) Gas Turbine (#157)	409.7	3086.0	12.9	105.7	35	
54	Seminole (WR Grace) 2 46 17 (#68)	409.5	3086.5	13.4	105.2	–	Date <88
55	Cargill (Gardinier) SAP 4, 5, 6 (Increment Expanding)	363.4	3082.4	51.5	86.4	–	
56,57	Cargill (Gardinier) SAP 7 Existing, Modification (#178)	363.4	3082.4	51.5	86.4	0	
58	AMAX (Mobil Big 4) (#1, #094)	394.8	3067.7	20.4	112.1	–	Date <88
59	AMAX (Mobil Big 4) (#1, #094)	394.9	3069.8	19.8	110.4	–	Date <88
60	Mobil - Nichols (#102)	398.3	3084.3	19.0	7.0	–	Date <88
61	FDOC Boiler #3 * changed 1/3/92 * changed 1/8/92 (No PSD #)	382.2	3166.1	97.6	40.4	Approx. 50	Estimated
62	ER Jahna (Lime Dryer) (No PSD #)	386.7	3155.8	86.4	47.4	0.3	
63	Oman Construction (Asphalt Plant) (No PSD #) (Shut down)	359.8	3164.9	106.0	19.5	–	Relocated
64	Dris Paving (Asphalt Plant) (No PSD #)	340.6	3119.2	86.4	46.5	Approx 100	Estimated
65	Overstreet Paving (Asphalt) * changed 1/3/92 * changed 1/8/92 (No PSD#)	355.9	3143.7	90.9	27.0	34	
66,67	New Port Richey Hospital Boiler #1 * changed 1/3/92 (No PSD#)	331.2	3124.5	97.2	42.2	0.2	
68,69	Hospital Corporation of America Boiler #1, #2 (No PSD #)	333.4	3141.0	105.0	25.6	Approx. 24	Estimated
70	Couch Construction - Odessa (Asphalt) * changed 1/3/92 (No PSD #)	340.7	3119.5	86.5	46.2	251	
71	Couch Construction - Zephyrhills (Asphalt) * changed 1/3/92 (No PSD #)	390.3	3129.4	60.4	61.8	69.2	
72	Agrico Baseline (Increment Expanding)	407.5	3071.3	7.2	115.9	-102.4	
73	Agrico Proposed (#179)	407.5	3071.3	7.2	115.9	118.2	
74	McCay Bay Refuse to Energy (#086)	360.0	3091.9	57.1	76.4	–	Date <88

TABLE 5.6.1-16
CLASS I PSD SOURCE INVENTORY - SO_2

No.	Name	UTM Coordinates		Distance to Polk Site (km)	Nearest Class I Recept. (km)	Emissions (TPY)
		East	North			
1	FPC/Debary Prop Turbines	467.5	3197.2	134.3	125.2	16199
2	FPC Intercession City Prop. Turbines	446.3	3126.0	61.2	113.2	10798
3	FPC Intercession City Prop. Turbines	446.3	3126.0	61.2	113.2	9589
4	Florida Crushed Stone Kiln 1 * changed 12/26/91	360.0	3162.4	103.8	20.0	3418
5,7	CF Ind. Baseline C, D	388.0	3116.0	49.6	68.9	-3501
6,8	CF Ind. Proposed C, D	388.0	3116.0	49.6	68.9	3793
9	Florida Mining & Materials Kiln 2	356.2	3169.9	112.2	14.6	50
10	TECO Big Bend- Unit 4	361.9	3075.0	52.3	93.2	22739
11	TECO Big Bend- Units 1 & 2 (24-hr) * combined 1/3/92	361.9	3075.0	52.3	93.2	-84605
12	TECO Big Bend- Unit 3 (24-hr)	361.9	3075.0	52.3	93.2	-42303
13	Pasco County Resource Recovery Facility	347.1	3139.2	93.6	27.4	490
14,15	FPC - Crystal River 4, 5	334.2	3204.5	153.2	21.1	70074
16	FPC - Crystal River 1	334.2	3204.5	153.2	21.1	-10906
17	FPC - Crystal River 2	334.2	3204.5	153.2	21.1	-64565
18	Orlando Utility Stanton 1	483.5	3150.6	103.4	142.5	3661
19	Orlando Utility Stanton 2 24 hr	483.5	3150.6	103.4	142.5	8419
20	Kissimmee Utility Existing	460.1	3129.3	71.9	125.2	1115
21	TECO Hardee Station	404.8	3057.4	19.0	126.1	9641
22	Stauffer (Shut Down)	325.6	3116.7	98.4	51.2	-1808
23	City of Lakeland - McIntosh 3	408.5	3105.8	32.4	90.8	17369
24	Hillsborough County Resource Recovery Facility	368.2	3092.7	49.7	78.1	743
25	Pinellas County Resource Recovery Facility	335.3	3084.4	79.6	81.5	2162
26	Evans Packing (Shut Down)	383.3	3135.8	69.2	52.4	0
27	Asphalt Pavers No. 4 * changed 1/3/92 * changed 12/26/91	361.4	3168.4	108.3	20.0	78

TABLE 5.6.1-16
CLASS I PSD SOURCE INVENTORY - SO_2

No.	Name	UTM Coordinates East	UTM Coordinates North	Distance to Polk Site (km)	Nearest Class I Recept. (km)	Emissions (TPY)
28	Asphalt Pavers No. 3 * changed 1/3/92 * added 12/26/91	359.9	3162.4	103.8	19.9	78
29	City of Lakeland - Combustion Turbines	409.2	3102.8	29.3	93.3	1011
30	IMC - New Wales SAP #1, 2, 3 Baseline	396.6	3078.9	18.3	103.5	-5908
31	IMC - New Wales SAP #1, 2, 3 Projected	396.6	3078.9	18.3	103.5	6351
32	IMC - New Wales SAP #4, 5 Projected	396.6	3078.9	18.3	103.5	4234
33	IMC - New Wales DAP	396.6	3078.9	18.3	103.5	192
34	Proposed Pasco County Cogeneration Facility	385.6	3139.0	71.1	52.6	175
35	Proposed Lake County Cogeneration Facility	434.0	3198.8	126.5	92.6	175
36	CF Bartow Retired SAP	408.5	3083.0	10.7	107.2	-3841
37	CF Bartow DAP	408.5	3083.0	10.7	107.2	149
38	CF Bartow #7 SAP	408.5	3083.0	10.7	107.2	1837
39	CLM Chloride Metals (Shut Down)	361.8	3088.3	54.3	80.3	0
40	Conserve	398.4	3084.2	18.9	100.1	-528
41	Conserve No. 1 SAP	398.4	3084.2	18.9	100.1	1459
42	Farmland SAP 1, 2	409.5	3079.5	7.3	110.5	-1895
43	Farmland SAP 3, 4	409.5	3079.5	7.3	110.5	2333
44	Farmland SAP 5	409.5	3079.5	7.3	110.5	1457
45	IMC - Lonesome Mine Dry 1	389.6	3067.9	25.4	109.5	639
46	IMC - Lonesome Mine Dry 2	389.6	3067.9	25.4	109.5	735
47	Royster #1	406.7	3085.2	13.6	104.4	-8947
48	Royster #2	406.7	3085.2	13.6	104.4	1240
49,50	US Agrichem Fort Meade SAP 1, 2	416.1	3068.6	5.6	123.2	4376
51	US Agrichem Fort Meade SAP X	416.2	3068.7	5.5	123.1	-2737
52	Seminole (WR Grace) Retired SAP	409.7	3086.0	12.9	105.7	-7502

TABLE 5.6.1-16
CLASS I PSD SOURCE INVENTORY - SO_2

No.	Name	UTM Coordinates East	UTM Coordinates North	Distance to Polk Site (km)	Nearest Class I Recept. (km)	Emissions (TPY)
53	Seminole (WR Grace) 2 46 16	409.7	3086.0	12.9	105.7	2556
54	Seminole (WR Grace) 2 46 17	409.5	3086.5	13.4	105.2	2501
55	Cargill (Gardinier) SAP 4, 5, 6	363.4	3082.4	51.5	86.4	-6818
56,57	Cargill (Gardinier) SAP 7 Existing, Modification	363.4	3082.4	51.5	86.4	-485
58	AMAX (Mobil) Big 4 Mine	394.8	3067.7	20.4	112.1	21
59	AMAX (Mobil) Big 4 Mine	394.9	3069.8	19.8	110.4	568
60	Mobil - Nichols	398.3	3084.3	19.0	7.0	83
61	FDOC Boiler #3 * changed 1/3/92 * changed 1/8/92	382.2	3166.1	97.6	40.4	104
62	ER Jahna (Lime Dryer)	386.7	3155.8	86.4	47.4	28
63	Oman Construction (Asphalt Plant) (Shut down)	359.8	3164.9	106.0	19.5	0
64	Dris Paving (Asphalt Plant)	340.6	3119.2	86.4	46.5	8
65	Overstreet Paving (Asphalt) * changed 1/3/92 * changed 1/8/92	355.9	3143.7	90.9	27.0	127
66,67	New Port Richey Hospital Boiler #1, #2 * changed 1/3/92	331.2	3124.5	97.2	42.2	3
68,69	Hospital Corporation of America Boiler #1	333.4	3141.0	105.0	25.6	6
70	Couch Construction - Odessa (Asphalt) * changed 1/3/92	340.7	3119.5	86.5	46.2	252
71	Couch Construction - Zephyrhills (Asphalt) * changed 1/3/92	390.3	3129.4	60.4	61.8	123
72	Agrico Baseline	407.5	3071.3	7.2	115.9	-2626
73	Agrico Proposed	407.5	3071.3	7.2	115.9	3942
74	McCay Bay Refuse to Energy	360.0	3091.9	57.1	76.4	743

TABLE 5.6.1-17
AAQS SOURCE INVENTORY - NO_x

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
1	Glades	ER Janna Lime Dryer	386.7	3155.9	86.7	0	1730	No	Q<20D
2	Hardee	American Orange Corp. (Permit Expired)	429.8	3047.3	30.8	0	616	No	Q<20D
3	Hardee	TECO Hardee Station	404.8	3057.4	19.0	5039	380	Yes	Q>20D
4	Hardee	Wachula Power	418.4	3047.0	27.2	65	545	No	Q<20D
5	Highlands	FPC - Avon Park	451.4	3050.5	43.9	27	877	No	Q<20D
6	Hillsborough	Alumax Extrusions	385.6	3097.0	36.8	129	737	No	Q<20D
7	Hillsborough	AMAX Mobil Mining - Big Four Mine	394.7	3069.6	20.1	0	401	No	Q<20D
8	Hillsborough	Cargill	362.9	3082.5	52.1	471	1042	No	Q<20D
9	Hillsborough	Cargill (Gardinier)	358.1	3091.7	59.0	0	1179	No	Q<20D
10	Hillsborough	CF Industries	388.0	3116.0	49.6	1116	993	Yes	Q>20D
11	Hillsborough	Hillsborough Co. Resource Recovery	368.2	3092.7	49.8	657	996	No	Q<20D
12	Hillsborough	IMC - Fort Lonesome	389.6	3067.9	25.3	608	506	Yes	Q>20D
13	Hillsborough	International Petroleum Corp. (Nat. Gas Fired)	389.0	3098.0	34.9	0	699	No	Q<20D
14	Hillsborough	John Carlo, Inc.	348.0	3096.4	70.0	0	1400	No	Q<20D
15	Hillsborough	Mckay Bay Refuse-To-Energy	360.0	3091.9	57.2	1310	1144	Yes	Q>20D
16	Hillsborough	TECO - Big Bend Station	361.9	3075.0	52.4	41912	1048	Yes	Q>20D
17	Hillsborough	TECO - Gannon Station	360.0	3087.5	56.0	28083	1120	Yes	Q>20D
18	Hillsborough	TECO - Hookers Station	358.0	3091.0	58.8	3573	1177	Yes	Q>20D
19	Hillsborough	Consolidated Minerals	393.8	3096.3	30.4	148	607.3	No	Q<20D
20	Hillsborough	CLM - Chloride Metals (Shut Down)	361.8	3088.3	54.4	0	1089	No	Q<20D
21	Orange	Orlando Utilities Stanton #1	483.5	3150.6	103.0	10982	2060	No	Too Far
22	Orange	Orlando Utilities Stanton #2	483.5	3150.6	103.0	3188	2060	No	Too Far
23	Osceola	FPC Intercession City	446.3	3126.0	61.2	1748	1224	Yes	Q>20D
24	Osceola	Kissimee Utilities	460.1	3129.3	71.9	1625	1437.6	Yes	Q>20D
25	Pasco	Couch Construction Co. (Zepherhills)	390.3	3129.4	60.5	0	1209	No	Q<20D

TABLE 5.6.1-17
AAQS SOURCE INVENTORY - NO_X

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
26	Pasco	Couch Const. Odessa	340.7	3119.5	86.6	6	1732	No	Q<20D
27	Pasco	Dris Paving	340.6	3119.2	86.4	100	1728	No	Q<20D
28	Pasco	Evans (Shut Down)				0		No	Q<20D
29	Pasco	New Port Richey Community Hospital	333.4	3133.0	100.2	2	2004.0	No	Q<20D
30	Pasco	Overstreet Paving Co.	355.9	3143.7	91.0	5	1820	No	Q<20D
31	Pasco	Pasco Cogen	385.6	3139.0	71.1	405	1422.9	No	Q<20D
32	Pasco	Pasco County Resource Recovery	347.0	3139.0	93.6	1183	1873	No	Q<20D
33	Pinellas	Pinellas Resource Recovery Facility	335.2	3084.1	79.8	947	1595	No	Q<20D
34	Pinellas	Stauffer Chemical Co. (Shut Down)	325.6	3116.7	98.5	0	1970	No	Q<20D
35	Polk	Adams Packing	421.7	3104.2	31.2	16	623	No	Q<20D
36	Polk	Agrico Chemical Co. - Pierce	403.7	3079.0	11.8	81	235	No	Q>20D
37	Polk	Alcoma Packing Co.	451.6	3085.5	39.1	59	781	No	Q<20D
38	Polk	Allsun Products (Shut Down)	413:5	3093.8	19.9	0	398	No	Q<20D
39	Polk	Bordo Citrus Product Co.	427.8	3097.5	27.2	29	544	No	Q<20D
40	Polk	Cargill (Gardinier)	415.3	3063.3	10.7	176	213	No	Q<20D
41	Polk	CF - Bartow	408.5	3083.0	10.8	0	216	No	Q<20D
42	Polk	Citrus Hill Manufacturing Co.	411.6	3081.4	8.0	11	159	No	Q<20D
43	Polk	Citrus Hill Manufacturing Co. (Frost Proof)	447.9	3068.3	34.2	313	684	No	Q<20D
44	Polk	Citrus World	441.0	3087.3	30.0	1303	599	Yes	Q>20D
45	Polk	City of Lakeland CT's	409.2	3102.8	29.2	186	584	No	Q<20D
46	Polk	City of Lakeland - Larsen Station	409.0	3106.2	32.7	92	654	No	Q<29D
47	Polk	City of Lakeland - McIntosh	408.5	3105.8	32.4	1557	648	Yes	Q>20D
48	Polk	Coca Cola	421.6	3103.7	30.7	270	614	No	Q<20D
49	Polk	Conserve (Nichols)	398.7	3084.2	18.7	13	374	No	Q<20D
50	Polk	Dundee Citrus	438.8	3099.9	35.7	17	714	No	Q<20D

TABLE 5.6.1-17
AAQS SOURCE INVENTORY - NO_X

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
51	Polk	Estech-Agricola (Shut Down)						No	Shut Down
52	Polk	Farmland (SAP 5)	409.5	3080.1	7.8	52	156	No	Q<20D
53	Polk	Farmland Industries	409.5	3080.1	7.8	205	156	Yes	Q>20D
54	Polk	Florida Distillers - Lake Alfred	428.0	3108.1	36.8	17	737	No	Q<20D
55	Polk	Florida Distillers Co. (Aubrundale)	421.4	3102.9	29.9	194	597	No	Q<20D
56	Polk	Holly Hill Fruit Products	441.0	3115.4	49.3	15	987	No	Q<20D
57	Polk	IMC - New Wales	396.7	3079.4	18.3	367	367	Yes	Q=20D
58	Polk	IMC Noralyn	414.7	3080.3	6.4	0	128	No	Q<20D
59	Polk	IMC Prairie	402.9	3087.0	17.4	0	348	No	Q<20D
60	Polk	John Carlo Inc.	426.2	3104.1	32.5	12	649	No	Q<20D
61	Polk	Juice Bowl Products	409.4	3099.9	26.5	39	529	No	Q<20D
62	Polk	Kaplan Industries, Inc.	418.3	3079.3	6.7	20	134	No	Q<20D
63	Polk	Laidlaw Env. Services, Inc.	424.0	3091.9	20.4	0	409	No	Q<20D
64	Polk	Mobil - Electrophos Division (Shut Down)							Shut Down
65	Polk	Mobil Mining & Minerals	398.4	3085.3	19.5	125	390	No	Q<20D
66	Polk	Owens Brockway (Illinois)	423.4	3102.3	28.9	393	675	No	Q<20D
67	Polk	Owens-Illinois	406.0	3102.3	29.6	391	591	No	Q<20D
68	Polk	Pavex Corp.	413.0	3086.2	12.4	24	247	No	Q<20D
69	Polk	Royster Mulberry	406.8	3085.1	13.2	20	265	No	Q<20D
70	Polk	Schering Berlin Polymers,Inc.	410.7	3098.9	25.3	530	505	Yes	Q>20D
71	Polk	Seminole Fertilizer Corp. (WR Grace)	409.8	3086.6	13.5	552	269	Yes	Q>20D
72	Polk	US Agrichem - Bartow	413.2	3086.3	12.3	21	247	No	Q<20D
73	Polk	US Agrichem - Fort Meade	416.0	3069.0	5.2	13	104	No	Q<20D
74	Polk	Agrico - S. Pierce	407.5	3071.5	7.2	139	144	No	Q<20D
75	Sumter	FDOC Boiler #3	382.2	3166.1	97.6	100	1952	No	Q<20D

TABLE 5.6.1-18
AAQS SOURCE INVENTORY - SO_2

No.	County	Source Name	UTM Coordinates East (Km)	UTM Coordinates North (Km)	Distance (Km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)
1	Polk	Adams Packing	421.7	3104.2	31.2	94	624	No
2	Polk	Agrico - S. Pierce	407.5	3071.5	7.1	3206	142	Yes
3	Polk	Alcoma Packing	451.6	3085.5	39.2	328	783	No
4	Hardee	American Orange Corp.	429.8	3047.3	30.8	198	617	No
5	Polk	Brewer/Pavex Co.	413.0	3086.2	12.4	75	247	No
6	Polk	CF - Bartow	408.4	3082.4	10.3	3904	206	Yes
7	Polk	Citrus Hill	447.9	3068.3	34.2	410	683	No
8	Polk	Citrus World	441.0	3087.3	30.0	877	599	Yes
9	Polk	Conserve - Nichols	398.7	3084.2	18.6	1582	372	Yes
10	Hillsborough	Consolidated Minerals	393.8	3096.3	30.3	817	606	Yes
11	Polk	Farmland - Green Bay	409.5	3080.1	7.8	3825	156	Yes
12	Highlands	FPC - Avon Park	451.4	3050.5	43.9	58	879	No
13	Polk	Gardinier Mine (Cargil) Ft. Meade	415.3	3063.3	10.7	1173	213	Yes
14	Hardee	TECO - Hardee Station	404.8	3057.4	19.0	16081	380	Yes
15	Polk	Holly Hill Fruit	441.0	3115.4	49.4	398	988	No
16	Hillsborough	IMC - Lonesome Mine	389.6	3067.9	25.3	1547	506	Yes
17	Polk	IMC - New Wales	396.7	3079.4	18.3	10561	367	Yes
18	Polk	IMC - Noralyn	414.7	3080.3	6.4	505	128	Yes
19	Polk	IMC - Prairie	402.9	3087.0	17.3	137	346	No
20	Hillsborough	International Petroleum	389.0	3098.0	34.9	61	697	No
21	Polk	John Carlo Florida	426.2	3104.1	32.5	33	650	No
22	Polk	City of Lakeland - Larsen Station	409.0	3106.2	32.7	3998	654	Yes
23	Polk	City of Lakeland - McIntosh Station	409.2	3106.2	32.7	30176	654	Yes
24	Polk	Mobil - Nichols	398.4	3085.3	19.5	898	390	Yes

TABLE 5.6.1-18
AAQS SOURCE INVENTORY - SO_2

No.	County	Source Name	UTM Coordinates East (Km)	UTM Coordinates North (Km)	Distance (Km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)
25	Polk	Owens-Illinois Glass	406.0	3102.3	29.6	21	591	No
26	Polk	Royster - Mulberry	406.8	3085.1	13.4	1265	268	Yes
27	Polk	WR Grace (Seminole)	409.8	3086.6	13.4	8674	269	Yes
28	Hillsborough	TECO - Big Bend	361.9	3075.0	52.3	237646	1046	Yes
29	Hillsborough	TECO - Gannon	360.0	3087.5	55.9	126940	1118	Yes
30	Hillsborough	TECO - Hookers PT	358.0	3091.0	58.7	13522	1175	Yes
31	Polk	Laidlaw Environmental Services	422.7	3091.9	19.9	240	398	No
32	Polk	US Agrichem - Fort Meade	416.0	3069.0	5.2	2710	104	Yes
33	Hardee	Wachula City Power	418.4	3047.0	27.2	180	545	No
34	Hillsborough	CF Industries	388.0	3116.0	49.4	7096	988	Yes
35	Hillsborough	Hillsborough County Resource Recovery Facility	368.2	3092.7	49.7	893	994	No
36	Polk	AMAX (Mobil) Big 4 Mine	394.7	3096.6	20.0	569	399	Yes
37	Polk	US Agrichem - Bartow	413.2	3086.3	12.4	423	249	Yes
38	Polk	Coca Cola	421.6	3103.7	30.7	119	614	No
39	Polk	Agrico - Pierce	403.7	3079.0	11.7	417	233	Yes
40	Polk	Kaplan Industries	418.3	3079.3	6.8	337	136	Yes
41	Polk	Bordo Citrus	427.8	3097.5	27.2	60	545	No

TABLE 5.6.1-19
AAQS SOURCE INVENTORY - PM

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
1	Glades	ER Janna Lime Dryer	386.7	3155.9	86.7	139.0	1730.0	No	Q<20D
2	Hardee	American Orange Corp. (Permit Expired)	429.8	3047.3	30.8	0.0	615.7	No	Q<20D
3	Hardee	TECO Hardee	404.8	3057.4	19.0	131.0	380.0	No	Q<20D
4	Hardee	Wachula Power	418.4	3047.0	27.4	20.0	547.0	No	Q<20D
5	Highlands	FPC - Avon Park	451.4	3050.5	43.9	422.8	877.3	No	Q<20D
6	Hillsborough	Alumax Extrusions	385.6	3097.0	36.8	57.9	736.8	No	Q<20D
7	Hillsborough	AMAX Mobil Mining - Big Four Mine	394.7	3069.6	20.1	50.2	401.3	No	Q<20D
8	Hillsborough	Cargill	362.9	3082.5	52.1	874.7	1042.3	No	Q<20D
9	Hillsborough	Cargill (Gardinier)	358.1	3091.7	59.0	5.8	1179.0	No	Q<20D
10	Hillsborough	CF Industries	388.0	3116.0	49.6	878.5	992.8	No	Q<20D
11	Hillsborough	CLM - Chloride Metals (Shut Down)	361.8	3088.3	54.4	0.0	1089.0	No	Q<20D
12	Hillsborough	Consolidated Minerals	393.8	3096.3	30.4	507.0	607.3	No	Q<20D
13	Hillsborough	Hillsborough Co. Resource Recovery	368.2	3092.7	49.8	174.1	995.7	No	Q<20D
14	Hillsborough	IMC - Fort Lonesome	389.6	3067.9	25.2	634.0	503.0	Yes	Q>20D
15	Hillsborough	International Petroleum Corp. (Nat. Gas Fired)	389.0	3098.0	34.9	0.0	698.8	No	Q<20D
16	Hillsborough	John Carlo, Inc.	348.0	3096.4	70.0	8.0	1400.3	No	Q<20D
17	Hillsborough	Mckay Bay Refuse-To-Energy	360.0	3091.9	57.2	250.9	1144.1	No	Q<20D
18	Hillsborough	TECO-Gannon Sta.	360.0	3087.5	56.0	6305.8	1119.5	Yes	Q>20D
19	Hillsborough	TECO-Hookers Sta.	358.0	3091.0	58.8	1227.4	1176.8	Yes	Q>20D
20	Hillsborough	TECO-Big Bend Sta.	361.9	3075.0	52.4	7869.8	1048.2	Yes	Q>20D
21	Manatee	FPL Manatee	367.3	3054.2	50.7	2965.0	1014.0	Yes	Q>20D
22	Orange	Orlando Utilities Stanton #1	483.5	3150.6	103.0	548.0	2060	No	Too Far
23	Orange	Orlando Utilities Stanton #2	483.5	3150.6	103.0	375.0	2060	No	Too Far
24	Osceola	FPC Intercession City	446.3	3126.0	61.2	108.0	1224.0	No	Q<20D

TABLE 5.6.1-19
AAQS SOURCE INVENTORY - PM

No.	County	Source Name	UTM Coordinates		Distance	Emissions	Screen	Model?	Comments
			East (km)	North (km)	(km)	(TPY)	(Q=20*D)	(Yes/No)	
25	Osceola	Kissimee Utilities	460.1	3129.3	71.9	102.5	1437.6	No	Q<20D
26	Pasco	Couch Const. Odessa	340.7	3119.5	86.6	2.8	1731.6	No	Q<20D
27	Pasco	Couch Construction - Zepherhills	390.3	3129.4	60.5	15.9	1209.3	No	Q<20D
28	Pasco	Dris Paving	340.6	3119.2	86.4	100.0	1728.0	No	Q<20D
29	Pasco	Evans (Shut Down)				0.0		No	Q<20D
30	Pasco	New Port Richey Community Hospital	333.4	3133.0	100.2	0.2	2004.0	No	Q<20D
31	Pasco	Overstreet Paving Co.	355.9	3143.7	91.0	3.5	1820.2	No	Q<20D
32	Pasco	Pasco Cogen	385.6	3139.0	71.1	27.0	1422.9	No	Q<20D
33	Pasco	Pasco County Resource Recovery	347.0	3139.0	93.6	59.1	1872.7	No	Q<20D
34	Pinellas	Pinellas Resource Recovery Facility	335.2	3084.1	79.8	373.4	1595.1	No	Q<20D
35	Pinellas	Stauffer Chemical Co. (Shut Down)	325.6	3116.7	98.5	0	1969.7	No	Q<20D
36	Polk	Adams Packing	421.7	3104.2	31.2	144.0	623.0	No	Q<20D
37	Polk	Agrico - Pierce	403.7	3079.0	11.8	605.2	229.0	Yes	Q>20D
38	Polk	Agrico - S. Pierce	407.7	3071.5	7.2	232.0	144.0	Yes	Q>20D
39	Polk	Alcoa	416.8	3116.0	42.1	446.0	842.0	No	Q<20D
40	Polk	Alcoma Packing Co.	451.6	3085.5	39.1	59.7	781.2	No	Q<20D
41	Polk	Allsun Products (Shut Down)	413.5	3093.8	19.9	0.0	398.3	No	Q<20D
42	Polk	Bordo Citrus Product Co.	427.8	3097.5	27.2	0.0	543.8	No	Q<20D
43	Polk	Cargill (Gardinier) - Fort Meade	415.3	3063.3	10.8	132.0	216.0	No	Q<20D
44	Polk	CF - Bartow	408.5	3083.0	10.8	805.0	215.8	Yes	Q>20D
45	Polk	Citrus Hill Manufacturing Co.	411.6	3081.4	8.0	0.4	159.4	No	Q<20D
46	Polk	Citrus Hill Manufacturing Co. (Frost Proof)	447.9	3068.3	34.2	50.0	684.0	No	Q<20D
47	Polk	Citrus World	441.0	3087.3	30.1	412.0	602.0	No	Q<20D
48	Polk	Coca Cola	421.6	3103.7	30.7	332.0	613.0	No	Q<20D

TABLE 5.6.1-19
AAQS SOURCE INVENTORY - PM

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
49	Polk	Conserve	398.7	3084.2	18.4	1590.0	368.0	Yes	Q>20D
50	Polk	C&M Products	405.5	3079.1	9.9	37.0	198.0	No	Q<20D
51	Polk	Dundee Citrus	438.8	3099.9	35.7	0.0	714.5	No	Q<20D
52	Polk	Earl Massey	440.4	3103.4	39.5	39.0	790.0	No	Q<20D
53	Polk	Eger Concrete	428.1	3102.0	31.3	34.0	627.0	No	Q<20D
54	Polk	ER Carpenter	397.0	3131.5	60.0	55.0	1199.0	No	Q<20D
55	Polk	Erly Juice	399.0	3101.8	31.6	13.0	632.0	No	Q<20D
56	Polk	Estech-Agricola (Shut Down)							Q<20D
57	Polk	Ewell Industries	406.3	3092.9	20.4	103.0	408.0	No	Q<20D
58	Polk	Farmland - Bartow	409.5	3080.1	7.6	230.0	152.0	Yes	Q>20D
59	Polk	Farmland (SAP 5)	409.5	3080.1	7.8	0.0	156.8	No	Q<20D
60	Polk	Florida Distillers Co. (Aubrundale)	421.4	3102.9	29.9	2.3	597.1	No	Q<20D
61	Polk	Florida Distillers - Lake Alfred	428.0	3108.1	36.8	4.1	736.8	No	Q<20D
62	Polk	Florida Mining & Materials (Eger)	420.8	3103.4	30.2	118.0	604.0	No	Q<20D
63	Polk	Florida Privitization	418.3	3048.0	26.4	279.6	527.0	No	Q<20D
64	Polk	Florida Tile	405.4	3102.4	29.7	73.0	593.0	No	Q<20D
65	Polk	Holly Hill Fruit Products	441.0	3115.4	49.3	94.0	986.9	No	Q<20D
66	Polk	IMC - Kingsford	398.2	3075.7	15.9	162.0	318.0	No	Q<20D
67	Polk	IMC - New Wales	396.7	3079.4	18.1	1322.0	362.0	Yes	Q>20D
68	Polk	IMC - Noralyn	414.7	3080.3	6.3	682.0	127.0	Yes	Q>20D
69	Polk	IMC - Prairie	402.9	3087.0	17.1	5.0	342.0	No	Q<20D
70	Polk	Imperial Phosphates	404.8	3069.5	10.2	39.0	205.0	No	Q<20D
71	Polk	John Carlo (Asphalt Plant)	426.2	3104.1	32.5	12.4	649.0	No	Q<20D
72	Polk	Juice Bowl Products	409.4	3099.9	26.5	0.3	529.2	No	Q<20D
73	Polk	Kaiser Aluminum	408.3	3085.5	12.8	95.5	257.0	No	Q<20D

TABLE 5.6.1-19
AAQS SOURCE INVENTORY - PM

No.	County	Source Name	UTM Coordinates East (km)	UTM Coordinates North (km)	Distance (km)	Emissions (TPY)	Screen (Q=20*D)	Model? (Yes/No)	Comments
74	Polk	Kaplan Industries,Inc.	418.3	3079.3	6.7	12.0	134.4	No	Q<20D
75	Polk	Laidlaw Env. Services,Inc.	424.0	3091.9	20.4	1.3	408.9	No	Q<20D
76	Polk	City of Lakeland CT's	408.5	3105.8	29.2	74.0	584.0	No	Q<20D
77	Polk	City of Lakeland - Larsen Station	409.0	3106.2	32.6	128.0	652.0	No	Q>20D
78	Polk	City Of Lakeland - McIntosh	408.5	3105.8	32.4	2358.0	648.5	Yes	Q>20D
79	Polk	Macasphalt	423.1	3101.5	29.0	49.0	579.0	No	Q<20D
80	Polk	Mobil Electrophos (Shut Down)	405.6	3079.4	10.0	0	200.0	No	Q<20D
81	Polk	Mobil - Nichols	398.4	3085.3	19.3	385.0	385.0	Yes	Q=20D
82	Polk	Orange Company of Florida	418.7	3083.6	10.7	91.0	214.0	No	Q<20D
83	Polk	Owens Brockway (Illinois)	423.4	3102.3	28.9	188.2	596.4	No	Q<20D
84	Polk	Pavers Inc.	414.0	3098.2	24.2	113.0	484.0	No	Q<20D
85	Polk	Pavex Corp.	413.0	3086.2	12.4	12.6	247.4	No	Q<20D
86	Polk	Quikrete	412.8	3099.0	25.0	190.0	501.0	No	Q<20D
87	Polk	Ridge Pallets	418.6	3084.1	11.1	78.0	222.0	No	Q<20D
88	Polk	Rinker Cencon	412.4	3099.0	25.1	159.0	501.0	No	Q<20D
89	Polk	Royster (PSD)	406.8	3085.1	13.2	105.0	265.0	No	Q<20D
90	Polk	Schering Berlin Polymers,Inc.	410.7	3098.9	25.3	27.6	505.2	No	Q<20D
91	Polk	Seminole Fertilizer Corp. (WR Grace)	409.8	3086.6	13.5	948.7	269.5	Yes	Q>20D
92	Polk	Standard Sand & Silica	441.5	3118.2	52.1	286.0	1041.0	No	Q<20D
93	Polk	Sun Pac	422.7	3092.6	20.5	62.0	411.0	No	Q<20D
94	Polk	US Agrichem - Bartow	413.2	3086.3	12.3	268.0	247.0	Yes	Q>20D
95	Polk	US Agrichem - Fort Meade	416.0	3069.0	5.2	691	103.7	Yes	Q>20D
96	Polk	Vigoro	427.9	3097.4	27.2	136.0	544.0	No	Q<20D
97	Sumter	FDOC Boiler #3	382.2	3166.1	97.6	100.0	1952.0	No	Q<20D

TABLE 5.6.1-20 RECEPTOR GRID FOR PSD CLASS I AREA					
Point	UTM Coordinates		Distance from Polk County Site *		
	East (km)	North (km)	ΔX (km)	ΔY (km)	Distance (km)
1	340.3	3,165.7	-74.0	91.82	117.9
2	340.3	3,167.7	-74.0	93.82	119.5
3	340.3	3,169.8	-74.0	95.92	121.1
4	340.7	3,171.9	-73.6	98.02	122.6
5	342.0	3,174.0	-72.3	100.12	123.5
6	343.0	3,176.2	-71.3	102.32	124.7
7	343.7	3,178.3	-70.6	104.42	126.0
8	342.4	3,180.6	-71.9	106.72	128.7
9	341.1	3,183.4	-73.2	109.52	131.7
10	339.0	3,183.4	-75.3	109.52	132.9
11	336.5	3,183.4	-77.8	109.52	134.3
12	334.0	3,183.4	-80.3	109.52	135.8
13	331.5	3,183.4	-82.8	109.52	137.3

* Location of "zero point" for Polk County Site is 414.300 km East; 3,073.880 km North

TABLE 5.6.1-21
WORST-CASE LOAD ANALYSIS RESULTS (PC UNITS)

Averaging Time	Year	Maximum SO_2 Concentration ($\mu g/m^3$)		
		50% Load	75% Load	100% Load
3-Hour	1986	64.6	86.2	106.8
24-Hour	1986	15.1	18.3	21.1
Annual	1986	1.48	1.83	2.05

Source: Ebasco Environmental, 1992

TABLE 5.6.1-22
MAXIMUM OFF-SITE IMPACTS
OF AUXILIARY BOILER AND DIESEL GENERATOR

Pollutant	Averaging Period	Maximum[1] Predicted Concentration ($\mu g/m^3$)	Location[2] X (m)	Location[2] Y (m)	Year	PSD Increment ($\mu g/m^3$)	AAQS ($\mu g/m^3$)
Carbon Monoxide	1-Hour 8-Hour	240.4 72.5	-104 -450	-591 -536	1985 1986	N/A N/A	40,000 10,000
Nitrogen Dioxide	Annual	0.12	-450	-536	1984	25	100
Sulfur Dioxide	3-Hour 24-Hour Annual	23.2 7.0 0.007	-450 -450 -450	-536 -536 -536	1983 1986 1984	512 91 20	1,300 260 60
Particulate Matter (PM_{10} or TSP)[3]	24-Hour Annual	6.1 0.006	-450 -450	-536 -536	1986 1984	37 19	150 50
Beryllium	24-Hour	0.00041	-450	-536	1986	N/A	N/A
Sulfuric Acid Mist	24-Hour	0.28	-450	-536	1986	N/A	N/A
Benzene	24-Hour	0.002	-450	-536	1986	N/A	N/A
Inorganic Arsenic	24-Hour	0.00066	-450	-536	1986	N/A	N/A

(1) Short-term values are highest, second-highest values for this analysis.
(2) With respect to zero point of 414.30 km E; 3,073.88 km N.
(3) The allowable PSD increment is evaluated for TSP whereas the AAQS compliance is evaluated for PM_{10}. As a conservative approach, all project emissions of particulate matter were assumed to be in the form of PM_{10}.

N/A = Not applicable

Source: Ebasco Environmental, 1992

TABLE 5.6.1-23
SUMMARY OF SIGNIFICANT IMPACT AREAS (CASE B)

Pollutant	Averaging Period	Maximum[1] Predicted Concentration ($\mu g/m^3$)	Location[2] X (m)	Location[2] Y (m)	Year	Significance Level ($\mu g/m^3$)	Distance to Significance (km)	Off-site Significant Impact (Yes/No)
Carbon Monoxide	1-Hour	439.3	2,000	-500	1984	2,000	None	No
	8-Hour	114.2	3,000	-500	1986	500	None	No
Nitrogen Dioxide	Annual	4.6	-2,000	1,000	1986	1	33	Yes
Sulfur Dioxide	3-Hour	358.1	1,000	-500	1983	25	>50	Yes
	24-Hour	80.2	1,000	-500	1985	5	>50	Yes
	Annual	4.8	-2,000	1,000	1986	1	40	Yes
Particulate Matter (PM_{10} or TSP)[3]	.24-Hour	36.6	-2,320	0	1983	5	12	Yes
	Annual	4.7	-2,000	-500	1982	1	7	Yes
Beryllium	24-Hour	0.0018	1,000	-500	1985	N/A	N/A	N/A
Sulfuric Acid Mist	24-Hour	15.7	1,000	-500	1985	N/A	N/A	N/A
Inorganic Arsenic	24-Hour	0.00679	1,000	-500	1985	N/A	N/A	N/A

(1) Short-term values are highest rather than highest, second-highest values for this analysis.
(2) With respect to zero point of 414.30 km E; 3,073.88 km N.
(3) The allowable PSD increment is evaluated for TSP whereas the AAQS compliance is evaluated for PM_{10}. As a conservative approach, all project emissions of particulate matter were assumed to be in the form of PM_{10}.

N/A = Not applicable

Source: Ebasco Environmental, 1992

TABLE 5.6.1-24
SUMMARY OF MAXIMUM OFF-SITE IMPACTS (CASE B)

Pollutant	Averaging Period	Maximum[1] Predicted Concentration ($\mu g/m^3$)	Location[2] X (m)	Location[2] Y (m)	Year	PSD Increment ($\mu g/m^3$)	AAQS ($\mu g/m^3$)
Carbon Monoxide	1-Hour 8-Hour	414.5 97.2	2,000 2,000	-500 -500	1984 1983	N/A N/A	40,000 10,000
Nitrogen Dioxide	Annual	4.6	-2,000	1,000	1986	25	100
Sulfur Dioxide	3-Hour 24-Hour Annual	263.7 65.5 4.8	1,000 1,000 -2,000	-500 -500 1,000	1983 1984 1986	512 91 20	1,300 260 60
Particulate Matter (PM_{10} or TSP)[3]	24-Hour Annual	30.4 4.7	-2,000 -2,000	-500 -500	1986 1982	37 19	150 50
Beryllium	24-Hour	0.0018	1,000	-500	1985	N/A	N/A
Sulfuric Acid Mist	24-Hour	15.7	1,000	-500	1985	N/A	N/A
Inorganic Arsenic	24-Hour	0.00679	1,000	-500	1985	N/A	N/A

(1) Short-term values are highest, second-highest values for this analysis, except for beryllium, sulfuric acid mist, and inorganic arsenic.

(2) With respect to zero point of 414.30 km E; 3,073.88 km N.

(3) The allowable PSD increment is evaluated for TSP whereas the AAQS compliance is evaluated for PM_{10}. As a conservative approach, all project emissions of particulate matter were assumed to be in the form of PM_{10}.

N/A = Not applicable

Source: Ebasco Environmental, 1992

TABLE 5.6.1-25
CLASS II PSD INCREMENT ANALYSES RESULTS

Pollutant	Averaging Period	Maximum[1] Concentration ($\mu g/m^3$)	Receptor Location[2] X (m)	Receptor Location[2] Y (m)	Period Julian Day	Period Ending Hour	Period Year	Allowable Class II Increments ($\mu g/m^3$)
Nitrogen Dioxide	Annual	4.7	2,500	-500	N/A	N/A	1986	25
Sulfur Dioxide	3-Hour	271.8	1,000	-500	42	3	1983	512
	24-Hour	67.2	1,000	-500	226	N/A	1984	91
	Annual	3.1	-9,397	-3,420	N/A	N/A	1982	20
Particulate Matter (TSP)	24-Hour	30.4	-2,000	-500	361	N/A	1986	37
	Annual	5.4	-2,000	-500	N/A	N/A	1986	19

(1) Maximum short-term concentrations are highest, second-highest values.
(2) With respect to zero point of 414.30 km E; 3,073.88 km N.

N/A = Not Applicable

Source: Ebasco Environmental, 1992

TABLE 5.6.1-26
MAXIMUM PROJECT IMPACTS PREDICTED USING ISCST VERSUS CLASS I PSD SIGNIFICANCE VALUES

Pollutant	Averaging Period	Maximum[1] Concentration ($\mu g/m^3$)	Receptor Location[2] X (m)	Receptor Location[2] Y (m)	Period Julian Day	Period Ending Hour	Period Year	PSD Class I Significance Value[3] ($\mu g/m^3$)	Project Impact Significance (Yes/No)
Nitrogen Dioxide	Annual	0.176	-73,870	91,820	N/A	N/A	1982	0.1	Yes
Sulfur Dioxide	3-Hour	12.6	-73,870	91,820	75	6	1986	1.23	Yes
	24-Hour	3.57	-73,870	95,920	99	N/A	1983	0.275	Yes
	Annual	0.22	-73,870	91,820	N/A	N/A	1982	0.1	Yes
Particulate Matter (PM_{10} or TSP)	24-Hour	0.441	-73,470	98,020	344	N/A	1986	1.35	No
	Annual	0.025	-73,870	93,820	N/A	N/A	1983	0.27	No

(1) Maximum short-term concentrations are highest rather than highest, second-highest values.
(2) With respect to zero point of 414.30 km E; 3,073.88 km N.
(3) Significance values as recommended by EPA (1991).

N/A = Not applicable

Source: Ebasco Environmental, 1992

TABLE 5.6.1-27
AAQS ANALYSES RESULTS

Pollutant	Averaging Time	Maximum Concentrations[1]				Receptor Location[2]		Period			Federal NAAQS ($\mu g/m^3$)	Florida FAAQS ($\mu g/m^3$)
		FPC ($\mu g/m^3$)	Background Sources ($\mu g/m^3$)	Monitored Background ($\mu g/m^3$)	Total ($\mu g/m^3$)	X (m)	Y (m)	Julian Date	Ending Hour	Year		
Nitrogen Dioxide	Annual	4.0	3.1	25	32.1	2,500	-500	N/A	N/A	1986	100	100
Sulfur Dioxide	3-Hour	0.0	654	78	732	4,000	5,500	299	12	1983	1,300	1,300
	24-Hour	0.0	198.5	34	232.5	4,000	5,500	167	N/A	1983	365	260
	Annual	1.0	45.2	5	51.2	-7,000	12,124	N/A	N/A	1982	80	60
Particulate Matter (PM_{10})	24-Hour	0.0	128.7	13	141.7	-8,660	5,000	241	N/A	1983	150	150
	Annual	0.2	18.3	12	30.5	-13,156	4,788	N/A	N/A	1984	50	50

(1) Maximum short-term concentrations are highest, second-highest values.
(2) With respect to zero point of 414.30 km E; 3,073.88 km N.

N/A = Not applicable

Source: Ebasco Environmental, 1992

TABLE 5.6.1-28
AIR TOXICS ANALYSIS[1]

Pollutant	FDER NTLs ($\mu g/m^3$)			Maximum Predicted Concentration ($\mu g/m^3$)			Below NTL
	8-Hour	24-Hour	Annual	8-Hour	24-Hour	Annual	
Trace Metals[2]							
Antimony	5	1.2	0.3	0.0457	0.0156	0.000172	Yes
Arsenic	2	0.48	0.00023	0.022	0.0077	0.000495	No
Barium	5	1.2	50	0.103	0.0363	0.00228	Yes
Beryllium	0.02	0.0048	0.00042	0.0052	0.00176	0.00003	Yes
Boron	100	24	N/A	0.134	0.0455	0.000124	Yes
Cadmium	0.5	0.12	0.00056	0.0222	0.00766	0.000168	Yes
Calcium	100	24	N/A	1.533	0.522	0.001424	Yes
Chromium	5	1.2	0.002	0.359	0.142	0.0100	No
Cobalt	0.5	0.12	N/A	0.0297	0.0105	0.000729	Yes
Copper	10	2.4	N/A	0.586	0.201	0.00223	Yes
Lead	N/A	N/A	N/A	0.312	0.107	0.00496	Yes
Magnesium	100	24	N/A	0.476	0.1622	0.000442	Yes
Manganese	50	12	0.4	0.0515	0.0207	0.00164	Yes
Mercury	0.5	0.12	0.3	0.0299	0.0109	0.00068	Yes
Nickel	1	0.24	N/A	0.424	0.158	0.0065	Yes
Selenium	2	0.48	N/A	0.0372	0.0129	0.00085	Yes
Vanadium (as V_2O_5)	0.5	0.12	20	0.172	0.0596	0.0016	Yes
Zinc	50	24	N/A	1.526	0.531	0.0202	Yes
Volatile Organic Compounds							
Benzene [3]	30	7.2	0.12	[3]	[3]	[3]	N/A
Formaldehyde	12	2.88	0.077	0.456	0.156	0.000667	Yes

Notes: [1] Analysis is for eight circuits, 2 PC units and 4 TOUs.
[2] Emission estimates based on application of BACT as discussed in Section 3.4.
[3] Benzene emission estimates are not available for CGCC units, PC units or TOUs.

NTL = "No Threat" Level (FDER Draft, Air Toxics Guidelines)

N/A = Not Applicable

Source: Ebasco Environmental, 1992

TABLE 5.6.1-29
OPTIONS SELECTED FOR READ 56 PROGRAM
PROPOSED FPC POLK COUNTY SITE

Variable	Description	Selected Value
1. CARD 1 – STARTING AND ENDING HOURS, UPPER PRESSURE LEVEL		
IBYR, IBDAY, IBHR, IEYR, IEDAY, IEHR	Starting and ending year, day, hour	As needed
PSTOP	Top pressure level for which data are extracted	500 mb
2. CARD 2 – MISSING DATA CONTROL VARIABLES		
LHT	Height field control variable	True (1)
LTEMP	Height field control variable	True (1)
LWD	Wind direction field control variable	True (1)
LWS	Wind speed field control variable	True (1)

(1) Program run a second time with value set to false in order provide a missing value indicator for mandatory levels of 850, 700, and 500 mb. Data for these levels are input by user.

TABLE 5.6.1-30
OPTIONS SELECTED FOR MESOPAC II PROGRAM
PROPOSED FPC POLK COUNTY SITE

Variable	Description	Selected Value
1. CARD GROUP 1 – TITLE		
TITLE	Title of run	As needed
2. CARD GROUP 2 – GENERAL RUN INFORMATION		
NYR, IDYSTR, IHRMAX	Year, start day, and number	As needed
NSSTA, NUSTA	Number of surface and rawinsonde stations	As needed
3. CARD GROUP 3 – GRID DATA		
IMAX, JMAX	Number of grid points in the X and Y directions	15, 15
DGRID	Grid spacing	20 km
4. CARD GROUP 4 – OUTPUT OPTIONS		
Various	Disk and printer control variables for writing data to disk	As needed
5. CARD GROUP 5 – LAND USE CATEGORIES AT EACH GRID POINT		
ILANDU	Land use categories at each grid point	15 by 15 array
6. CARD GROUP 6 – DEFAULT OVERRIDE OPTIONS		
IOPTS(1)	Surface wind speed measurement heights control variable	0 (Default– 10 m)
IOPTS(2)	von Karman constant control variable	0 (Default)
IOPTS(3)	Friction velocity constants control variable	0 (Default)
IOPTS(4)	Mixing height constants control variable	0 (Default)

TABLE 5.6.1-30
OPTIONS SELECTED FOR MESOPAC II PROGRAM
PROPOSED FPC POLK COUNTY SITE

Variable	Description	Selected Value
IOPTS(5)	Wind speed control variable	0 (Default – RADIUS = 99 km, ILWF = 2, IUWF = 4)
IOPTS(6)	Surface roughness lengths control variable	0 (Default)
IOPTS(7)	Option to adjust heat flux estimate	0 (Default)
IOPTS(8)	Radiation reduction factors control variable	0 (Default)
IOPTS(9)	Heat flux constant control variable	0 (Default)
IOPTS(10)	Option to begin run at date other than at start of meteorological data files	0 or 1, as needed
7.– 14. CARD GROUPS 7 TO 14		
Various	Options input to override default values	Not used
15. CARD GROUP 15 – SURFACE STATION DATA		
Various	Surface meteorological station information	As needed
16. CARD GROUP 16 – RAWINSONDE STATION DATA		
Various	Rawinsonde meteorological station information	As needed

Note: Precipitation data were available and were used in the enhanced operation mode of the MESOPUFF II modeling.

TABLE 5.6.1-31
OPTIONS SELECTED FOR MESOPUFF II PROGRAM
PROPOSED FPC POLK COUNTY SITE

Variable	Description	Selected Value
1. CARD GROUP 1 – TITLE		
TITLE	Title of run	As needed
2. CARD GROUP 2 – GENERAL RUN INFORMATION		
NSYR, NSDAY, NSHR	Year, start day and hour	As needed
NADVTS	Number of hours in run	As needed
NPTS	Number of point sources	As needed
NAREAS	Number of area sources	Not used
NREC	Number of non–gridded receptors	13 (Class I area)
NSPEC	Number of chemical species to model	1 (SO2)
3. CARD GROUP 3 – COMPUTATIONAL VARIABLES		
IAVG	Concentration averaging time	24 hours
NPUF	Puff release rate for each source	1 puff/hour
NSAMAD	Minimum sampling rate	2 samples/hour
LVSAMP	Variable sampling rate option	True (increase rate with higher wind speeds)
WSAMP	Reference wind speed used in variable sampling rate option (used if LVSAMP is true)	2 m/s
LSGRID	Control variable for concentration computations at sampling grid points	False (sampling at non–gridded points only)
AGEMIN	Minimum age of puffs to be sampled	900 seconds (should not be larger than 3600 seconds)

TABLE 5.6.1-31
OPTIONS SELECTED FOR MESOPUFF II PROGRAM
PROPOSED FPC POLK COUNTY SITE

Variable	Description	Selected Value
1. CARD GROUP 1 – TITLE		
TITLE	Title of run	As needed
2. CARD GROUP 2 – GENERAL RUN INFORMATION		
NSYR, NSDAY, NSHR	Year, start day and hour	As needed
NADVTS	Number of hours in run	As needed
NPTS	Number of point sources	As needed
NAREAS	Number of area sources	Not used
NREC	Number of non–gridded receptors	13 (Class I area)
NSPEC	Number of chemical species to model	1 (SO2)
3. CARD GROUP 3 – COMPUTATIONAL VARIABLES		
IAVG	Concentration averaging time	24 hours
NPUF	Puff release rate for each source	1 puff/hour
NSAMAD	Minimum sampling rate	2 samples/hour
LVSAMP	Variable sampling rate option	True (increase rate with higher wind speeds)
WSAMP	Reference wind speed used in variable sampling rate option (used if LVSAMP is true)	2 m/s
LSGRID	Control variable for concentration computations at sampling grid points	False (sampling at non–gridded points only)
AGEMIN	Minimum age of puffs to be sampled	900 seconds (should not be larger than 3600 seconds)

TABLE 5.6.1-31
OPTIONS SELECTED FOR MESOPUFF II PROGRAM
PROPOSED FPC POLK COUNTY SITE

Variable	Description	Selected Value
1. CARD GROUP 1 – TITLE		
TITLE	Title of run	As needed
2. CARD GROUP 2 – GENERAL RUN INFORMATION		
NSYR, NSDAY, NSHR	Year, start day and hour	As needed
NADVTS	Number of hours in run	As needed
NPTS	Number of point sources	As needed
NAREAS	Number of area sources	Not used
NREC	Number of non–gridded receptors	13 (Class I area)
NSPEC	Number of chemical species to model	1 (SO2)
3. CARD GROUP 3 – COMPUTATIONAL VARIABLES		
IAVG	Concentration averaging time	24 hours
NPUF	Puff release rate for each source	1 puff/hour
NSAMAD	Minimum sampling rate	2 samples/hour
LVSAMP	Variable sampling rate option	True (increase rate with higher wind speeds)
WSAMP	Reference wind speed used in variable sampling rate option (used if LVSAMP is true)	2 m/s
LSGRID	Control variable for concentration computations at sampling grid points	False (sampling at non–gridded points only)
AGEMIN	Minimum age of puffs to be sampled	900 seconds (should not be larger than 3600 seconds)

TABLE 5.6.1-31
OPTIONS SELECTED FOR MESOPUFF II PROGRAM
PROPOSED FPC POLK COUNTY SITE

Variable	Description	Selected Value
16. CARD GROUP 16 – NON–GRIDDED RECEPTOR COORDINATES		
XREC, YREC	X– and Y–coordinates of non–gridded receptors	Used

(1) This option was not used when the MESOPUFF II model was run in the inert mode. In the enhanced mode, this option was considered.

TABLE 5.6.1-32
SUMMARY OF 1982 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT
USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts
Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (µg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (µg/m³)			Concentration (µg/m³)			
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A-B+C)	Is Increment Exceeded and FPC's Impact Above SIL?	ISCST for Sources <=50km of Class I Area (D)	MESOPUFF for Non-FPC Sources >50km of Class I Area (E)	Adjusted Total (C+D+E)	Is Increment Exceeded and FPC's Impact Above SIL?
24-Hour Concentration Analysis												
22	24	1/22	1	5.66	0.58	0.14	5.22	No				
30	24	1/30	1	6.15	0.41	1.10	6.84	Yes	0.56	2.50	4.16	No
30	24	1/30	2	6.17	0.41	1.10	6.87	Yes	0.48	2.45	4.03	No
30	24	1/30	3	6.82	0.40	1.08	7.50	Yes	1.44	2.37	4.89	No
30	24	1/30	4	5.53	0.38	1.03	6.18	Yes	0.87	2.33	4.23	No
106	24	4/16	12	5.01	0.77	0.96	5.20	Yes	1.42	-20.00	-17.62	No
106	24	4/16	13	5.18	0.74	0.83	5.27	Yes	1.72	-19.30	-16.75	No
154	24	6/03	2	5.62	0.44	0.13	5.30	No				
154	24	6/03	3	5.74	0.36	0.12	5.50	No				
154	24	6/03	4	6.04	0.30	0.11	5.85	No				
154	24	6/03	13	5.80	0.27	0.11	5.63	No				
155	24	6/04	5	5.83	0.42	0.00	5.41	No				
155	24	6/04	11	5.38	0.29	0.00	5.09	No				
155	24	6/04	12	5.06	0.49	0.00	4.57	No				
177	24	6/26	5	5.02	0.36	0.02	4.69	No				
187	24	7/06	4	5.04	1.20	0.61	4.45	No				
188	24	7/07	1	5.36	0.68	2.01	6.69	Yes	0.93	-3.81	-0.87	No
205	24	7/24	4	6.02	0.60	0.0007	5.42	No				
205	24	7/24	5	5.41	0.77	0.0010	4.65	No				
205	24	7/24	7	5.18	0.83	0.0014	4.36	No				
205	24	7/24	8	5.15	0.81	0.0014	4.34	No				
205	24	7/24	9	5.51	0.79	0.0015	4.73	No				
205	24	7/24	12	5.15	0.64	0.0009	4.51	No				
205	24	7/24	13	5.35	0.51	0.0007	4.84	No				
230	24	8/18	4	5.72	0.58	0.85	6.00	Yes	1.15	-3.49	-1.49	No
230	24	8/18	5	5.21	0.59	0.88	5.50	Yes	0.51	-3.13	-1.75	No
230	24	8/18	13	5.42	0.50	1.05	5.96	Yes	0.37	-4.56	-3.14	No

TABLE 5.6.1-32
SUMMARY OF 1982 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT
USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts
Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (µg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (µg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (µg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A-B+C)		ISCST for Sources <=50km of Class I Area (D)	MESOPUFF for Non-FPC Sources >50km of Class I Area (E)	Adjusted Total (C+D+E)	
336	24	12/02	1	5.50	0.40	0.00	5.09	No				
336	24	12/02	2	6.06	0.36	0.00	5.69	No				
336	24	12/02	3	6.17	0.31	0.00	5.86	No				
356	24	12/22	4	5.31	0.52	0.02	4.80	No				
357	24	12/23	1	5.10	1.46	0.84	4.49	No				
358	24	12/24	1	5.42	0.29	1.92	7.05	Yes	0.09	-0.55	1.46	No
358	24	12/24	2	5.91	0.30	1.66	7.27	Yes	0.34	0.37	2.38	No
358	24	12/24	3	6.54	0.30	1.40	7.64	Yes	1.09	1.40	3.89	No
358	24	12/24	4	6.54	0.29	1.11	7.36	Yes	1.40	2.47	4.98	No
361	24	12/27	1	6.90	1.05	1.20	7.05	Yes	1.09	2.29	4.58	No

Note: MESOPUFF II modeling is performed in the inert mode (i.e., without chemical transformation or wet/dry deposition).

(1) No additional analysis is needed if no exceedance of the increment is predicted or the proposed FPC facility's impacts are less than the significant impact levels.

TABLE 5.6.1-33
SUMMARY OF 1983 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT
USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts
Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (µg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (µg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (µg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A−B+C)		ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non−FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	
24−Hour Concentration Analysis												
28	24	1/28	1	5.15	0.96	0.00126	4.20	No				
28	24	1/28	7	5.14	0.61	0.00101	4.53	No				
28	24	1/28	8	5.09	0.59	0.00067	4.50	No				
28	24	1/28	9	5.28	0.57	0.00037	4.71	No				
28	24	1/28	10	5.12	0.61	0.00022	4.50	No				
32	24	2/01	4	5.22	1.70	1.35	4.87	No				
32	24	2/01	5	5.12	1.62	1.36	4.86	No				
32	24	2/01	6	5.48	1.49	1.44	5.43	Yes	0.78	−1.10	1.12	No
32	24	2/01	7	5.66	1.38	1.53	5.81	Yes	1.41	−0.93	2.01	No
32	24	2/01	8	5.39	1.33	1.55	5.61	Yes	1.23	−1.49	1.29	No
32	24	2/01	10	5.57	1.34	1.53	5.76	Yes	0.96	−3.05	−0.56	No
32	24	2/01	11	6.15	1.43	1.48	6.20	Yes	0.66	−3.79	−1.66	No
32	24	2/01	12	6.73	1.49	1.44	6.68	Yes	0.69	−3.97	−1.84	No
32	24	2/01	13	6.87	1.49	1.39	6.77	Yes	0.70	−3.68	−1.59	No
63	24	3/04	7	6.64	0.42	2.54	8.76	Yes	1.72	−4.65	−0.39	No
63	24	3/04	8	6.48	0.39	2.50	8.59	Yes	0.92	−4.62	−1.20	No
63	24	3/04	9	6.51	0.35	2.46	8.62	Yes	0.98	−4.51	−1.07	No
63	24	3/04	10	6.32	0.49	2.37	8.19	Yes	0.86	−4.93	−1.70	No
63	24	3/04	11	5.97	0.72	2.19	7.45	Yes	0.89	−5.12	−2.04	No
63	24	3/04	12	5.85	0.92	1.91	6.84	Yes	1.29	−4.99	−1.79	No
63	24	3/04	13	5.16	1.00	1.56	5.73	Yes	1.16	−4.75	−2.04	No
64	24	3/05	8	6.22	1.27	0.76	5.71	Yes	3.08	1.19	5.03	Yes
64	24	3/05	12	5.56	1.36	0.24	4.44	No				
64	24	3/05	13	5.03	1.32	0.11	3.82	No				
104	24	4/14	4	5.35	0.49	0.21	5.08	No				
104	24	4/14	5	5.21	0.35	0.078	4.93	No				
104	24	4/14	11	5.62	0.28	0.0067	5.34	No				
104	24	4/14	12	6.03	0.36	0.038	5.71	No				
104	24	4/14	13	5.80	0.45	0.12	5.46	No				
121	24	5/01	1	6.55	0.42	0.025	6.16	No				
121	24	5/01	2	7.82	0.42	0.022	7.42	No				
121	24	5/01	3	6.70	0.43	0.019	6.29	No				
121	24	5/01	4	6.40	0.44	0.016	5.97	No				
121	24	5/01	5	5.65	0.45	0.014	5.21	No				
121	24	5/01	6	5.08	0.46	0.012	4.63	No				

TABLE 5.6.1-33
SUMMARY OF 1983 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (µg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (µg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (µg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A−B+C)		ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non-FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	
122	24	5/02	3	5.32	0.40	0.58	5.51	Yes	0.19	5.42	6.19	Yes
122	24	5/02	4	6.62	0.52	0.54	6.64	Yes	0.90	5.35	6.79	Yes
122	24	5/02	13	5.43	0.43	0.41	5.41	Yes	0.66	4.14	5.21	Yes
127	24	5/07	1	5.08	0.37	0.34	5.04	Yes	0.019	3.35	3.71	No
127	24	5/07	5	6.27	0.37	0.36	6.26	Yes	2.41	4.11	6.88	Yes
127	24	5/07	6	7.02	0.33	0.34	7.03	Yes	2.11	4.02	6.47	Yes
127	24	5/07	7	6.58	0.29	0.30	6.59	Yes	1.35	4.05	5.70	Yes
127	24	5/07	8	6.12	0.28	0.30	6.14	Yes	1.19	4.14	5.63	Yes
127	24	5/07	10	5.57	0.30	0.34	5.61	Yes	1.01	4.21	5.56	Yes
127	24	5/07	11	6.32	0.33	0.35	6.33	Yes	1.41	4.34	6.10	Yes
127	24	5/07	12	6.48	0.35	0.35	6.47	Yes	1.38	4.50	6.23	Yes
127	24	5/07	13	6.54	0.35	0.38	6.57	Yes	1.44	4.65	6.47	Yes
130	24	5/10	4	6.61	0.27	0.20	6.54	No				
130	24	5/10	5	7.32	0.27	0.20	7.25	No				
135	24	5/15	9	5.31	0.90	1.45	5.86	Yes	0.78	1.41	3.64	No
139	24	5/19	1	5.06	0.72	0.078	4.41	No				
216	24	8/04	3	5.26	0.29	0.082	5.06	No				
247	24	9/04	8	5.01	0.68	0.21	4.53	No				
263	24	9/20	1	5.21	0.32	1.24	6.14	Yes	1.27	1.97	4.48	No
316	24	11/14	8	6.11	0.30	1.50	7.31	Yes	1.58	−5.44	−2.36	No
316	24	11/14	10	5.44	0.29	1.31	6.48	Yes	1.26	−6.34	−3.77	No

Note: MESOPUFF II modeling is performed in the inert mode (i.e., without chemical transformation or wet/dry deposition).

(1) No additional analysis is needed if no exceedance of the increment is predicted or the proposed FPC facility's impacts are less than the significant impact levels.

TABLE 5.6.1-34
SUMMARY OF 1984 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT
USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts
Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (µg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (µg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (µg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A−B+C)		ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non−FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	
24−Hour Concentration Analysis												
64	24	3/04	1	6.49	0.45	0.34	6.38	Yes	0.60	4.20	5.14	Yes
64	24	3/04	2	5.55	0.49	0.32	5.38	Yes	0.80	4.15	5.27	Yes
64	24	3/04	3	6.00	0.51	0.31	5.80	Yes	2.26	4.03	6.60	Yes
144	24	5/23	1	5.14	0.54	0.026	4.63	No				
144	24	5/23	2	5.36	0.50	0.028	4.89	No				
144	24	5/23	3	5.85	0.44	0.030	5.44	No				
149	24	5/28	1	5.09	0.52	0.61	5.19	Yes	1.01	1.31	2.93	No
158	24	6/06	1	5.08	0.87	0.15	4.36	No				
158	24	6/06	2	5.40	0.91	0.11	4.60	No				
158	24	6/06	3	5.65	0.94	0.078	4.79	No				
158	24	6/06	4	5.16	0.95	0.051	4.26	No				
158	24	6/06	9	5.44	0.69	0.0043	4.75	No				
158	24	6/06	10	5.21	0.77	0.0070	4.45	No				
166	24	6/14	4	5.63	0.31	1.04	6.36	Yes	0.26	0.85	2.15	No
166	24	6/14	5	6.53	0.41	1.08	7.20	Yes	0.75	0.48	2.31	No
166	24	6/14	6	6.17	0.50	1.12	6.79	Yes	0.91	0.10	2.13	No
166	24	6/14	7	5.50	0.59	1.16	6.07	Yes	1.00	−0.15	2.01	No
166	24	6/14	8	5.11	0.59	1.14	5.66	Yes	1.14	−0.19	2.09	No
170	24	6/18	5	5.19	1.18	1.35	5.36	Yes	1.38	2.14	4.87	No
199	24	7/17	3	5.79	0.81	0.00013	4.98	No				
205	24	7/23	1	5.74	0.54	1.52	6.72	Yes	1.00	−3.81	−1.29	No
205	24	7/23	2	5.02	0.54	1.65	6.13	Yes	1.78	−3.71	−0.28	No
210	24	7/28	3	5.41	0.55	0.42	5.29	Yes	1.44	−6.74	−4.88	No
210	24	7/28	6	5.45	0.70	0.49	5.24	Yes	1.42	−5.25	−3.34	No
214	24	8/01	4	6.04	0.32	0.84	6.56	Yes	0.99	−0.28	1.55	No
214	24	8/01	5	5.25	0.40	0.94	5.80	Yes	1.13	−0.12	1.95	No
215	24	8/02	1	6.37	0.45	1.55	7.47	Yes	1.34	−0.80	2.09	No
215	24	8/02	2	5.06	0.45	1.70	6.31	Yes	0.73	−0.58	1.85	No

TABLE 5.6.1-34
SUMMARY OF 1984 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT
USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts
Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (μg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (μg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (μg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A−B+C)		ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non-FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	
365	24	12/30	1	5.29	0.57	1.71	6.44	Yes	0.37	−4.88	−2.80	No
365	24	12/30	2	7.04	0.59	1.76	8.21	Yes	0.44	−4.55	−2.35	No
365	24	12/30	3	9.20	0.61	1.80	10.40	Yes	1.05	−4.24	−1.39	No
365	24	12/30	4	9.82	0.61	1.87	11.08	Yes	0.89	−3.74	−0.98	No
365	24	12/30	5	7.77	0.60	1.99	9.17	Yes	0.65	−2.88	−0.24	No
365	24	12/30	6	5.72	0.55	2.08	7.25	Yes	1.45	−2.27	1.26	No
365	24	12/30	10	5.13	0.51	2.06	6.69	Yes	1.44	−3.30	0.20	No
365	24	12/30	11	5.14	0.54	1.96	6.56	Yes	0.84	−4.45	−1.65	No
365	24	12/30	12	5.19	0.55	1.85	6.49	Yes	0.43	−5.77	−3.49	No
365	24	12/30	13	5.44	0.55	1.74	6.63	Yes	0.36	−7.19	−5.09	No

Note: MESOPUFF II modeling is performed in the inert mode (i.e., without chemical transformation or wet/dry deposition).

(1) No additional analysis is needed if no exceedance of the increment is predicted or the proposed FPC facility's impacts are less than the significant impact levels.

TABLE 5.6.1-35
SUMMARY OF 1985 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (μg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (μg/m³)			Concentration (μg/m³)			
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A−B+C)	Is Increment Exceeded and FPC's Impact Above SIL?	ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non-FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	Is Increment Exceeded and FPC's Impact Above SIL?
3-Hour Concentration Analysis												
302	3	10/29	9	25.7	1.36	0.06	24.42	No				
24-Hour Concentration Analysis												
54	24	2/23	3	5.21	0.34	0.90	5.77	Yes	0.64	1.64	3.18	No
157	24	6/6	9	5.16	0.69	0.007	4.48	No				
176	24	6/25	12	5.98	0.30	0.00	5.69	No				
212	24	7/31	2	5.29	0.68	0.39	5.00	Yes	0.49	0.94	1.82	No
212	24	7/31	3	6.06	0.67	0.38	5.77	Yes	0.67	0.95	2.00	No
212	24	7/31	4	5.09	0.66	0.37	4.80	No				
232	24	8/20	13	5.31	0.29	0.0091	5.03	No				
242	24	8/30	1	5.77	1.32	1.80	6.25	Yes	0.18	−2.68	−0.70	No
242	24	8/30	2	5.04	1.23	1.88	5.70	Yes	0.22	−2.28	−0.18	No
242	24	8/30	8	6.82	0.69	2.26	8.19	Yes	2.46 (2)	2.27	6.99	Yes
242	24	8/30	7	5.16	0.87	2.21	6.50	Yes	1.82	2.57	6.60	Yes
242	24	8/30	10	5.12	0.83	2.21	6.50	Yes	1.49	1.87	5.57	Yes
242	24	8/30	11	5.78	0.84	2.11	7.05	Yes	1.83	1.31	5.25	Yes
242	24	8/30	12	6.36	0.88	1.94	7.42	Yes	2.45	0.69	5.08	Yes
242	24	8/30	13	5.48	0.94	1.83	6.37	Yes	1.89	0.033	3.75	No
302	24	10/29	9	5.05	0.67	0.21	4.59	No				
334	24	11/30	5	7.30	0.32	0.07	7.04	No				
334	24	11/30	6	5.68	0.42	0.12	5.38	No				
334	24	11/30	7	5.52	0.48	0.17	5.22	No				
334	24	11/30	8	5.02	0.47	0.15	4.69	No				
334	24	11/30	10	5.23	0.42	0.08	4.89	No				

TABLE 5.6.1-35
SUMMARY OF 1985 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT
USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts
Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (µg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (µg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (µg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A-B+C)		ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non-FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	
345	24	12/11	5	5.01	0.46	0.31	4.86	No				

Note: MESOPUFF II modeling is performed in the inert mode (i.e., without chemical transformation or wet/dry deposition).

(1) No additional analysis is needed if no exceedance of the increment is predicted or the proposed FPC facility's impacts are less than the significant impact levels.

(2) Based on revised exit velocity and temperature for Florida Crushed Stone emission source and elimination of Oman Construction source.

TABLE 5.6.1-36
SUMMARY OF 1986 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (µg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (µg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (µg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A–B+C)		ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non-FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	
3-Hour Concentration Analysis												
205	3	7/24	4	25.4	1.01	0.0	24.39	No				
205	3	7/24	13	36.5	0.67	0.0	35.83	No				
24-Hour Concentration Analysis												
41	24	2/10	11	5.72	1.52	0.014	4.21	No				
41	24	2/10	12	5.81	0.99	0.013	4.83	No				
48	24	2/17	6	5.64	0.49	0.30	5.45	Yes	2.12	−3.93	−1.51	No
166	24	6/15	1	6.07	0.44	1.02	6.65	Yes	0.73	−20.95	−19.2	No
166	24	6/15	2	6.64	0.38	1.03	7.29	Yes	0.92	−20.83	−18.88	No
166	24	6/15	3	6.93	0.32	1.04	7.65	Yes	1.91	−20.62	−17.67	No
167	24	6/16	1	5.45	0.98	0.29	4.76	No				
167	24	6/16	2	5.57	0.99	0.29	4.87	No				
167	24	6/16	5	5.57	1.24	0.32	4.65	No				
167	24	6/16	6	6.23	1.39	0.33	5.17	Yes	0.77	−3.41	−2.31	No
167	24	6/16	7	6.42	1.56	0.34	5.20	Yes	2.29	−3.48	−0.85	No
167	24	6/16	8	6.01	1.55	0.32	4.78	No				
167	24	6/16	9	5.97	1.56	0.30	4.71	No				
167	24	6/16	10	6.83	1.39	0.28	5.72	Yes	1.26	−3.24	−1.7	No
167	24	6/16	11	7.50	1.21	0.24	8.53	No				
167	24	6/16	12	6.65	1.09	0.21	5.77	No				
205	24	7/24	3	6.37	0.36	0.0025	6.01	No				
205	24	7/24	12	5.14	0.78	0.0026	4.36	No				
205	24	7/24	13	7.21	0.46	0.0022	6.75	No				
215	24	8/3	4	5.37	0.82	0.14	4.69	No				
215	24	8/3	5	5.58	0.59	0.15	5.14	No				
215	24	8/3	6	7.03	0.46	0.15	6.72	No				
215	24	8/3	7	8.78	0.43	0.16	8.51	No				
215	24	8/3	8	8.79	0.42	0.16	8.53	No				
215	24	8/3	9	9.35	0.43	0.16	9.08	No				
215	24	8/3	10	8.09	0.41	0.16	7.84	No				
215	24	8/3	11	7.55	0.48	0.15	7.22	No				
215	24	8/3	12	7.33	0.61	0.14	6.86	No				
215	24	8/3	13	6.12	0.79	0.13	5.46	No				

TABLE 5.6.1-36
SUMMARY OF 1986 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (μg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (μg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (μg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A−B+C)		ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non-FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	
218	24	8/6	5	5.25	0.38	1.82	6.69	Yes	1.82	−3.67	−0.03	No
218	24	8/6	6	5.04	0.35	1.93	6.62	Yes	1.35	−3.43	−0.15	No
218	24	8/6	7	5.23	0.32	2.01	6.92	Yes	1.18	−3.20	−0.01	No
218	24	8/6	8	5.31	0.31	1.87	6.87	Yes	0.91	−3.35	−0.57	No
218	24	8/6	10	5.18	0.32	1.51	6.37	Yes	0.76	−3.88	−1.61	No
218	24	8/6	11	5.19	0.34	1.28	6.13	Yes	0.66	−4.29	−2.35	No
218	24	8/6	12	5.19	0.35	1.07	5.91	Yes	0.90	−4.68	−2.71	No
218	24	8/6	13	5.03	0.36	0.89	5.56	Yes	1.07	−5.08	−3.12	No
222	24	8/10	4	5.62	0.32	0.23	5.53	No				
224	24	8/12	6	5.31	0.55	0.84	5.60	Yes	1.00	2.72	4.56	No
224	24	8/12	7	5.31	0.39	0.81	5.73	Yes	0.95	2.45	4.21	No
242	24	8/30	1	6.61	0.83	0.20	5.98	No				
242	24	8/30	2	7.76	0.85	0.21	7.12	No				
242	24	8/30	3	8.79	0.86	0.22	8.15	No				
242	24	8/30	4	8.74	0.85	0.24	8.13	No				
242	24	8/30	5	5.86	0.80	0.26	5.32	No				
253	24	9/10	4	5.43	0.45	1.37	6.35	Yes	0.67	−10.68	−8.64	No
253	24	9/10	5	5.41	0.54	1.37	6.24	Yes	0.76	−10.17	−8.04	No
256	24	9/13	7	5.20	0.49	0.18	4.89	No				
256	24	9/13	8	5.01	0.46	0.18	4.73	No				
256	24	9/13	10	5.54	0.55	0.16	5.15	No				
256	24	9/13	11	6.99	0.69	0.15	6.45	No				
256	24	9/13	12	8.21	0.76	0.15	7.60	No				
256	24	9/13	13	8.76	0.76	0.14	8.14	No				
267	24	9/24	1	5.38	0.58	1.71	6.51	Yes	0.18	−14.95	−13.06	No
270	24	9/27	1	6.00	0.36	0.10	5.74	No				
270	24	9/27	2	7.64	0.28	0.10	7.46	No				
272	24	9/29	2	5.41	0.40	0.00	5.01	No				
272	24	9/29	5	5.75	0.39	0.00	5.36	No				
298	24	10/25	11	5.28	0.30	1.57	6.55	Yes	0.89	−1.55	0.91	No

TABLE 5.6.1-36
SUMMARY OF 1986 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT
USING THE ISCST AND MESOPUFF II MODELS
(Based on the FPC Facility's Impacts
Predicted to be Greater than the Significant Impact Levels (SIL) Using the ISCST Model)

Time Period			Receptor	ISCST Concentrations (µg/m³)		MESOPUFF Step 1 (1)			MESOPUFF Step 2			
						Concentration (µg/m³)		Is Increment Exceeded and FPC's Impact Above SIL?	Concentration (µg/m³)			Is Increment Exceeded and FPC's Impact Above SIL?
Julian Day	Hour Ending	Calendar Date Month/Day	Receptor Number	All Sources (A)	Proposed FPC Sources (B)	MESOPUFF II FPC Only (C)	Adjusted Total (A−B+C)		ISCST for Sources <=50 km of Class I Area (D)	MESOPUFF for Non−FPC Sources >50 km of Class I Area (E)	Adjusted Total (C+D+E)	
299	24	10/26	8	5.01	0.57	0.00	4.44	No				
299	24	10/26	9	5.77	0.58	0.00	5.19	No				
329	24	11/25	1	6.51	0.79	1.08	6.80	Yes	0.10	5.23	6.41	Yes
329	24	11/25	2	5.23	0.87	0.86	5.22	Yes	0.13	5.36	6.35	Yes
329	24	11/25	3	5.12	0.93	0.67	4.86	No				
329	24	11/25	4	6.08	1.01	0.50	5.57	Yes	0.96	4.99	6.45	Yes
329	24	11/25	5	5.77	1.10	0.31	4.98	No				
329	24	11/25	6	5.20	1.18	0.19	4.21	No				
329	24	11/25	12	5.76	0.96	0.37	5.17	Yes	1.23	3.83	5.43	Yes
329	24	11/25	13	6.65	0.88	0.53	6.30	Yes	0.90	4.03	5.46	Yes
332	24	11/28	3	5.76	0.30	1.80	7.26	Yes	1.72	−0.59	2.93	No
344	24	12/10	13	5.47	2.64	0.17	3.00	No				

Note: MESOPUFF II modeling is performed in the inert mode (i.e., without chemical transformation or wet/dry deposition).

(1) No additional analysis is needed if no exceedance of the increment is predicted or the proposed FPC facility's impacts

TABLE 5.6.1-37

SUMMARY OF 1983 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT REMAINING AFTER MESOPUFF II MODEL, STEPS 3 AND 4

(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the MESOPUFF II Model Through Step 2)

Time Period			Rec.	Concentration ($\mu g/m^3$)		MESOPUFF Step 3 Concentration ($\mu g/m^3$)						MESOPUFF Step 4 Concentration ($\mu g/m^3$)					
						Case 1 (1)		Case 2 (2)		Case 3 (3)		Case 1 (1)		Case 2 (2)		Case 3 (3)	
Julian Day	Hour End	Month/ Day	Rec. No.	ISCST for Sources <=50 km of Class I Area (A)	MESOPUFF Step 2 for Non-FPC Sources >50 km of Class I Area (B)	MESOPUFF FPC Only (C)	Adj. Total (A+B+C)	MESOPUFF FPC Only (D)	Adj. Total (A+B+D)	MESOPUFF FPC Only (E)	Adj. Total (A+B+E)	Non-FPC Src. >50 km of Class I Area (F)	Adj. Total (A+C+F)	Non-FPC Src. >50 km of Class I Area (G)	Adj. Total (A+D+G)	Non-FPC Src. >50 km of Class I Area (H)	Adj. Total (A+E+H)
24-Hour Concentration Analysis																	
64	24	3/05	6	3.08	1.19	0.71	4.98	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
122	24	5/02	3	0.19	5.42	0.30	5.91	0.30	5.91	0.30	5.91	3.02	3.51	NA	NA	NA	NA
122	24	5/02	4	0.90	5.35	0.28	6.53	0.28	6.53	0.28	6.53	2.96	4.14	NA	NA	NA	NA
122	24	5/02	13	0.66	4.14	0.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
127	24	5/07	5	2.41	4.11	0.32	6.84	0.32	6.84	0.32	6.84	3.34	6.07	3.34	6.07	3.32	6.05
127	24	5/07	6	2.11	4.02	0.31	6.44	0.31	6.44	0.31	6.44	3.20	5.62	3.20	5.62	3.17	5.59
127	24	5/07	7	1.35	4.05	0.266	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
127	24	5/07	8	1.19	4.14	0.266	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
127	24	5/07	10	1.01	4.21	0.30	5.52	0.30	5.52	0.30	5.52	3.26	4.57	NA	NA	NA	NA
127	24	5/07	11	1.41	4.34	0.31	6.06	0.31	6.06	0.31	6.06	3.40	5.12	3.40	5.12	3.35	5.07
127	24	5/07	12	1.38	4.50	0.32	6.20	0.32	6.20	0.32	6.20	3.54	5.24	3.54	5.24	3.51	5.21
127	24	5/07	13	1.44	4.65	0.35	6.44	0.35	6.44	0.35	6.44	3.68	5.47	3.68	5.47	3.64	5.43

Note: NA is not applicable because the proposed FPC's impacts are less than the SIL or the predicted total concentration is less than the PSD Class I increment.

(1) Case 1 includes chemical transformation, dry deposition, Gaussian vertical concentration distribution.
(2) Case 2 includes options in Case 1 plus wet deposition.
(3) Case 3 includes options in Case 2 plus option for 3 vertical layers used for deposition.

TABLE 5.6.1-38

SUMMARY OF 1983 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT REMAINING AFTER MESOPUFF II MODEL, STEPS 3 AND 4, CASE 4 (1)

(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the MESOPUFF II Model Through Step 4, Case 3)

Time Period			Receptor	Concentration (μg/m³)		MESOPUFF Step 3 Concentration (μg/m³)		MESOPUFF Step 4 Concentration (μg/m³)	
						Case 4		Case 4	
Julian Day	Hour Ending	Month/ Day	Receptor Number	ISCST for Sources <=50 km of Class I Area (A)	MESOPUFF Step 4, Case 3 Non-FPC Sources >50 km of Class I Area (B)	MESOPUFF FPC Only (C)	Adjusted Total (A+B+C)	Non-FPC Src. >50 km of Class I Area (D)	Adjusted Total (A+C+D)
24-Hour Concentration Analysis									
127	24	5/07	5	2.41	3.32	0.044	5.77	1.32	3.77
127	24	5/07	6	2.11	3.17	0.034	5.31	1.28	3.42
127	24	5/07	11	1.41	3.35	0.035	4.80	1.49	2.94
127	24	5/07	12	1.38	3.51	0.042	4.93	1.53	2.95
127	24	5/07	13	1.44	3.64	0.055	5.14	1.61	3.11

(1) Case 1 includes chemical transformation, dry deposition, Gaussian vertical concentration distribution.
Case 2 includes options in Case 1 plus wet deposition.
Case 3 includes options in Case 2 plus option for 3 vertical layers used for deposition.
Case 4 includes options in Case 3 plus option for uniform vertical concentration distribution instead of Gaussian.

TABLE 5.6.1-39
SUMMARY OF 1984 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT REMAINING AFTER MESOPUFF II MODEL, STEPS 3 AND 4
(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the MESOPUFF II Model Through Step 2)

Time Period			Rec.	Concentration (μg/m³)		MESOPUFF Step 3 Concentration (μg/m³)						MESOPUFF Step 4 Concentration (μg/m³)					
						Case 1 (1)		Case 2 (2)		Case 3 (3)		Case 1 (1)		Case 2 (2)		Case 3 (3)	
Julian Day	Hour End	Month/ Day	Rec. No.	ISCST for Sources <=50 km of Class I Area (A)	MESOPUFF Step 2 for Non-FPC Sources >50 km of Class I Area (B)	MESOPUFF FPC Only (C)	Adj. Total (A+B+C)	MESOPUFF FPC Only (D)	Adj. Total (A+B+D)	MESOPUFF FPC Only (E)	Adj. Total (A+B+E)	Non-FPC Src. >50 km of Class I Area (F)	Adj. Total (A+C+F)	Non-FPC Src. >50 km of Class I Area (G)	Adj. Total (A+D+G)	Non-FPC Src. >50 km of Class I Area (H)	Adj. Total (A+E+H)
24-Hour Concentration Analysis																	
64	24	3/04	1	0.60	4.20	0.254	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
64	24	3/04	2	0.60	4.15	0.243	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
64	24	3/04	3	2.26	4.03	0.236	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: NA is not applicable because the proposed FPC's impacts are less than the SIL or the predicted total concentration is less than the PSD Class I Increment.

(1) Case 1 includes chemical transformation, dry deposition, Gaussian vertical concentration distribution.
(2) Case 2 includes options in Case 1 plus wet deposition.
(3) Case 3 includes options in Case 2 plus option for 3 vertical layers used for deposition.

TABLE 5.6.1-40
SUMMARY OF 1985 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT REMAINING AFTER MESOPUFF II MODEL, STEPS 3 AND 4
(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the MESOPUFF II Model Through Step 2)

Time Period			Rec.	Concentration (µg/m³)		MESOPUFF Step 3 Concentration (µg/m³)						MESOPUFF Step 4 Concentration (µg/m³)					
						Case 1 (1)		Case 2 (2)		Case 3 (3)		Case 1 (1)		Case 2 (2)		Case 3 (3)	
Julian Day	Hour End	Month/ Day	Rec. No.	ISCST for Sources <=50 km of Class I Area (A)	MESOPUFF Step 2 for Non-FPC Sources >50 km of Class I Area (B)	MESOPUFF FPC Only (C)	Adj. Total (A+B+C)	MESOPUFF FPC Only (D)	Adj. Total (A+B+D)	MESOPUFF FPC Only (E)	Adj. Total (A+B+E)	Non-FPC Src. >50 km of Class I Area (F)	Adj. Total (A+C+F)	Non-FPC Src. >50 km of Class I Area (G)	Adj. Total (A+D+G)	Non-FPC Src. >50 km of Class I Area (H)	Adj. Total (A+E+H)
24-Hour Concentration Analysis																	
242	24	8/30	6	2.46 (4)	2.27	2.10	6.83	1.95	6.68	1.95	6.68	2.13	6.69	2.10	6.51	2.10	6.51
242	24	8/30	7	1.82	2.57	2.04	6.43	1.90	6.29	1.90	6.29	2.40	6.26	2.39	6.11	2.39	6.11
242	24	8/30	10	1.49	1.87	2.03	5.39	1.91	5.27	1.91	5.27	1.69	5.21	1.64	5.04	1.64	5.04
242	24	8/30	11	1.83	1.31	1.94	5.08	1.65	4.99	NA	NA	NA	NA	NA	NA	NA	NA
242	24	8/30	12	2.45	0.69	1.80	4.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: NA is not applicable because the proposed FPC's impacts are less than the SIL or the predicted total concentration is less than the PSD Class I increment.

(1) Case 1 includes chemical transformation, dry deposition, Gaussian vertical concentration distribution.
(2) Case 2 includes options in Case 1 plus wet deposition.
(3) Case 3 includes options in Case 2 plus option for 3 vertical layers used for deposition.
(4) Based on revised exit velocity and temperature for Florida Crushed Stone emission source and elimination of Oman Construction source.

TABLE 5.6.1-41

SUMMARY OF 1985 PREDICTED CONCENTRATIONS COMPARED TO THE SO_2 PSD CLASS I INCREMENT AFTER MESOPUFF II MODEL, STEPS 3 AND 4, CASE 4 (1)

(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the MESOPUFF II Model Through Step 4, Case 3)

Time Period: Julian Day	Time Period: Hour Ending	Time Period: Month/Day	Receptor Number	Concentration (µg/m³): ISCST for Sources <=50 km of Class I Area (A)	Concentration (µg/m³): MESOPUFF Step 4, Case 3 Non-FPC Sources >50 km of Class I Area (B)	MESOPUFF Step 3 Concentration (µg/m³), Case 4: MESOPUFF FPC Only (C)	MESOPUFF Step 3 Concentration (µg/m³), Case 4: Adjusted Total (A+B+C)	MESOPUFF Step 4 Concentration (µg/m³), Case 4: Non-FPC Src. >50 km of Class I Area (D)	MESOPUFF Step 4 Concentration (µg/m³), Case 4: Adjusted Total (A+C+D)
24-Hour Concentration Analysis									
242	24	8/30	6	2.46 (2)	2.10	1.17	5.73	1.10	4.73
242	24	8/30	7	1.82	2.39	1.14	5.35	1.29	4.25
242	24	8/30	10	1.49	1.64	1.20	4.33	1.02	3.71

(1) Case 1 includes chemical transformation, dry deposition, Gaussian vertical concentration distribution.
Case 2 includes options in Case 1 plus wet deposition.
Case 3 includes options in Case 2 plus option for 3 vertical layers used for deposition.
Case 4 includes options in Case 3 plus option for uniform vertical concentration distribution instead of Gaussian.
(2) Based on revised exit velocity and temperature for Florida Crushed Stone emission source and elimination of Oman Construction source.

TABLE 5.6.1-42
SUMMARY OF 1986 PREDICTED VIOLATIONS OF THE SO_2 PSD CLASS I INCREMENT REMAINING AFTER MESOPUFF II MODEL, STEPS 3 AND 4
(Based on the FPC Facility's Impacts Predicted to be Greater than the Significant Impact Levels (SIL) Using the MESOPUFF II Model Through Step 2)

Time Period			Rec.	Concentration (µg/m³)		MESOPUFF Step 3 Concentration (µg/m³)						MESOPUFF Step 4 Concentration (µg/m³)					
						Case 1 (1)		Case 2 (2)		Case 3 (3)		Case 1 (1)		Case 2 (2)		Case 3 (3)	
Julian Day	Hour End	Month/ Day	Rec. No.	ISCST for Sources <=50 km of Class I Area (A)	MESOPUFF Step 2 for Non-FPC Sources >50 km of Class I Area (B)	MESOPUFF FPC Only (C)	Adj. Total (A+B+C)	MESOPUFF FPC Only (D)	Adj. Total (A+B+D)	MESOPUFF FPC Only (E)	Adj. Total (A+B+E)	Non-FPC Src. >50 km of Class I Area (F)	Adj. Total (A+C+F)	Non-FPC Src. >50 km of Class I Area (G)	Adj. Total (A+D+G)	Non-FPC Src. >50 km of Class I Area (H)	Adj. Total (A+E+H)
24-Hour Concentration Analysis																	
329	24	11/25	1	0.10	5.23	0.71	6.04	0.71	6.04	0.71	6.04	4.53	5.34	4.53	5.34	4.53	5.34
329	24	11/25	2	0.13	5.36	0.55	6.04	0.55	6.04	0.55	6.04	4.43	5.11	4.43	5.11	4.43	5.11
329	24	11/25	4	0.96	4.99	0.41	6.36	0.41	6.36	0.41	6.36	3.85	5.22	3.85	5.22	3.85	5.22
329	24	11/25	13	0.90	4.03	0.40	5.33	0.40	5.33	0.40	5.33	2.62	4.12	NA	NA	NA	NA

Note: NA is not applicable because the proposed FPC's impacts are less than the SIL or the predicted total concentration is less than the PSD Class I increment.

(1) Case 1 includes chemical transformation, dry deposition, Gaussian vertical concentration distribution.
(2) Case 2 includes options in Case 1 plus wet deposition.
(3) Case 3 includes options in Case 2 plus option for 3 vertical layers used for deposition.

TABLE 5.6.1-43
SUMMARY OF 1986 PREDICTED CONCENTRATIONS COMPARED TO THE SO_2 PSD CLASS I INCREMENT
AFTER MESOPUFF II MODEL, STEPS 3 AND 4, CASE 4 (1)
(Based on the FPC Facility's Impacts Predicted to be
Greater than the Significant Impact Levels (SIL) Using the MESOPUFF II Model Through Step 4, Case 3)

Time Period			Receptor	Concentration (µg/m³)		MESOPUFF Step 3 Concentration (µg/m³) Case 4		MESOPUFF Step 4 Concentration (µg/m³) Case 4	
Julian Day	Hour Ending	Month/ Day	Receptor Number	ISCST for Sources <=50 km of Class I Area (A)	MESOPUFF Step 4, Case 3 Non-FPC Sources >50 km of Class I Area (B)	MESOPUFF FPC Only (C)	Adjusted Total (A+B+C)	Non-FPC Src. >50 km of Class I Area (D)	Adjusted Total (A+C+D)
24-Hour Concentration Analysis									
329	24	11/25	1	0.10	4.53	0.44	5.07	1.82	2.36
329	24	11/25	2	0.13	4.43	0.34	4.90	1.76	2.23
329	24	11/25	4	0.96	3.85	0.19	5.00	1.63	2.78

(1) Case 1 includes chemical transformation, dry deposition, Gaussian vertical concentration distribution.
Case 2 includes options in Case 1 plus wet deposition.
Case 3 includes options in Case 2 plus option for 3 vertical layers used for deposition.
Case 4 includes options in Case 3 plus option for uniform vertical concentration distribution instead of Gaussian.

TABLE 5.6.1-44
ESTIMATED PROJECT IMPACTS AND BACKGROUND CONCENTRATIONS IN CLASS I AREA

Pollutant	Maximum Predicted Concentrations ($\mu g/m^3$)					Estimated Background ($\mu g/m^3$)
	1-Hour	3-Hour	8-Hour	24-Hour	Annual	
CO	1.49E+01	6.44E+00	3.04E+00	1.23E+00	1.14E-01	1700
NO_2	3.34E+01	1.62E+01	7.52E+00	2.86E+00	1.76E-01	10
SO_2	2.95E+01	1.27E+01	6.02E+00	2.42E+00	2.25E-01	3
PM	3.64E+00	1.76E+00	8.20E-01	3.11E-01	2.82E-02	29
VOC (O_3)	1.62E+00	7.14E-01	3.36E-01	1.34E-01	1.24E-02	55
Lead	2.02E-02	1.09E-02	5.00E-03	1.79E-03	1.59E-04	0.1
Beryllium	3.28E-04	1.79E-04	8.19E-05	2.92E-05	9.30E-07	N/A
Mercury	2.29E-03	1.12E-03	5.21E-04	1.97E-04	1.77E-05	N/A
Fluorides	3.91E-03	1.26E-03	6.23E-04	2.94E-04	2.89E-05	N/A
H_2SO_4	2.45E+00	1.14E+00	5.34E-01	2.06E-01	1.89E-02	N/A
Arsenic	2.05E-03	9.22E-04	4.33E-04	1.71E-04	1.55E-05	N/A
Antimony	2.91E-03	1.58E-03	7.27E-04	2.59E-04	5.22E-06	N/A
Barium	1.28E-02	5.14E-03	2.45E-03	1.03E-03	9.70E-05	N/A
Boron	8.35E-03	4.59E-03	2.10E-03	7.47E-04	3.78E-06	N/A
Cadmium	1.46E-03	7.80E-04	3.58E-04	1.29E-04	4.80E-06	N/A
Calcium	9.58E-02	5.27E-02	2.41E-02	8.57E-03	4.34E-05	N/A
Chromium	2.51E-02	1.27E-02	5.86E-03	2.19E-03	1.93E-04	N/A
Cobalt	3.95E-03	1.54E-03	7.39E-04	3.14E-04	2.57E-05	N/A
Copper	3.77E-02	2.04E-02	9.35E-03	3.35E-03	6.17E-05	N/A
Formaldehyde	2.95E-02	1.59E-02	7.32E-03	2.62E-03	2.23E-05	N/A
Magnesium	2.98E-02	1.64E-02	7.50E-03	2.66E-03	1.35E-05	N/A
Manganese	5.27E-03	2.23E-03	1.06E-03	4.33E-04	3.64E-05	N/A
Nickel	3.03E-02	1.53E-02	7.08E-03	2.64E-03	1.27E-04	N/A
Selenium	3.79E-03	1.64E-03	7.76E-04	3.11E-04	2.90E-05	N/A
Vanadium	1.64E-02	7.32E-03	3.44E-03	1.36E-03	5.92E-05	N/A
Zinc	1.12E-01	5.65E-02	2.62E-02	9.72E-03	5.92E-04	N/A

Notes: Short-term values are highest, second-highest concentrations. See text for sources of estimated background concentrations.
N/A: Not Available
Source: Ebasco Environmental, 1992

TABLE 5.6.1-45
ESTIMATED PROJECT IMPACTS AND BACKGROUND CONCENTRATIONS IN THE GENERAL VICINITY OF THE PROPOSED PROJECT

Pollutant	Maximum Predicted Concentrations ($\mu g/m^3$)					Estimated Background ($\mu g/m^3$)
	1-Hour	3-Hour	8-Hour	24-Hour	Annual	
CO	4.14E+02	2.35E+02	9.70E+01	3.70E+01	3.44E+00	1700
NO_2	1.52E+03	6.67E+02	3.15E+02	1.12E+02	4.60E+00	25
SO_2	1.04E+03	2.63E+02	2.19E+02	6.55E+01	4.80E+00	5
PM	1.65E+02	7.20E+01	3.40E+01	1.15E+01	9.05E-01	12
VOC (O_3)	6.03E+01	2.67E+01	1.25E+01	4.15E+00	3.68E-01	55
Lead	1.13E+00	4.84E-01	2.30E-01	7.75E-02	5.23E-03	N/A
Beryllium	1.88E-02	8.00E-03	3.80E-03	1.28E-03	3.09E-05	N/A
Mercury	1.07E-01	4.72E-02	2.23E-02	8.22E-03	6.61E-04	N/A
Fluorides	5.42E-02	2.84E-02	1.27E-02	3.94E-03	7.50E-04	N/A
H_2SO_4	1.03E+02	4.50E+01	2.12E+01	7.11E+00	5.69E-01	N/A
Arsenic	7.95E-02	3.52E-02	1.65E-02	5.64E-03	4.95E-04	N/A
Antimony	1.66E-01	7.08E-02	3.36E-02	1.13E-02	1.72E-04	N/A
Barium	3.75E-01	1.71E-01	7.96E-02	2.63E-02	2.80E-03	N/A
Boron	4.86E-01	2.07E-01	9.81E-02	3.31E-02	1.24E-04	N/A
Cadmium	8.06E-02	3.45E-02	1.64E-02	5.60E-03	1.68E-04	N/A
Calcium	5.57E+00	2.37E+00	1.13E+00	3.80E-01	1.42E-03	N/A
Chromium	1.25E+00	5.69E-01	2.68E-01	1.14E-01	1.00E-02	N/A
Cobalt	1.07E-01	4.96E-02	2.30E-02	7.65E-03	7.29E-04	N/A
Copper	2.13E+00	9.09E-01	4.31E-01	1.47E-01	2.23E-03	N/A
Formaldehyde	1.66E+00	7.08E-01	3.36E-01	1.13E-01	6.67E-04	N/A
Magnesium	1.73E+00	7.36E-01	3.50E-01	1.18E-01	4.42E-04	N/A
Manganese	1.79E-01	8.46E-02	3.95E-02	1.66E-02	1.64E-03	N/A
Nickel	1.50E+00	6.68E-01	3.16E-01	1.22E-01	6.50E-03	N/A
Selenium	1.35E-01	6.01E-02	2.81E-02	9.32E-03	8.54E-04	N/A
Vanadium	6.25E-01	2.76E-01	1.30E-01	4.32E-02	1.60E-03	N/A
Zinc	5.52E+00	2.39E+00	1.13E+00	3.91E-01	2.02E-02	N/A

Notes: Short-term values are highest, second-highest concentrations. See text for sources of estimated background concentrations.
N/A: Not Available
Source: Ebasco Environmental, 1992

TABLE 5.6.1-46
THRESHOLD NO_2 CONCENTRATIONS
FOR VISIBLE INJURY TO PLANT SPECIES

Exposure Period (Hour)	Threshold Concentration[a] ($\mu g/m^3$)	
	U.S. EPA (1976)	Thompson et al. (1974)
1	68,620	1,880-28,200
2	37,600	--
3	22,560	--
4	16,920	--
8	9,024	4,324-6,580[b]
24	4,324	1,880

[a] Extrapolated values
[b] Values reported for 8-21 hours

TABLE 5.6.1-47
RESPONSE OR SENSITIVITY RATING OF
VEGETATION TYPICAL OF THE PROPOSED PROJECT TO NO_2

Vegetation	NO_2 Concentration ($\mu g/m^3$)	Exposure Period	Rating or Response	Reference
Citrus sinensis	470	8 months	Intermediate sensitivity leaf abscission and reduced yield	Taylor and MacLean (1970) Thompson et al. (1970)
Melaleuca leucadendra	--	--	Moderately sensitive	MacLean et al. (1968)
Citrus sinensis (Marsh seedless	376,000	4-8 hours	Necrotic areas along succulent young shoots	MacLean et al. (1968)
grapefruit Valencia orange Tangelo orange Hamlin orange Temple orange)	470,000	1 hour	Necrotic areas along succulent young shoots	MacLean et al. (1968)

TABLE 5.6.1-48
THRESHOLD SO_2 CONCENTRATIONS FOR
VISIBLE INJURY TO SENSITIVE VEGETATION

Exposure Period (hour)	Threshold Concentration ($\mu g/m^3$)			
	Jacobsen (1977)	Jones et al. (1974)	Linzon (1973)	USEPA (1973)
1	2,000	1,300-2,620	1,834	1,300-7,860
2	1,050	--	1,048	655-5,240
3	850	786-1,572	785[a]	400-3,750[a]
4	750	--	681	262-2,620
8	500	--	472	131-1,310

[a] Interpolated value

TABLE 5.6.1-49

RESPONSE OR SENSITIVITY RATING OF VEGETATION TYPICAL OF THE PROPOSED PROJECT TO SO_2

Vegetation	SO_2 Concentration ($\mu g/m^3$)	Exposure Period	Rating or Response	Reference
Acer sp. (maples)	118	Growing season	No leaf injury	Fed Am Soc Exp Bio (1973)
	--	--	Resistant	Sucoff and Bailey (1971)
	2,620-5,240	1 hour	Threshold level	Jones et al. (1974)
	1,572-2,096	3 hours	Threshold level	Jones et al. (1974)
Acer rubrum (red maple)	--	--	Tolerant	USDA (1972)
	786	5 hours	11% Leaf injury[a]	Davis and Shelly (1992)
Citrus sp.	--	--	Tolerant	USEPA (1976)
Citrus surantium	2,620	2 hours/day 40 days	No leaf injury, decrease in total linear growth	Fed Am Soc Exp Bio (1973)
Citrus mobillis var. unshiu	2,620	2 hours/day 40 days	No leaf injury	Fed Am Soc Exp Bio (1973)
Citrus sinensis (Koethon orange)	2,096	10 days	No visible injury Decreased growth	Mat Sushima and Brewer (1972)
Fragaria ananassa	2,620	6 hours/day 4 days	No leaf injury	Rajput et al. (1977)
Pinus sp. (southern pines)	3,930-5,240	Peak	Sensitive	Jones et al. (1974)
	2,620-5,240	1 hour	Sensitive	Jones et al. (1974)
	1,572-2,096	3 hours	Sensitive	Jones et al. (1974)
Pteridium aquilium (brackenfern)	--	--	Sensitive	USEPA (1976)
Quercus virginiana (live oak)	--	--	Tolerant	Loomis and Padgett (1973)

TABLE 5.6.1-49

RESPONSE OR SENSITIVITY RATING OF VEGETATION TYPICAL OF THE PROPOSED PROJECT TO SO_2

Vegetation	SO_2 Concentration ($\mu g/m^3$)	Exposure Period	Rating or Response	Reference
Rhus spp. (summacs)	2,620-3,920	Peak	Sensitive	Jones et al. (1974)
	1,310-2,620	1 hour	Sensitive	Jones et al. (1974)
Rubus spp.	2,620-3,930	Peak	Sensitive	Jones et al. (1974)
	1,310-2,620	1 hour	Sensitive	Jones et al. (1974)
	786-1,572	3 hours	Sensitive	Jones et al. (1974)
Taxodium distichum (bald cypress)	2,620	48 hours	Reduced growth	Shanklin and Kozlowski (1985)

[a] Exposed to O_3 and acid precipitation as well as SO_2

TABLE 5.6.1-50
THRESHOLD O_3 CONCENTRATIONS FOR
VISIBLE INJURY TO PLANT SPECIES[a]

Exposure Period (hour)	Ozone Concentration ($\mu g/m^3$)		
	Sensitive	Intermediate	Tolerant
0.5	294-588	490-1,176	980
1.0	196-490	392-784	686
2.0	137-392	294-588	490
4.0	98-294	196-490	392
8.0	59-196	157-392	294

[a] Heggestad and Heck (1971)

TABLE 5.6.1-51
RESPONSE OR SENSITIVITY RATING OF VEGETATION TYPICAL OF THE PROJECT AREA TO OZONE

Vegetation	O_3 Concentration ($\mu g/m^3$)	Exposure Period	Impact Area Rating or Response	Reference
Acer rubrum (Red maple)	--	--	Tolerant	USDA (1972)
Acer rubrum	178	7 hours/day 8-12 weeks	Leaf injury	Davis and Shelly (1992)
	156	7 hours/day 8-12 weeks	11% leaf injury Less growth/biomass	
Citrus sp.	--	--	Sensitive	USEPA (1976)
Cornus sp.	--	--	Tolerant	USEPA (1976)
Liquidembar stryacilflua (sweetgum)	52	8 hours/day 3 days/week 16 weeks	Sensitive Growth reduction	Jensen and Dochinger, (1989)
Nyssa sylvatica (Blackgum)	--	--	Tolerant	USEPA (1976)
Parthenocissus quinquefolia (Virginia creeper)	784	4 hours/day 14 days	Leaf injury	Treshow (1970)
Pinus elliottii (Slash pine)	149-203 (Seasonal mean)	112 days	Increased reduction in growth with increasing O_3 concentrations	Hogsett et al. (1985)
Quercus rubra (Red Oak)	78	7 hours/day 8-12 weeks	Leaf injury	Davis and Shelly (1992)
	156	7 hours/day 8-12 weeks	5% leaf injury Less growth/biomass	

TABLE 5.6.1-52
RESPONSE OR SENSITIVITY RATING OF VEGETATION TO MIXTURES OF SO_2 AND NO_2

Vegetation	SO_2 Concentration ($\mu g/m^3$)	NO_2 Concentration ($\mu g/m^3$)	Exposure Period	Rating or Response	Reference
Glycine max	131	94	4 hours	Slight leaf discoloration	Fed. Am. Soc. Exp. Bio. (1973)
(Soybean)	131-655	94-470	4 hours	Greater than additive effort	USEPA (1976)
	262	188	4 hours	Leaf injury (35%)	Tingey et al. (1971)
	262	282	4 hours	Leaf injury (20%)	Tingey et al. (1971)
	524	376	4 hours	Leaf injury (9%)	Tingey et al. (1971)
	262	94	4 hours	No leaf injury	Tingey et al. (1971)
Medicago	655	470	1 hour	9% inhibition of CO_2 uptake	White et al. (1974)
sativa	655	470	2 hours	15% inhibition of CO_2 uptake	White et al. (1974)
Nicotiana	262	188	4 hours	Leaf injury (11%)	Tingey et al. (1971)
tabacum (Tobacco)	262	282	4 hours	Leaf injury (18%)	Tingey et al. (1971)
Lycopersicon	262	188	4 hours	Leaf injury (1%)	Tingey et al. (1971)
esculentum (Tomato)	262	282	4 hours	Leaf injury (17%)	Tingey et al. (1971)

TABLE 5.6.1-53
RESPONSE OR SENSITIVITY RATING OF VEGETATION TO MIXTURES OF SO_2 AND O_3

Vegetation	SO_2 Concentration ($\mu g/m^3$)	O_3 Concentration ($\mu g/m^3$)	Exposure Period	Rating or Response	Reference
Acer rubrum (red maple)	52	137	5 hours/day 3 days/week, 16 weeks	Sensitive Growth reduction	Jensen and Dochinger (1989)
	52	294	8 hours/day 3 days/week, 16 weeks	Sensitive Growth reduction	Jensen and Dochinger (1989)
Brassica oleracea capitata (Cabbage)	1,310	98	4 hours	Leaf injury (4%)	Tingey et al. (1973b)
	262	196	4 hours	Leaf injury (22%)	Tingey et al. (1973b)
	655	196	4 hours	Leaf injury (14%)	Tingey et al. (1973b)
	1,310	98	4 hours	Leaf injury (54%)	Tingey et al. (1973b)
Fragaria ananassa (strawberry)	2,620	980	6 hours/day 4 days	Leaf injury	Rajput et al. (1977)
Fraxinus pennsylvanica (green ash)	209	196	4 hours/day 5 days/week, 6 weeks	Reduced growth[a]	Chappelka et al. (1988)
Glycine max (soybean)	2,620	196	4 hours	Additive effect	USEPA (1976)
	131	98	6 hours	Leaf injury and decreased growth	Tingey et al. (1973b)
	98	98	6 hours	Leaf injury and decreased growth	Heagle et al. (1974)
	196	196	6 hours	Leaf injury and decreased growth	Heagle et al. (1974)
	655	98	4 hours	No leaf injury	Tingey et al. (1973a)
	2,620	196	4 hours	Leaf injury (1%)	Tingey et al. (1973a)
Gossypium sp. (cotton)	734-838	176-216	10 weeks	Leaf injury and chlorosis	Fed Am Soc E Bio (1975)

TABLE 5.6.1-53

RESPONSE OR SENSITIVITY RATING OF VEGETATION TO MIXTURES OF SO_2 AND O_3

Vegetation	SO_2 Concentration ($\mu g/m^3$)	O_3 Concentration ($\mu g/m^3$)	Exposure Period	Rating or Response	Reference
Liquidambar stryaciflua (sweetgum)	52	137	8 hours/day 3 days/week, 16 weeks	Sensitive Growth reduction	Jensen and Dochinger (1989)
	52	294	8 hours/day 3 days/week, 16 weeks	Sensitive Growth reduction	Jensen and Dochinger (1989)
Lycopersicon esculentum (tomato)	1,310	98	4 hours	Leaf injury (1%)	Tingey et al. (1973b)
	262	196	4 hours	Leaf injury (50%)	Tingey et al. (1973b)
	655	196	4 hours	Leaf injury (10%)	Tingey et al. (1973b)
	1,310	196	4 hours	Leaf injury (13%)	Tingey et al. (1973b)
Medicago sativa (alfalfa)	1,310	98	4 hours	Leaf injury (2%)	Tingey et al. (1973b)
	262	196	4 hours	Leaf injury (24%)	Tingey et al. (1973b)
	655	196	4 hours	Leaf injury (21%)	Tingey et al. (1973b)
	1,310	196	4 hours	Leaf injury (60%)	Tingey et al. (1973b)
Nicotiana tabacum	1,310	98	4 hours	Leaf injury (60%)	Tingey et al. (1973b)
	262	196	4 hours	Leaf injury (95%)	Tingey et al. (1973b)
	655	196	4 hours	Leaf injury (88%)	Tingey et al. (1973b)
	1,310	196	4 hours	Leaf injury (96%)	Tingey et al. (1973b)

[a] In combination with simulated acid rain

TABLE 5.6.1-54
SUMMARY OF ESTIMATED TRACE ELEMENT SOIL CONCENTRATIONS IN THE CLASS I AREA

Trace Elements	Maximum Predicted Trace Element Concentration ($\mu g/m^3$)	Deposition Flux ($g/m^2/yr$)	Estimated Soil Concentration Increase (mg/kg/yr)	Average Background Soil Concentration	Percent Increase Due to Emissions From the Proposed Project	
					Per Annum	30 Year Plant Life
Lead	1.59E-04	3.31E-05	1.41E-04	14.00	1.01E-03	3.02E-02
Beryllium	9.30E-07	1.94E-07	8.24E-07	0.55	1.50E-04	4.49E-03
Mercury	1.77E-05	3.68E-06	1.57E-05	0.08	1.94E-02	5.81E-01
Arsenic	1.55E-05	3.23E-06	1.37E-05	4.80	2.86E-04	8.58E-03
Antimony	5.22E-06	1.09E-06	4.62E-06	0.52	8.89E-04	2.67E-02
Barium	9.70E-05	2.02E-05	8.59E-05	290.00	2.96E-05	8.89E-04
Boron	3.78E-06	7.87E-07	3.35E-06	31.00	1.08E-05	3.24E-04
Cadmium	4.80E-06	9.99E-07	4.25E-06	0.06	7.09E-03	2.13E-01
Calcium	4.33E-05	9.01E-06	3.84E-05	24,000.00	1.60E-07	4.79E-06
Chromium	1.93E-04	4.02E-05	1.71E-04	33.00	5.18E-04	1.55E-02
Cobalt	2.57E-05	5.35E-06	2.28E-05	5.90	3.86E-04	1.16E-02
Copper	6.17E-05	1.28E-05	5.46E-05	13.00	4.20E-04	1.26E-02
Manganese	3.64E-05	7.58E-06	3.22E-05	260.00	1.24E-05	3.72E-04
Nickel	1.27E-04	2.64E-05	1.12E-04	11.00	1.02E-03	3.07E-02
Selenium	2.90E-05	6.04E-06	2.57E-05	0.30	8.56E-03	2.57E-01
Vanadium	5.92E-05	1.23E-05	5.24E-05	43.00	1.22E-04	3.66E-03
Zinc	5.92E-04	1.23E-04	5.24E-04	40.00	1.31E-03	3.93E-02

Source: Ebasco Environmental, 1992

TABLE 5.6.1-55
SUMMARY OF ESTIMATED TRACE ELEMENT SOIL CONCENTRATIONS IN THE GENERAL VICINITY OF THE PROPOSED PROJECT

Trace Elements	Maximum Predicted Trace Element Concentration ($\mu g/m^3$)	Deposition Flux ($g/m^2/yr$)	Estimated Soil Concentration Increase (mg/kg/yr)	Average Background Soil Concentration	Percent Increase Due to Emissions From the Proposed Project	
					Per Annum	30 Year Plant Life
Lead	5.23E-03	1.09E-03	4.63E-03	14.00	3.31E-02	9.92E-01
Beryllium	3.09E-05	6.43E-06	2.74E-05	0.55	4.48E-03	1.49E-01
Mercury	6.61E-04	1.38E-04	5.85E-04	0.08	7.18E-01	2.15E+01
Arsenic	4.95E-04	1.03E-04	4.38E-04	4.80	9.13E-03	2.74E-01
Antimony	1.72E-04	3.58E-05	1.52E-04	0.52	2.93E-02	8.79E-01
Barium	2.80E-03	5.83E-04	2.48E-03	290.00	8.55E-04	2.57E-02
Boron	1.24E-04	2.58E-05	1.10E-04	31.00	3.54E-04	1.06E-02
Cadmium	1.68E-04	3.50E-05	1.49E-04	0.06	2.47E-01	7.42E+00
Calcium	1.42E-03	2.96E-04	1.26E-03	24,000.00	5.26E-06	1.58E-04
Chromium	1.00E-02	2.08E-03	8.86E-03	33.00	2.68E-02	8.05E-01
Cobalt	7.29E-04	1.52E-04	6.46E-04	5.90	1.09E-02	3.28E-01
Copper	2.23E-03	4.64E-04	1.97E-03	13.00	1.52E-02	4.56E-01
Manganese	1.64E-03	3.41E-04	1.45E-03	260.00	5.59E-04	1.68E-02
Nickel	6.50E-03	1.35E-03	5.76E-03	11.00	5.23E-02	1.57E+00
Selenium	8.54E-04	1.78E-04	7.56E-04	0.30	2.51E-01	7.54E+00
Vanadium	1.60E-03	3.33E-04	1.42E-03	43.00	3.29E-03	9.88E-02
Zinc	2.02E-02	4.20E-03	1.79E-02	40.00	4.46E-02	1.34E+00

Source: Ebasco Environmental, 1992

TABLE 5.6.1-56

REPORTED EFFECTS IN WILDLIFE OF SELECTED AIR CONTAMINANTS

Pollutant	Concentration ($\mu g/m^3$)	Exposure	Reported Effect	Reference
Sulfur Dioxide	427-854	1 hour	Respiratory stress in guinea pigs	Newman and Schreiber (1988)
	267	7 hours/day 5 days/week, 10 weeks	Respiratory stress in rats	Newman and Schreiber (1988)
	13-157	Continually for 5 months	Decreased abundance of deer mice	Newman and Schreiber (1988)
Nitrogen Dioxide	1,917	3 hours	Respiratory stress in mice	Trzeciak et al. (1977)
	96-958	8 hours/day, 122 days	Respiratory stress in guinea pigs	Gardner and Graham (1976)
Ozone	160?-200	3 hours	Respiratory stress; increased susceptibility to respiratory infection in mice rats and rabbits	Newman and Schreiber (1988)
Particulates	120 (PbO_3)	Continually for 2 months	Respiratory stress, reduced respiratory disease defenses	Newman and Schreiber (1988)
	100 ($NiCl_2$)	2 hours	Decreased respiratory disease defenses in rats and hamsters	Newman and Schreiber (1988)

TABLE 5.6.1-57
VISIBILITY ANALYSIS

Visual Effects Screening Analysis for
Source: FPC POLK COUNTY SITE
Class I Area: CHASSAHOWITZKA WILDERNESS

*** LEVEL-1 SCREENING ***

Input Emissions for

Particulates	67.06	
NOx (as NO2)	457.02	
Primary NO2	.00	G /S
Soot	.00	G /S
Primary SO4		

**** Default particle Characteristics Assumed

Transport Scenario Specifications:

Background Ozone:	.04 ppm
Background Visual Range:	25.00 km
Source-Observer Distance:	117.90 km
Min. Source-Class I Distance:	117.90 km
Max. Source-Class I Distance:	137.30 km
Plume-Source-Observer Angle:	11.25 degrees
Stability:	6
Wind Speed:	1.00 m/s

RESULTS

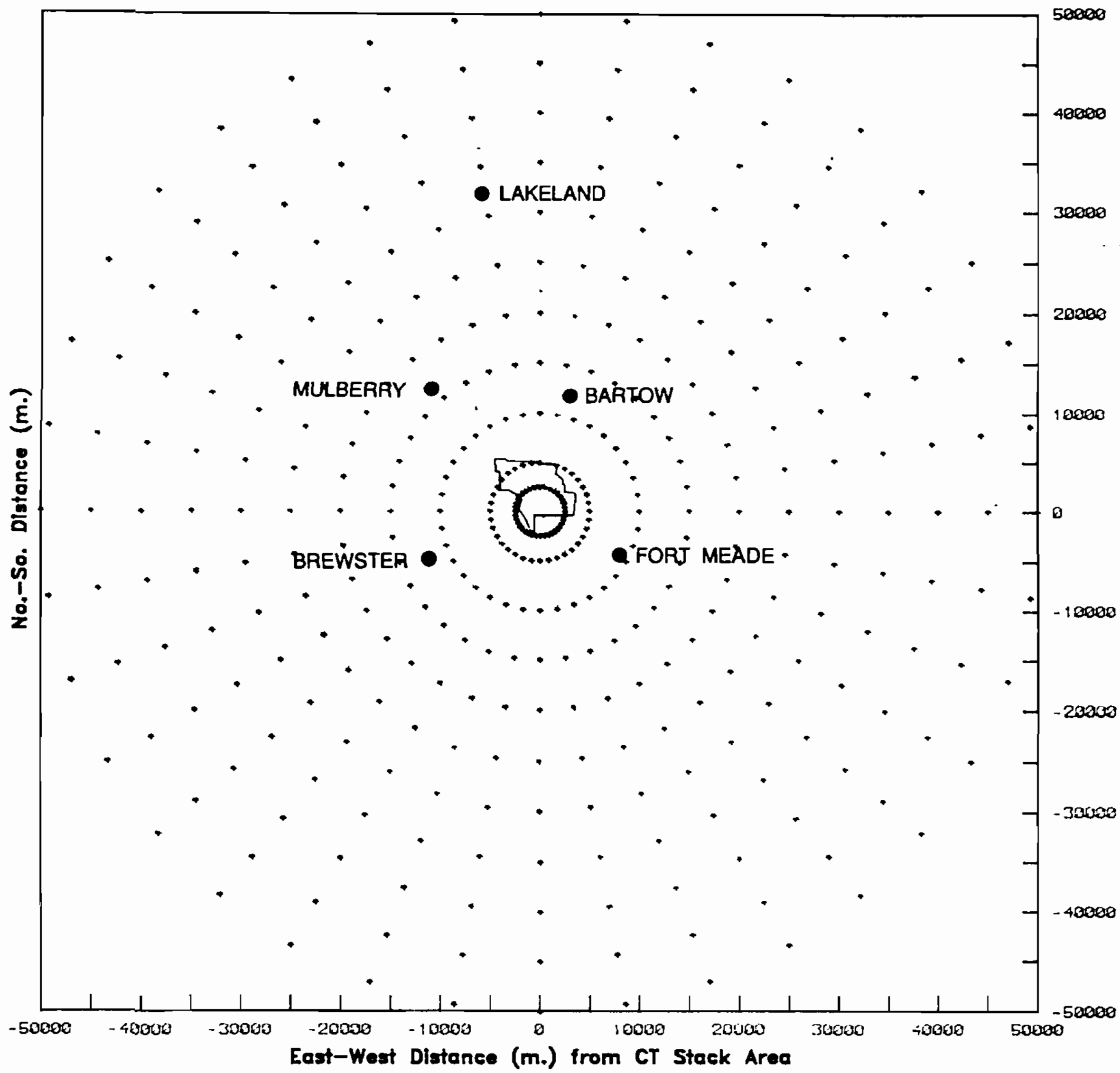
Asterisks (*) indicate plume impacts that exceed screening criteria

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

					Delta E		Contrast	
Background	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	84.	117.9	84.	2.00	.242	.05	-.000
SKY	140.	84.	117.9	84.	2.00	.063	.05	-.003
TERRAIN	10.	84.	117.9	84.	2.00	.013	.05	.000
TERRAIN	140.	84.	117.9	84.	2.00	.004	.05	.000

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

					Delta E		Contrast	
Background	Theta	Azi	Distance	Alpha	Crit	Plume	Crit	Plume
SKY	10.	75.	114.1	94.	2.00	.252	.05	-.000
SKY	140.	75.	114.1	94.	2.00	.066	.05	-.003
TERRAIN	10.	65.	110.0	104.	2.00	.019	.05	.000
TERRAIN	140.	65.	110.0	104.	2.00	.005	.05	.000

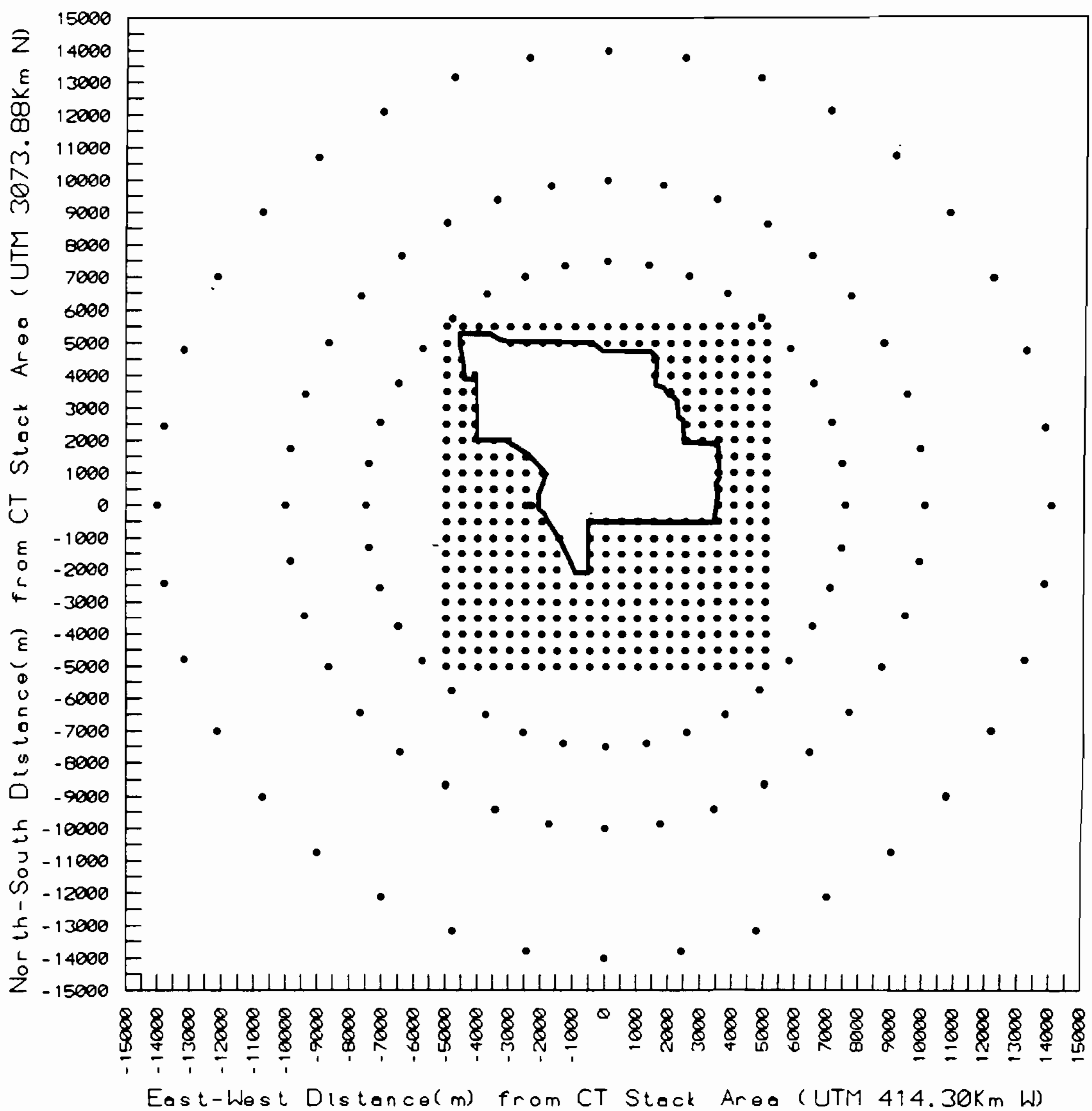


Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 5.6.1-1
RECEPTOR GRID FOR SIGNIFICANT IMPACT AREA ANALYSES

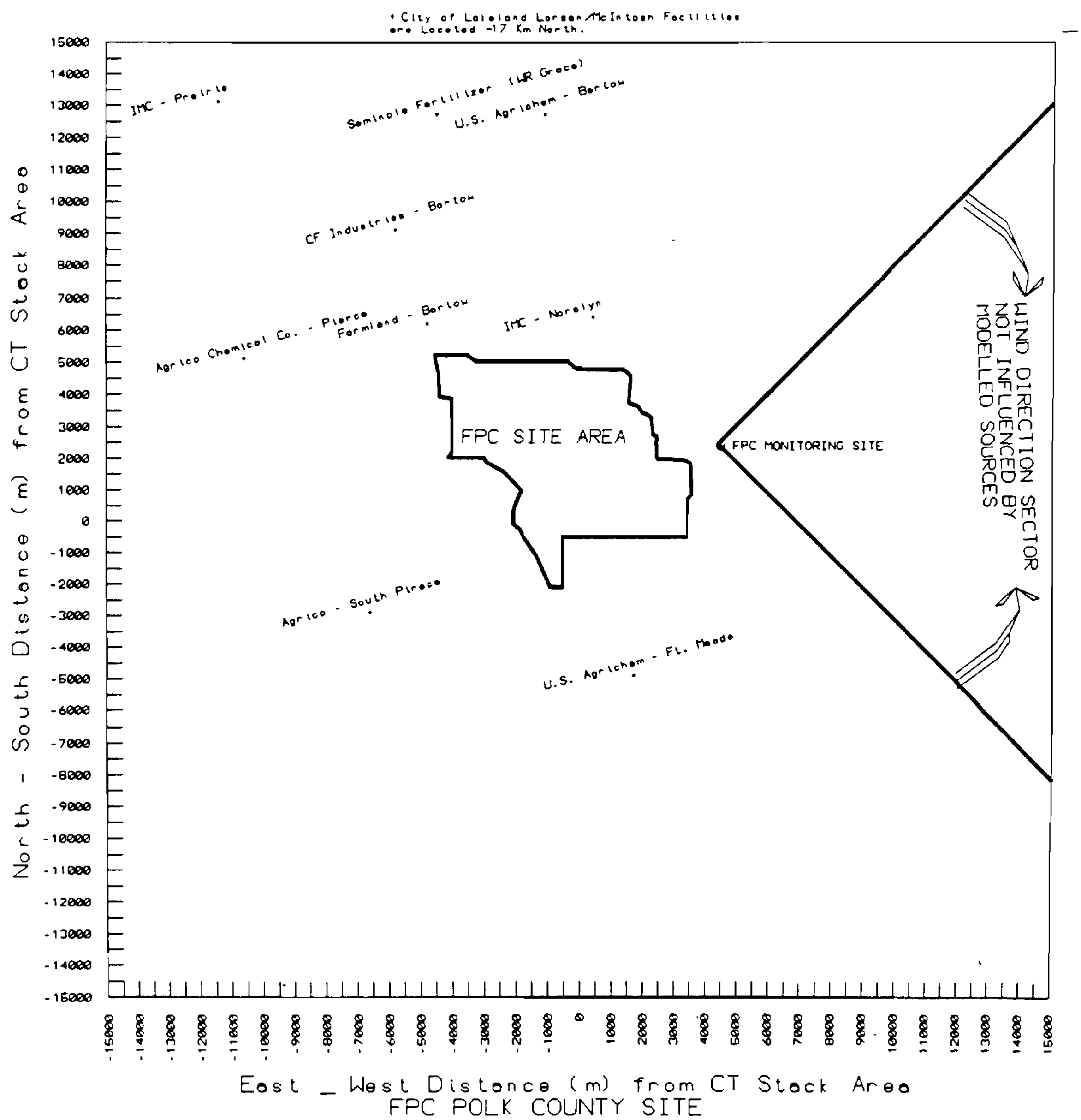


Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 5.6.1-2
COARSE RECEPTOR GRID FOR CLASS II PSD AND AAQS ANALYSES

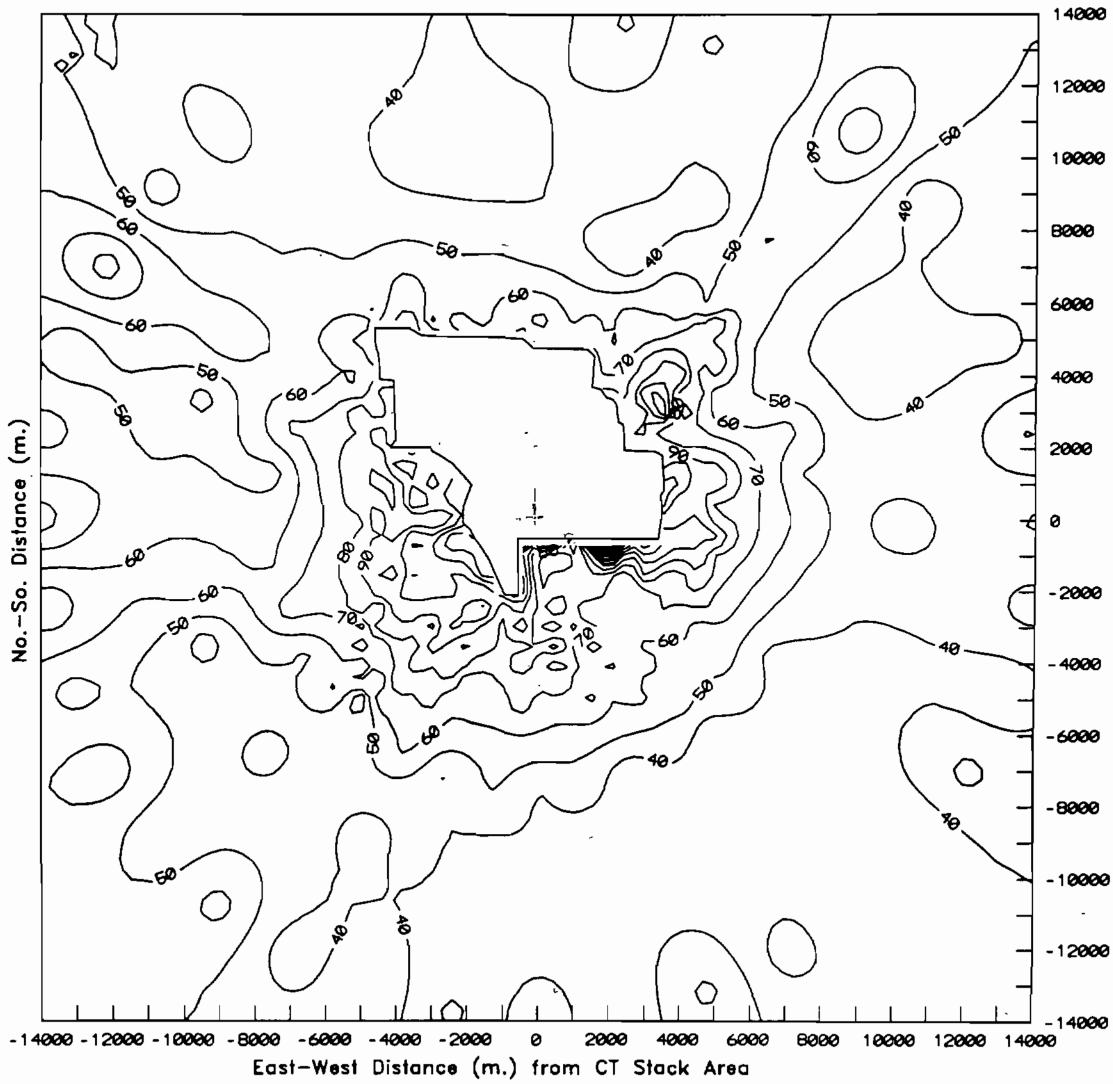


Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 5.6.1-3
LOCATIONS OF SELECTED NEAR-SITE MODELLED PM SOURCES AND WIND DIRECTION SECTOR CONSIDERED FOR BACKGROUND PM CONCENTRATIONS

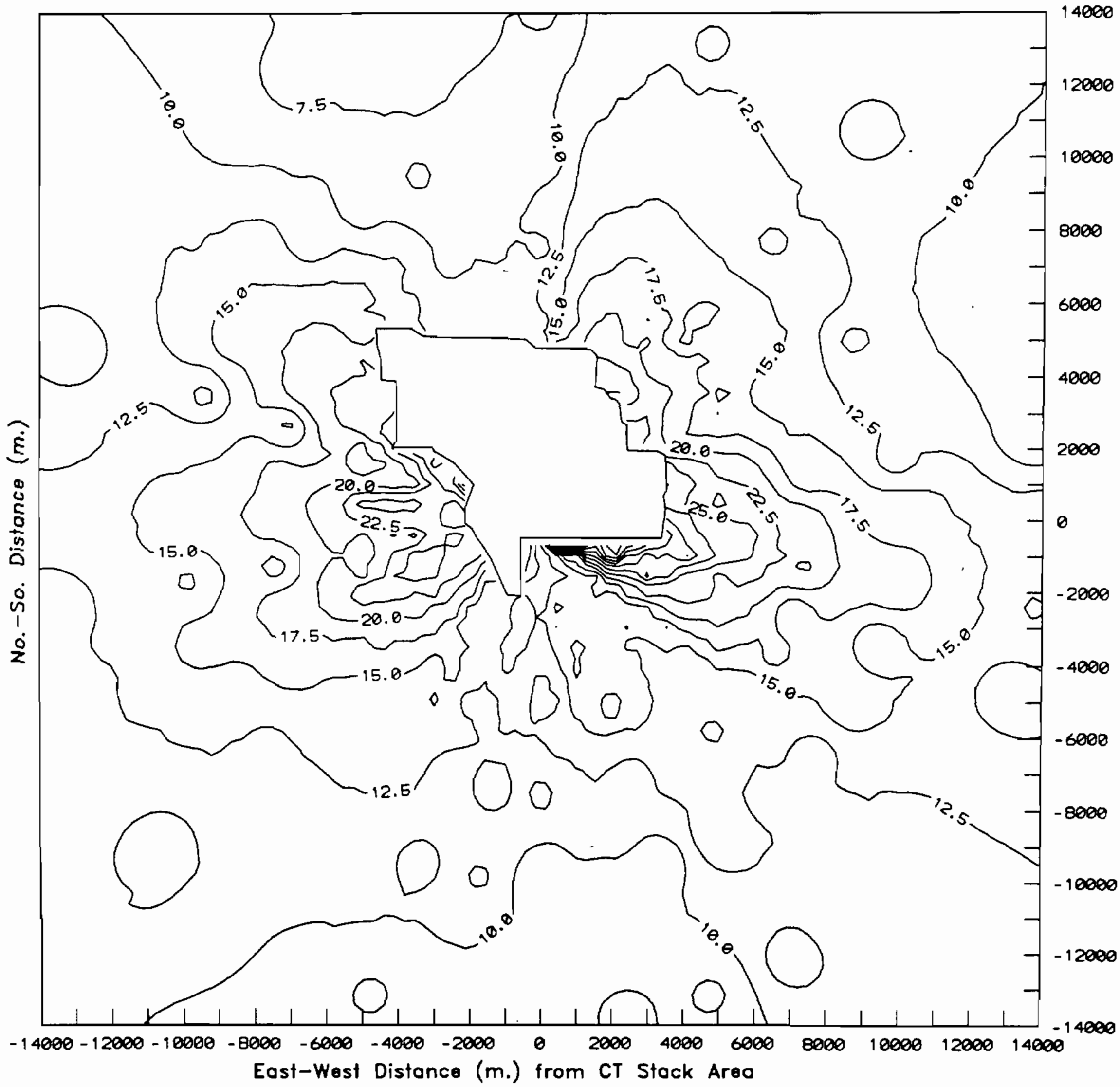


Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 5.6.1-4
MAXIMUM PREDICTED OFF-SITE 3-HOUR AVERAGE SO_2 PROJECT IMPACTS ($\mu g/m^3$)

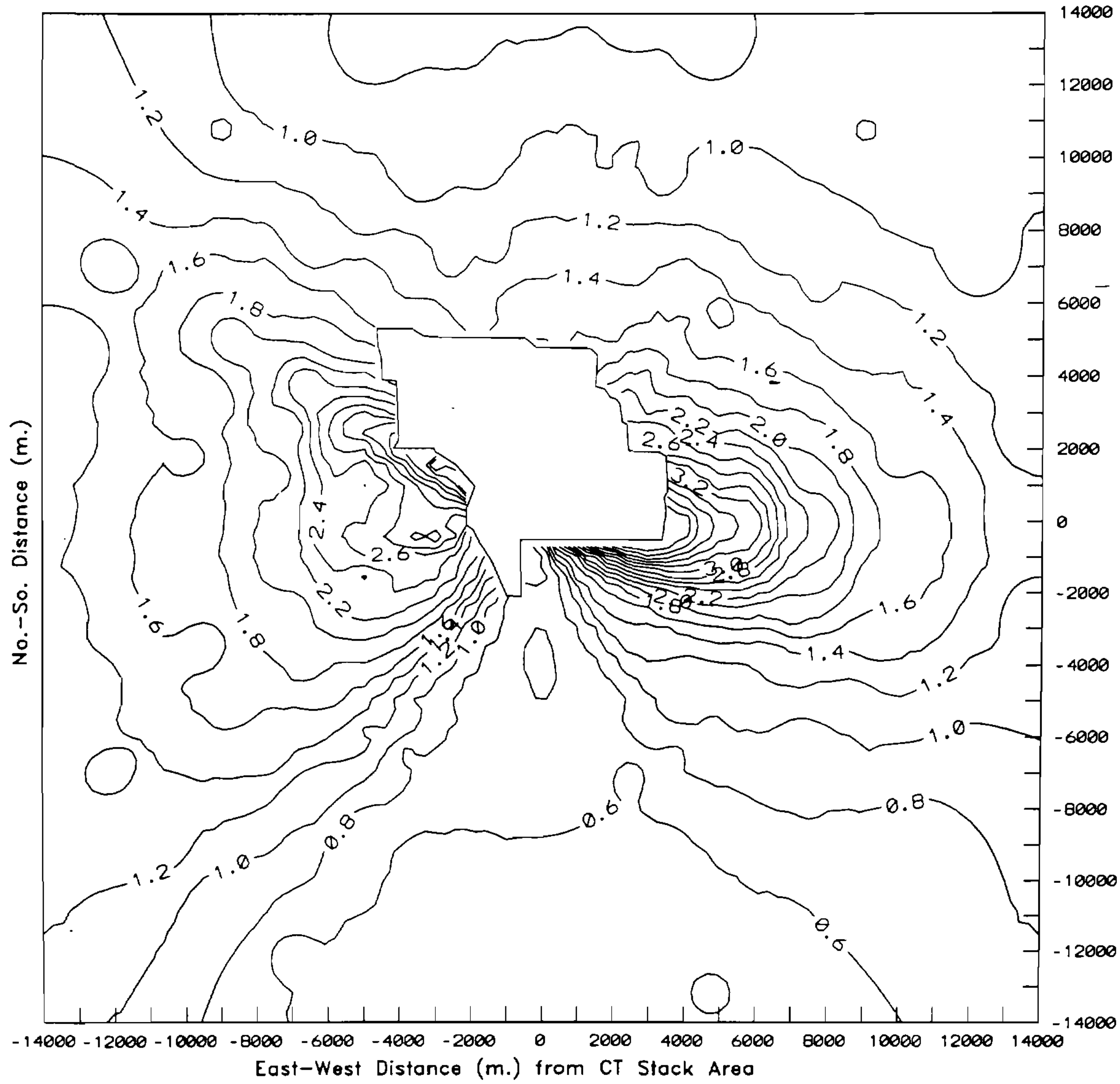


Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 5.6.1-5
MAXIMUM PREDICTED OFF-SITE 24-HOUR AVERAGE SO_2 PROJECT IMPACTS ($\mu g/m^3$)



Source: Ebasco Environmental, 1992

Florida Power CORPORATION

Polk County Site

FIGURE 5.6.1-6
MAXIMUM PREDICTED OFF-SITE ANNUAL AVERAGE SO_2 PROJECT IMPACTS ($\mu g/m^3$)

10.5.6 Meteorology/Air Quality

Data collected in support of the preparation of SCA Section 2.3.7 are contained in this appendix.

10.5.6.1 Joint Frequency Distribution of Wind Directions and Wind Speed By Atmospheric Stability Class, Tampa, Florida, Yearly 1982 - 1986

STABILITY CLASS A

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.00	0.02	0.00	0.00	0.00	0.00	0.02
NNE	0.00	0.01	0.00	0.00	0.00	0.00	0.01
NE	0.00	0.01	0.00	0.00	0.00	0.00	0.01
ENE	0.02	0.05	0.00	0.00	0.00	0.00	0.07
E	0.00	0.07	0.00	0.00	0.00	0.00	0.07
ESE	0.00	0.01	0.00	0.00	0.00	0.00	0.01
SE	0.00	0.03	0.00	0.00	0.00	0.00	0.03
SSE	0.00	0.03	0.00	0.00	0.00	0.00	0.03
S	0.01	0.02	0.00	0.00	0.00	0.00	0.03
SSW	0.00	0.03	0.00	0.00	0.00	0.00	0.03
SW	0.02	0.05	0.00	0.00	0.00	0.00	0.07
WSW	0.02	0.06	0.00	0.00	0.00	0.00	0.08
W	0.01	0.03	0.00	0.00	0.00	0.00	0.05
WNW	0.00	0.02	0.00	0.00	0.00	0.00	0.02
NW	0.02	0.02	0.00	0.00	0.00	0.00	0.05
NNW	0.00	0.02	0.00	0.00	0.00	0.00	0.02
TOTAL	0.11	0.50	0.00	0.00	0.00	0.00	0.62

STABILITY CLASS B

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.01	0.11	0.10	0.00	0.00	0.00	0.23
NNE	0.03	0.08	0.05	0.00	0.00	0.00	0.16
NE	0.05	0.16	0.25	0.00	0.00	0.00	0.46
ENE	0.01	0.19	0.30	0.00	0.00	0.00	0.50
E	0.03	0.31	0.40	0.00	0.00	0.00	0.74
ESE	0.01	0.23	0.17	0.00	0.00	0.00	0.41
SE	0.01	0.30	0.29	0.00	0.00	0.00	0.59
SSE	0.00	0.22	0.34	0.00	0.00	0.00	0.56
S	0.05	0.30	0.45	0.00	0.00	0.00	0.79
SSW	0.01	0.22	0.30	0.00	0.00	0.00	0.53
SW	0.01	0.26	0.47	0.00	0.00	0.00	0.74
WSW	0.00	0.33	0.87	0.00	0.00	0.00	1.20
W	0.01	0.32	0.65	0.00	0.00	0.00	0.98
WNW	0.01	0.13	0.21	0.00	0.00	0.00	0.34
NW	0.01	0.07	0.07	0.00	0.00	0.00	0.15
NNW	0.00	0.05	0.03	0.00	0.00	0.00	0.08
TOTAL	0.26	3.26	4.93	0.00	0.00	0.00	8.45

STAR DECK OUTPUT DERIVED FROM TAMPA (1982) PREPROCESSED DATA (FDER) (UNITS PERCENT JOINT FREQUENCY)

STABILITY CLASS C

DIRECTION	WIND SPEED (m/s) <=1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.28	8.23 – <10.8	>= 10.8	TOTAL
N	0.01	0.09	0.25	0.06	0.00	0.00	0.41
NNE	0.00	0.08	0.31	0.06	0.00	0.00	0.45
NE	0.02	0.23	0.61	0.09	0.00	0.00	0.95
ENE	0.06	0.27	1.30	0.24	0.00	0.00	1.87
E	0.06	0.34	1.45	0.24	0.00	0.00	2.09
ESE	0.02	0.19	0.73	0.07	0.00	0.00	1.02
SE	0.02	0.17	0.80	0.11	0.00	0.00	1.11
SSE	0.01	0.13	0.61	0.13	0.00	0.00	0.87
S	0.05	0.15	0.57	0.16	0.00	0.00	0.93
SSW	0.01	0.13	0.53	0.09	0.01	0.00	0.76
SW	0.02	0.21	0.67	0.09	0.00	0.00	0.99
WSW	0.00	0.26	0.69	0.07	0.00	0.00	1.02
W	0.06	0.18	1.35	0.33	0.00	0.00	1.92
WNW	0.01	0.08	0.55	0.22	0.00	0.00	0.86
NW	0.03	0.11	0.15	0.11	0.00	0.00	0.41
NNW	0.01	0.00	0.14	0.01	0.00	0.00	0.16
TOTAL	0.40	2.62	10.68	2.08	0.01	0.00	15.79

STABILITY CLASS D

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.08	0.24	0.72	0.78	0.01	0.00	1.83
NNE	0.03	0.16	0.48	0.62	0.01	0.00	1.30
NE	0.07	0.61	1.63	1.13	0.00	0.00	3.44
ENE	0.06	0.86	2.42	1.50	0.02	0.00	4.85
E	0.01	1.08	2.28	1.21	0.03	0.00	4.62
ESE	0.03	0.51	1.24	0.42	0.01	0.00	2.22
SE	0.03	0.71	1.28	0.69	0.02	0.00	2.73
SSE	0.01	0.40	0.87	0.43	0.00	0.00	1.71
S	0.07	0.35	0.89	0.24	0.01	0.00	1.56
SSW	0.01	0.24	0.66	0.57	0.05	0.00	1.53
SW	0.00	0.38	0.48	0.33	0.01	0.01	1.21
WSW	0.00	0.24	0.40	0.15	0.00	0.01	0.80
W	0.03	0.21	0.82	0.56	0.00	0.00	1.62
WNW	0.01	0.21	0.56	0.55	0.02	0.02	1.37
NW	0.03	0.27	0.67	0.51	0.01	0.01	1.52
NNW	0.01	0.10	0.63	0.61	0.02	0.00	1.37
TOTAL	0.50	6.56	16.03	10.28	0.24	0.06	33.67

STAR DECK OUTPUT DERIVED FROM TAMPA (1982) PREPROCESSED DATA (FDER) (UNITS PERCENT JOINT FREQUENCY)

STABILITY CLASS E

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
			WIND SPEED (m/s)				
N	0.07	0.35	0.70	0.00	0.00	0.00	1.12
NNE	0.05	0.13	0.30	0.00	0.00	0.00	0.47
NE	0.08	0.82	1.26	0.00	0.00	0.00	2.16
ENE	0.09	1.27	1.62	0.00	0.00	0.00	2.98
E	0.17	1.38	1.85	0.00	0.00	0.00	3.40
ESE	0.11	0.84	1.48	0.01	0.00	0.00	2.45
SE	0.14	0.82	0.78	0.00	0.00	0.00	1.74
SSE	0.01	0.45	0.34	0.00	0.00	0.00	0.80
S	0.02	0.40	0.17	0.00	0.00	0.00	0.59
SSW	0.02	0.22	0.16	0.00	0.00	0.00	0.40
SW	0.02	0.19	0.14	0.00	0.00	0.00	0.35
WSW	0.01	0.13	0.14	0.00	0.00	0.00	0.27
W	0.06	0.11	0.31	0.00	0.00	0.00	0.48
WNW	0.05	0.22	0.42	0.00	0.00	0.00	0.69
NW	0.01	0.34	0.39	0.00	0.00	0.00	0.74
NNW	0.05	0.17	0.38	0.00	0.00	0.00	0.59
TOTAL	0.96	7.84	10.42	0.01	0.00	0.00	19.23

STABILTY CLASS F

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
			WIND SPEED (m/s)				
N	0.54	0.79	0.00	0.00	0.00	0.00	1.32
NNE	0.11	0.57	0.00	0.00	0.00	0.00	0.69
NE	0.50	1.70	0.00	0.00	0.00	0.00	2.20
ENE	0.71	2.50	0.00	0.00	0.00	0.00	3.21
E	1.28	2.98	0.01	0.00	0.00	0.00	4.27
ESE	0.76	2.01	0.02	0.00	0.00	0.00	2.80
SE	0.57	1.15	0.02	0.00	0.00	0.00	1.75
SSE	0.21	0.39	0.00	0.00	0.00	0.00	0.59
S	0.18	0.39	0.00	0.00	0.00	0.00	0.57
SSW	0.17	0.13	0.00	0.00	0.00	0.00	0.30
SW	0.22	0.18	0.00	0.00	0.00	0.00	0.40
WSW	0.22	0.29	0.00	0.00	0.00	0.00	0.50
W	0.41	0.23	0.00	0.00	0.00	0.00	0.64
WNW	0.30	0.45	0.00	0.00	0.00	0.00	0.74
NW	0.25	0.86	0.00	0.00	0.00	0.00	1.11
NNW	0.53	0.59	0.00	0.00	0.00	0.00	1.12
TOTAL	6.95	15.19	0.06	0.00	0.00	0.00	22.19

STAR DECK OUTPUT DERIVED FROM TAMPA (1982) PREPROCESSED DATA (FDER) (UNITS PERCENT JOINT FREQUENCY)

ALL STABILITY CLASSES

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.71	1.61	1.77	0.83	0.01	0.00	4.93
NNE	0.23	1.03	1.13	0.67	0.01	0.00	3.07
NE	0.72	3.53	3.74	1.22	0.00	0.00	9.21
ENE	0.95	5.14	5.64	1.74	0.02	0.00	13.48
E	1.55	6.16	5.99	1.45	0.03	0.00	15.18
ESE	0.95	3.80	3.65	0.50	0.01	0.00	8.91
SE	0.78	3.18	3.16	0.80	0.02	0.00	7.94
SSE	0.24	1.61	2.16	0.56	0.00	0.00	4.56
S	0.38	1.61	2.08	0.40	0.01	0.00	4.47
SSW	0.23	0.96	1.64	0.66	0.06	0.00	3.55
SW	0.30	1.27	1.76	0.42	0.01	0.01	3.77
WSW	0.25	1.30	2.09	0.22	0.00	0.01	3.87
W	0.58	1.08	3.13	0.89	0.00	0.00	5.68
WNW	0.38	1.10	1.73	0.77	0.02	0.02	4.02
NW	0.36	1.68	1.28	0.63	0.01	0.01	3.97
NNW	0.59	0.94	1.18	0.62	0.02	0.00	3.34
TOTAL	9.18	35.98	42.12	12.37	0.25	0.06	99.94

STAR DECK OUTPUT DERIVED FROM TAMPA (1982) PREPROCESSED DATA (FDER) (UNITS PERCENT JOINT FREQUENCY)

STABILITY CLASS A

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
	WIND SPEED (m/s)						
N	0.01	0.03	0.00	0.00	0.00	0.00	0.05
NNE	0.03	0.02	0.00	0.00	0.00	0.00	0.06
NE	0.03	0.08	0.00	0.00	0.00	0.00	0.11
ENE	0.05	0.14	0.00	0.00	0.00	0.00	0.18
E	0.06	0.11	0.00	0.00	0.00	0.00	0.17
ESE	0.01	0.11	0.00	0.00	0.00	0.00	0.13
SE	0.00	0.03	0.00	0.00	0.00	0.00	0.03
SSE	0.02	0.03	0.00	0.00	0.00	0.00	0.06
S	0.00	0.07	0.00	0.00	0.00	0.00	0.07
SSW	0.00	0.11	0.00	0.00	0.00	0.00	0.11
SW	0.01	0.06	0.00	0.00	0.00	0.00	0.07
WSW	0.01	0.11	0.00	0.00	0.00	0.00	0.13
W	0.01	0.05	0.00	0.00	0.00	0.00	0.06
WNW	0.01	0.02	0.00	0.00	0.00	0.00	0.03
NW	0.01	0.02	0.00	0.00	0.00	0.00	0.03
NNW	0.02	0.01	0.00	0.00	0.00	0.00	0.03
TOTAL	0.29	1.03	0.00	0.00	0.00	0.00	1.32

STABILITY CLASS B

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
	WIND SPEED (m/s)						
N	0.01	0.19	0.15	0.00	0.00	0.00	0.35
NNE	0.01	0.23	0.17	0.00	0.00	0.00	0.41
NE	0.08	0.25	0.24	0.00	0.00	0.00	0.57
ENE	0.07	0.33	0.17	0.00	0.00	0.00	0.57
E	0.08	0.45	0.29	0.00	0.00	0.00	0.81
ESE	0.02	0.23	0.29	0.00	0.00	0.00	0.54
SE	0.02	0.29	0.31	0.00	0.00	0.00	0.62
SSE	0.01	0.17	0.17	0.00	0.00	0.00	0.35
S	0.06	0.19	0.27	0.00	0.00	0.00	0.53
SSW	0.02	0.21	0.24	0.00	0.00	0.00	0.47
SW	0.02	0.27	0.37	0.00	0.00	0.00	0.66
WSW	0.05	0.41	0.50	0.00	0.00	0.00	0.96
W	0.00	0.33	0.58	0.01	0.00	0.00	0.92
WNW	0.00	0.07	0.09	0.00	0.00	0.00	0.16
NW	0.01	0.05	0.05	0.00	0.00	0.00	0.10
NNW	0.03	0.06	0.07	0.01	0.00	0.00	0.17
TOTAL	0.50	3.72	3.95	0.02	0.00	0.00	8.19

STAR DECK OUTPUT DERIVED FROM TAMPA (1983) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS C

DIRECTION	<=1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
			WIND SPEED (m/s)				
N	0.07	0.13	0.49	0.13	0.00	0.00	0.81
NNE	0.06	0.11	0.50	0.06	0.00	0.00	0.73
NE	0.07	0.24	0.65	0.06	0.00	0.00	1.02
ENE	0.05	0.49	0.72	0.03	0.00	0.00	1.29
E	0.10	0.41	0.86	0.15	0.00	0.00	1.52
ESE	0.00	0.25	0.54	0.08	0.00	0.00	0.87
SE	0.05	0.24	0.67	0.11	0.00	0.00	1.07
SSE	0.03	0.11	0.50	0.16	0.00	0.00	0.81
S	0.10	0.19	0.37	0.13	0.00	0.00	0.79
SSW	0.02	0.11	0.34	0.09	0.00	0.00	0.57
SW	0.07	0.25	0.38	0.01	0.00	0.00	0.71
WSW	0.05	0.18	0.43	0.10	0.00	0.00	0.77
W	0.06	0.27	1.15	0.30	0.01	0.01	1.80
WNW	0.07	0.18	0.49	0.09	0.01	0.00	0.84
NW	0.01	0.10	0.27	0.13	0.01	0.00	0.53
NNW	0.02	0.07	0.32	0.15	0.00	0.00	0.56
TOTAL	0.82	3.36	8.68	1.77	0.03	0.01	14.67

STABILITY CLASS D

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
			WIND SPEED (m/s)				
N	0.01	0.40	0.97	0.89	0.03	0.00	2.30
NNE	0.07	0.41	0.65	0.41	0.00	0.00	1.54
NE	0.09	0.88	1.59	0.32	0.00	0.00	2.88
ENE	0.15	1.00	1.43	0.62	0.02	0.00	3.22
E	0.13	1.08	1.67	0.97	0.03	0.02	3.90
ESE	0.08	0.54	1.07	0.47	0.01	0.02	2.19
SE	0.15	0.46	0.95	0.72	0.02	0.00	2.29
SSE	0.03	0.23	0.74	0.46	0.00	0.00	1.46
S	0.15	0.41	0.76	0.59	0.03	0.01	1.96
SSW	0.02	0.37	0.76	0.54	0.01	0.00	1.70
SW	0.07	0.29	0.51	0.34	0.01	0.00	1.22
WSW	0.06	0.27	0.48	0.30	0.00	0.01	1.12
W	0.05	0.27	0.76	1.06	0.21	0.03	2.38
WNW	0.06	0.32	0.58	0.91	0.29	0.03	2.19
NW	0.08	0.32	0.96	1.02	0.08	0.00	2.45
NNW	0.05	0.24	0.78	0.75	0.01	0.00	1.83
TOTAL	1.23	7.48	14.66	10.36	0.76	0.14	34.63

STAR DECK OUTPUT DERIVED FROM TAMPA (1983) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS E

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.02	0.43	0.51	0.00	0.00	0.00	0.97
NNE	0.06	0.33	0.32	0.00	0.00	0.00	0.71
NE	0.10	0.79	0.46	0.00	0.00	0.00	1.35
ENE	0.16	1.24	0.64	0.00	0.00	0.00	2.04
E	0.19	1.48	0.69	0.00	0.00	0.00	2.36
ESE	0.11	0.61	1.07	0.01	0.00	0.00	1.80
SE	0.10	0.48	0.64	0.00	0.00	0.00	1.22
SSE	0.06	0.30	0.33	0.00	0.00	0.00	0.69
S	0.08	0.32	0.39	0.00	0.00	0.00	0.79
SSW	0.05	0.33	0.11	0.00	0.00	0.00	0.49
SW	0.07	0.23	0.11	0.00	0.00	0.00	0.41
WSW	0.03	0.17	0.26	0.00	0.00	0.00	0.47
W	0.03	0.21	0.33	0.00	0.00	0.00	0.57
WNW	0.08	0.30	0.30	0.00	0.00	0.00	0.67
NW	0.08	0.63	0.41	0.00	0.00	0.00	1.12
NNW	0.07	0.31	0.31	0.00	0.00	0.00	0.68
TOTAL	1.30	8.15	6.88	0.01	0.00	0.00	16.34

STABILTY CLASS F

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.53	0.97	0.01	0.00	0.00	0.00	1.51
NNE	0.26	0.66	0.01	0.00	0.00	0.00	0.94
NE	0.86	1.73	0.01	0.00	0.00	0.00	2.60
ENE	1.53	2.31	0.00	0.00	0.00	0.00	3.83
E	1.53	2.42	0.00	0.00	0.00	0.00	3.95
ESE	0.79	1.15	0.01	0.00	0.00	0.00	1.95
SE	0.47	0.83	0.00	0.00	0.00	0.00	1.30
SSE	0.30	0.42	0.01	0.00	0.00	0.00	0.73
S	0.21	0.41	0.00	0.00	0.00	0.00	0.62
SSW	0.13	0.23	0.00	0.00	0.00	0.00	0.35
SW	0.58	0.34	0.00	0.00	0.00	0.00	0.92
WSW	0.41	0.22	0.00	0.00	0.00	0.00	0.63
W	0.51	0.25	0.00	0.00	0.00	0.00	0.76
WNW	0.49	0.55	0.00	0.00	0.00	0.00	1.04
NW	1.48	1.02	0.00	0.00	0.00	0.00	2.50
NNW	0.66	0.49	0.00	0.00	0.00	0.00	1.15
TOTAL	10.73	14.00	0.06	0.00	0.00	0.00	24.78

STAR DECK OUTPUT DERIVED FROM TAMPA (1983) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

ALL STABILITY CLASSES

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
	WIND SPEED (m/s)						
N	0.65	2.16	2.13	1.02	0.03	0.00	5.99
NNE	0.49	1.77	1.65	0.47	0.00	0.00	4.38
NE	1.23	3.97	2.94	0.38	0.00	0.00	8.52
ENE	2.00	5.51	2.96	0.65	0.02	0.00	11.14
E	2.09	5.96	3.49	1.12	0.03	0.02	12.71
ESE	1.02	2.89	2.98	0.56	0.01	0.02	7.47
SE	0.79	2.33	2.57	0.83	0.02	0.00	6.54
SSE	0.46	1.27	1.76	0.62	0.00	0.00	4.10
S	0.59	1.60	1.79	0.72	0.03	0.01	4.75
SSW	0.24	1.36	1.46	0.63	0.01	0.00	3.70
SW	0.82	1.44	1.37	0.35	0.01	0.00	3.99
WSW	0.61	1.37	1.68	0.40	0.00	0.01	4.06
W	0.66	1.38	2.83	1.37	0.22	0.05	6.50
WNW	0.71	1.44	1.46	1.00	0.30	0.03	4.94
NW	1.68	2.13	1.69	1.14	0.09	0.00	6.73
NNW	0.86	1.18	1.47	0.91	0.01	0.00	4.43
TOTAL	14.87	37.73	34.23	12.16	0.80	0.15	99.94

STAR DECK OUTPUT DERIVED FROM TAMPA (1983) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS A

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.00	0.01	0.00	0.00	0.00	0.00	0.01
NNE	0.01	0.02	0.00	0.00	0.00	0.00	0.03
NE	0.03	0.05	0.00	0.00	0.00	0.00	0.08
ENE	0.01	0.08	0.00	0.00	0.00	0.00	0.09
E	0.03	0.08	0.00	0.00	0.00	0.00	0.11
ESE	0.01	0.02	0.00	0.00	0.00	0.00	0.03
SE	0.01	0.06	0.00	0.00	0.00	0.00	0.07
SSE	0.01	0.02	0.00	0.00	0.00	0.00	0.03
S	0.00	0.06	0.00	0.00	0.00	0.00	0.06
SSW	0.00	0.01	0.00	0.00	0.00	0.00	0.01
SW	0.00	0.09	0.00	0.00	0.00	0.00	0.09
WSW	0.02	0.10	0.00	0.00	0.00	0.00	0.13
W	0.02	0.01	0.00	0.00	0.00	0.00	0.03
WNW	0.00	0.05	0.00	0.00	0.00	0.00	0.05
NW	0.02	0.01	0.00	0.00	0.00	0.00	0.03
NNW	0.00	0.05	0.00	0.00	0.00	0.00	0.05
TOTAL	0.19	0.72	0.00	0.00	0.00	0.00	0.91

STABILITY CLASS B

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.03	0.18	0.16	0.00	0.00	0.00	0.38
NNE	0.02	0.14	0.09	0.00	0.00	0.00	0.25
NE	0.08	0.22	0.22	0.01	0.00	0.00	0.53
ENE	0.05	0.26	0.32	0.00	0.00	0.00	0.63
E	0.08	0.43	0.39	0.00	0.00	0.00	0.90
ESE	0.02	0.25	0.31	0.00	0.00	0.00	0.58
SE	0.02	0.25	0.41	0.00	0.00	0.00	0.69
SSE	0.05	0.16	0.27	0.00	0.00	0.00	0.48
S	0.03	0.16	0.19	0.00	0.00	0.00	0.39
SSW	0.03	0.19	0.24	0.00	0.00	0.00	0.47
SW	0.00	0.29	0.34	0.00	0.00	0.00	0.63
WSW	0.02	0.38	0.54	0.00	0.00	0.00	0.94
W	0.05	0.34	0.62	0.01	0.00	0.00	1.02
WNW	0.01	0.11	0.06	0.01	0.00	0.00	0.19
NW	0.02	0.09	0.07	0.00	0.00	0.00	0.18
NNW	0.01	0.07	0.10	0.00	0.00	0.00	0.18
TOTAL	0.54	3.53	4.32	0.03	0.00	0.00	8.42

STAR DECK OUTPUT DERIVED FROM TAMPA (1984) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS C

DIRECTION	WIND SPEED (m/s) <=1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.02	0.14	0.55	0.09	0.00	0.00	0.80
NNE	0.02	0.19	0.32	0.08	0.00	0.00	0.62
NE	0.02	0.30	0.65	0.10	0.00	0.00	1.07
ENE	0.09	0.42	1.06	0.11	0.00	0.00	1.69
E	0.14	0.47	1.30	0.26	0.00	0.00	2.17
ESE	0.05	0.33	0.63	0.02	0.00	0.00	1.03
SE	0.05	0.23	0.87	0.09	0.00	0.00	1.23
SSE	0.00	0.11	0.35	0.06	0.00	0.00	0.53
S	0.02	0.15	0.40	0.02	0.00	0.00	0.59
SSW	0.01	0.15	0.43	0.13	0.00	0.00	0.72
SW	0.06	0.17	0.42	0.07	0.00	0.00	0.72
WSW	0.03	0.21	0.67	0.16	0.00	0.00	1.07
W	0.03	0.21	1.30	0.41	0.01	0.00	1.96
WNW	0.02	0.09	0.35	0.10	0.00	0.00	0.57
NW	0.06	0.08	0.37	0.07	0.00	0.00	0.57
NNW	0.03	0.13	0.35	0.11	0.00	0.00	0.63
TOTAL	0.66	3.37	10.03	1.89	0.01	0.00	15.96

STABILITY CLASS D

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.06	0.30	0.75	0.70	0.08	0.00	1.88
NNE	0.01	0.31	0.59	0.78	0.03	0.00	1.72
NE	0.17	0.61	0.96	0.72	0.05	0.00	2.50
ENE	0.11	1.12	1.77	0.73	0.02	0.00	3.75
E	0.18	1.22	1.95	1.02	0.01	0.00	4.38
ESE	0.11	0.67	0.91	0.33	0.00	0.00	2.03
SE	0.03	0.27	0.76	0.37	0.00	0.00	1.44
SSE	0.02	0.21	0.26	0.19	0.00	0.00	0.68
S	0.07	0.23	0.46	0.38	0.03	0.00	1.16
SSW	0.01	0.29	0.46	0.63	0.10	0.00	1.48
SW	0.05	0.22	0.43	0.16	0.02	0.00	0.88
WSW	0.02	0.16	0.45	0.09	0.02	0.00	0.74
W	0.00	0.25	1.11	1.18	0.06	0.07	2.66
WNW	0.03	0.17	0.72	0.92	0.14	0.07	2.05
NW	0.06	0.23	0.80	0.65	0.15	0.09	1.97
NNW	0.02	0.13	0.62	0.56	0.05	0.00	1.37
TOTAL	0.97	6.37	13.00	9.39	0.77	0.23	30.71

STAR DECK OUTPUT DERIVED FROM TAMPA (1984) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS E

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.07	0.26	0.79	0.00	0.00	0.00	1.12
NNE	0.03	0.24	0.56	0.00	0.00	0.00	0.83
NE	0.16	0.73	0.76	0.00	0.01	0.00	1.67
ENE	0.23	1.44	1.35	0.00	0.00	0.00	3.01
E	0.24	1.40	1.34	0.00	0.00	0.00	2.98
ESE	0.16	0.82	0.47	0.00	0.00	0.00	1.45
SE	0.07	0.30	0.45	0.03	0.00	0.00	0.84
SSE	0.02	0.11	0.16	0.00	0.00	0.00	0.30
S	0.03	0.22	0.31	0.00	0.00	0.00	0.56
SSW	0.01	0.15	0.24	0.00	0.00	0.00	0.40
SW	0.05	0.16	0.21	0.00	0.00	0.00	0.41
WSW	0.06	0.17	0.18	0.00	0.00	0.00	0.41
W	0.07	0.30	0.26	0.00	0.00	0.00	0.63
WNW	0.05	0.41	0.33	0.00	0.00	0.00	0.79
NW	0.08	0.56	0.46	0.01	0.00	0.00	1.11
NNW	0.07	0.25	0.30	0.00	0.00	0.00	0.62
TOTAL	1.39	7.52	8.15	0.05	0.01	0.00	17.11

STABILTY CLASS F

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.99	1.42	0.01	0.00	0.00	0.00	2.42
NNE	0.49	0.61	0.00	0.00	0.00	0.00	1.10
NE	1.19	1.67	0.00	0.00	0.00	0.00	2.85
ENE	1.48	2.73	0.01	0.00	0.00	0.00	4.22
E	1.21	2.68	0.01	0.00	0.00	0.00	3.90
ESE	1.31	1.69	0.03	0.00	0.00	0.00	3.04
SE	0.40	0.67	0.01	0.00	0.00	0.00	1.08
SSE	0.11	0.24	0.00	0.00	0.00	0.00	0.35
S	0.23	0.24	0.01	0.00	0.00	0.00	0.48
SSW	0.13	0.39	0.00	0.00	0.00	0.00	0.51
SW	0.27	0.45	0.00	0.00	0.00	0.00	0.72
WSW	0.18	0.22	0.00	0.00	0.00	0.00	0.40
W	0.55	0.22	0.00	0.00	0.00	0.00	0.77
WNW	0.86	0.65	0.00	0.00	0.00	0.00	1.51
NW	1.29	1.03	0.00	0.00	0.00	0.00	2.32
NNW	0.87	0.57	0.00	0.00	0.00	0.00	1.44
TOTAL	11.56	15.45	0.09	0.00	0.00	0.00	27.10

ALL STABILITY CLASSES

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	1.18	2.31	2.26	0.79	0.08	0.00	6.61
NNE	0.59	1.51	1.56	0.86	0.03	0.00	4.55
NE	1.66	3.56	2.59	0.83	0.06	0.00	8.70
ENE	1.97	6.05	4.51	0.84	0.02	0.00	13.39
E	1.88	6.29	4.99	1.28	0.01	0.00	14.44
ESE	1.67	3.79	2.35	0.35	0.00	0.00	8.16
SE	0.58	1.78	2.50	0.49	0.00	0.00	5.35
SSE	0.22	0.86	1.05	0.25	0.00	0.00	2.37
S	0.39	1.05	1.37	0.40	0.03	0.00	3.24
SSW	0.19	1.17	1.37	0.75	0.10	0.00	3.59
SW	0.42	1.37	1.40	0.23	0.02	0.00	3.45
WSW	0.34	1.23	1.84	0.25	0.02	0.00	3.69
W	0.72	1.32	3.29	1.60	0.07	0.07	7.06
WNW	0.97	1.48	1.46	1.04	0.14	0.07	5.16
NW	1.53	2.00	1.69	0.73	0.15	0.09	6.18
NNW	1.00	1.19	1.37	0.67	0.05	0.00	4.28
TOTAL	15.31	36.95	35.58	11.36	0.79	0.23	100.22

STAR DECK OUTPUT DERIVED FROM TAMPA (1984) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS A

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.01	0.02	0.00	0.00	0.00	0.00	0.03
NNE	0.00	0.01	0.00	0.00	0.00	0.00	0.01
NE	0.03	0.01	0.00	0.00	0.00	0.00	0.05
ENE	0.00	0.05	0.00	0.00	0.00	0.00	0.05
E	0.01	0.07	0.00	0.00	0.00	0.00	0.08
ESE	0.01	0.05	0.00	0.00	0.00	0.00	0.06
SE	0.02	0.07	0.00	0.00	0.00	0.00	0.09
SSE	0.01	0.07	0.00	0.00	0.00	0.00	0.08
S	0.00	0.10	0.00	0.00	0.00	0.00	0.10
SSW	0.00	0.11	0.00	0.00	0.00	0.00	0.11
SW	0.03	0.13	0.00	0.00	0.00	0.00	0.16
WSW	0.01	0.14	0.00	0.00	0.00	0.00	0.15
W	0.02	0.02	0.00	0.00	0.00	0.00	0.05
WNW	0.00	0.06	0.00	0.00	0.00	0.00	0.06
NW	0.00	0.02	0.00	0.00	0.00	0.00	0.02
NNW	0.02	0.02	0.00	0.00	0.00	0.00	0.05
TOTAL	0.19	0.95	0.00	0.00	0.00	0.00	1.14

STABILITY CLASS B

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.03	0.18	0.08	0.00	0.00	0.00	0.30
NNE	0.05	0.15	0.07	0.00	0.00	0.00	0.26
NE	0.06	0.24	0.17	0.00	0.00	0.00	0.47
ENE	0.02	0.27	0.18	0.00	0.00	0.00	0.48
E	0.05	0.41	0.30	0.00	0.00	0.00	0.75
ESE	0.01	0.29	0.37	0.00	0.00	0.00	0.66
SE	0.05	0.37	0.17	0.00	0.00	0.00	0.58
SSE	0.03	0.18	0.13	0.00	0.00	0.00	0.34
S	0.05	0.30	0.27	0.01	0.00	0.00	0.63
SSW	0.02	0.23	0.39	0.00	0.00	0.00	0.64
SW	0.02	0.33	0.46	0.00	0.00	0.00	0.81
WSW	0.02	0.43	0.76	0.00	0.00	0.00	1.22
W	0.01	0.41	0.76	0.01	0.00	0.00	1.20
WNW	0.01	0.06	0.07	0.00	0.00	0.00	0.14
NW	0.00	0.15	0.05	0.00	0.00	0.00	0.19
NNW	0.01	0.05	0.06	0.00	0.00	0.00	0.11
TOTAL	0.45	4.04	4.28	0.02	0.00	0.00	8.79

STABILITY CLASS C

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.05	0.14	0.23	0.02	0.00	0.00	0.43
NNE	0.03	0.05	0.35	0.02	0.00	0.00	0.46
NE	0.08	0.21	0.62	0.09	0.00	0.00	0.99
ENE	0.02	0.29	1.04	0.21	0.00	0.00	1.55
E	0.08	0.35	1.34	0.31	0.00	0.00	2.08
ESE	0.08	0.27	0.58	0.16	0.00	0.00	1.10
SE	0.03	0.18	0.58	0.09	0.00	0.00	0.89
SSE	0.02	0.09	0.38	0.03	0.00	0.00	0.53
S	0.03	0.23	0.49	0.07	0.00	0.00	0.82
SSW	0.02	0.16	0.50	0.11	0.00	0.00	0.80
SW	0.03	0.24	0.55	0.08	0.00	0.00	0.90
WSW	0.02	0.21	0.98	0.15	0.00	0.00	1.36
W	0.03	0.24	1.46	0.66	0.00	0.00	2.40
WNW	0.02	0.10	0.53	0.23	0.00	0.00	0.88
NW	0.00	0.10	0.25	0.09	0.00	0.00	0.45
NNW	0.01	0.08	0.29	0.03	0.00	0.00	0.41
TOTAL	0.58	2.93	10.16	2.36	0.00	0.00	16.03

STABILITY CLASS D

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.01	0.26	0.97	0.48	0.05	0.00	1.77
NNE	0.00	0.15	0.69	0.26	0.01	0.00	1.11
NE	0.08	0.49	1.00	0.46	0.01	0.00	2.04
ENE	0.06	0.81	1.46	0.82	0.03	0.00	3.18
E	0.10	0.82	1.46	1.46	0.00	0.00	3.85
ESE	0.10	0.40	0.69	0.39	0.01	0.00	1.59
SE	0.06	0.42	0.73	0.46	0.01	0.00	1.68
SSE	0.03	0.29	0.43	0.22	0.01	0.00	0.98
S	0.03	0.40	0.74	0.56	0.09	0.06	1.88
SSW	0.02	0.18	0.71	0.54	0.07	0.05	1.56
SW	0.01	0.22	0.43	0.14	0.00	0.00	0.80
WSW	0.03	0.25	0.37	0.29	0.01	0.00	0.95
W	0.00	0.39	0.86	1.28	0.02	0.01	2.56
WNW	0.06	0.26	0.87	0.94	0.19	0.05	2.36
NW	0.03	0.34	0.81	0.74	0.05	0.00	1.97
NNW	0.07	0.14	0.59	0.63	0.02	0.00	1.45
TOTAL	0.71	5.82	12.80	9.64	0.59	0.16	29.72

STAR DECK OUTPUT DERIVED FROM TAMPA (1985) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS E

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.07	0.48	0.70	0.00	0.00	0.00	1.24
NNE	0.03	0.22	0.33	0.00	0.00	0.00	0.58
NE	0.11	0.61	0.88	0.00	0.00	0.00	1.60
ENE	0.11	1.46	1.45	0.01	0.00	0.00	3.03
E	0.16	1.27	1.26	0.01	0.00	0.00	2.69
ESE	0.08	0.64	0.63	0.00	0.00	0.00	1.35
SE	0.05	0.47	0.54	0.00	0.00	0.00	1.05
SSE	0.05	0.51	0.32	0.00	0.00	0.00	0.88
S	0.06	0.49	0.38	0.00	0.00	0.00	0.93
SSW	0.01	0.29	0.19	0.00	0.00	0.00	0.49
SW	0.01	0.27	0.21	0.00	0.00	0.00	0.49
WSW	0.08	0.27	0.16	0.00	0.00	0.00	0.51
W	0.02	0.23	0.45	0.00	0.00	0.00	0.70
WNW	0.10	0.42	0.37	0.01	0.00	0.00	0.90
NW	0.00	0.41	0.46	0.00	0.00	0.00	0.87
NNW	0.06	0.29	0.40	0.00	0.00	0.00	0.74
TOTAL	1.00	8.32	8.69	0.03	0.00	0.00	18.05

STABILTY CLASS F

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.95	1.00	0.02	0.00	0.00	0.00	1.97
NNE	0.46	0.43	0.01	0.00	0.00	0.00	0.90
NE	0.79	1.55	0.00	0.00	0.00	0.00	2.34
ENE	0.99	3.29	0.00	0.00	0.00	0.00	4.28
E	1.03	2.61	0.00	0.00	0.00	0.00	3.64
ESE	0.57	1.80	0.00	0.00	0.00	0.00	2.37
SE	0.37	0.96	0.02	0.00	0.00	0.00	1.35
SSE	0.31	0.75	0.00	0.00	0.00	0.00	1.06
S	0.39	0.58	0.00	0.00	0.00	0.00	0.97
SSW	0.13	0.35	0.00	0.00	0.00	0.00	0.48
SW	0.15	0.63	0.00	0.00	0.00	0.00	0.78
WSW	0.50	0.39	0.00	0.00	0.00	0.00	0.89
W	0.22	0.39	0.00	0.00	0.00	0.00	0.61
WNW	0.72	0.66	0.00	0.00	0.00	0.00	1.38
NW	0.86	1.03	0.00	0.00	0.00	0.00	1.88
NNW	0.71	0.62	0.00	0.00	0.00	0.00	1.32
TOTAL	9.12	17.05	0.06	0.00	0.00	0.00	26.22

STAR DECK OUTPUT DERIVED FROM TAMPA (1985) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

ALL STABILITY CLASSES

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	1.12	2.09	2.00	0.50	0.05	0.00	5.75
NNE	0.57	1.00	1.45	0.29	0.01	0.00	3.32
NE	1.15	3.10	2.67	0.55	0.01	0.00	7.48
ENE	1.21	6.16	4.13	1.04	0.03	0.00	12.57
E	1.43	5.54	4.35	1.78	0.00	0.00	13.09
ESE	0.86	3.45	2.26	0.55	0.01	0.00	7.12
SE	0.57	2.46	2.04	0.55	0.01	0.00	5.64
SSE	0.46	1.89	1.26	0.25	0.01	0.00	3.87
S	0.56	2.10	1.88	0.64	0.09	0.06	5.33
SSW	0.21	1.32	1.79	0.65	0.07	0.05	4.09
SW	0.26	1.82	1.64	0.22	0.00	0.00	3.94
WSW	0.67	1.69	2.27	0.43	0.01	0.00	5.08
W	0.31	1.68	3.53	1.95	0.02	0.01	7.50
WNW	0.91	1.56	1.83	1.18	0.19	0.05	5.72
NW	0.89	2.05	1.56	0.83	0.05	0.00	5.39
NNW	0.88	1.19	1.33	0.66	0.02	0.00	4.08
TOTAL	12.05	39.11	35.99	12.06	0.59	0.16	99.95

STAR DECK OUTPUT DERIVED FROM TAMPA (1985) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS A

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
	WIND SPEED (m/s)						
N	0.02	0.02	0.00	0.00	0.00	0.00	0.05
NNE	0.01	0.05	0.00	0.00	0.00	0.00	0.06
NE	0.05	0.07	0.00	0.00	0.00	0.00	0.11
ENE	0.01	0.05	0.00	0.00	0.00	0.00	0.06
E	0.01	0.13	0.00	0.00	0.00	0.00	0.14
ESE	0.02	0.13	0.00	0.00	0.00	0.00	0.15
SE	0.01	0.01	0.00	0.00	0.00	0.00	0.02
SSE	0.02	0.03	0.00	0.00	0.00	0.00	0.06
S	0.02	0.13	0.00	0.00	0.00	0.00	0.15
SSW	0.02	0.13	0.00	0.00	0.00	0.00	0.15
SW	0.01	0.09	0.00	0.00	0.00	0.00	0.10
WSW	0.03	0.17	0.00	0.00	0.00	0.00	0.21
W	0.03	0.10	0.00	0.00	0.00	0.00	0.14
WNW	0.01	0.03	0.00	0.00	0.00	0.00	0.05
NW	0.01	0.00	0.00	0.00	0.00	0.00	0.01
NNW	0.00	0.02	0.00	0.00	0.00	0.00	0.02
TOTAL	0.31	1.15	0.00	0.00	0.00	0.00	1.46

STABILITY CLASS B

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
	WIND SPEED (m/s)						
N	0.07	0.21	0.13	0.00	0.00	0.00	0.40
NNE	0.06	0.14	0.11	0.00	0.00	0.00	0.31
NE	0.05	0.22	0.27	0.00	0.00	0.00	0.54
ENE	0.06	0.39	0.29	0.00	0.00	0.00	0.73
E	0.03	0.53	0.46	0.00	0.00	0.00	1.02
ESE	0.08	0.43	0.31	0.00	0.00	0.00	0.82
SE	0.03	0.47	0.22	0.00	0.00	0.00	0.72
SSE	0.00	0.27	0.21	0.00	0.00	0.00	0.48
S	0.06	0.35	0.25	0.00	0.00	0.00	0.66
SSW	0.03	0.34	0.19	0.00	0.00	0.00	0.57
SW	0.02	0.43	0.25	0.00	0.00	0.00	0.71
WSW	0.06	0.74	0.76	0.01	0.00	0.00	1.57
W	0.06	0.72	1.16	0.01	0.00	0.00	1.95
WNW	0.05	0.21	0.15	0.00	0.00	0.00	0.40
NW	0.02	0.16	0.16	0.00	0.00	0.00	0.34
NNW	0.05	0.10	0.08	0.00	0.00	0.00	0.23
TOTAL	0.72	5.71	5.00	0.02	0.00	0.00	11.45

STAR DECK OUTPUT DERIVED FROM TAMPA (1986) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

STABILITY CLASS C

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.05	0.19	0.42	0.05	0.00	0.00	0.71
NNE	0.01	0.10	0.27	0.02	0.00	0.00	0.41
NE	0.08	0.31	0.46	0.09	0.00	0.00	0.94
ENE	0.07	0.42	0.82	0.10	0.00	0.00	1.42
E	0.10	0.50	1.04	0.10	0.00	0.01	1.76
ESE	0.03	0.33	0.70	0.03	0.00	0.00	1.10
SE	0.07	0.34	0.51	0.07	0.00	0.00	0.99
SSE	0.05	0.31	0.17	0.00	0.00	0.00	0.53
S	0.05	0.27	0.48	0.05	0.00	0.00	0.85
SSW	0.06	0.18	0.46	0.03	0.00	0.00	0.73
SW	0.03	0.25	0.32	0.02	0.00	0.00	0.63
WSW	0.03	0.37	0.56	0.05	0.00	0.00	1.00
W	0.10	0.49	1.89	0.26	0.00	0.00	2.75
WNW	0.05	0.18	0.63	0.10	0.00	0.00	0.96
NW	0.01	0.13	0.32	0.01	0.00	0.00	0.47
NNW	0.07	0.11	0.26	0.05	0.00	0.00	0.49
TOTAL	0.86	4.50	9.31	1.04	0.00	0.01	15.71

STABILITY CLASS D

DIRECTION	WIND SPEED (m/s) <1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
N	0.03	0.39	0.62	0.40	0.00	0.00	1.44
NNE	0.05	0.43	0.54	0.21	0.00	0.00	1.22
NE	0.13	0.87	0.84	0.48	0.00	0.00	2.32
ENE	0.17	0.81	0.92	0.37	0.00	0.00	2.27
E	0.18	1.10	1.16	0.26	0.00	0.00	2.70
ESE	0.09	0.74	0.63	0.14	0.00	0.00	1.60
SE	0.09	0.66	0.72	0.31	0.00	0.00	1.78
SSE	0.14	0.57	0.34	0.10	0.00	0.00	1.15
S	0.11	0.50	0.75	0.18	0.00	0.01	1.56
SSW	0.05	0.47	0.55	0.11	0.00	0.00	1.18
SW	0.05	0.48	0.27	0.01	0.01	0.00	0.82
WSW	0.01	0.30	0.42	0.14	0.00	0.00	0.87
W	0.09	0.61	0.64	0.31	0.03	0.00	1.68
WNW	0.05	0.37	0.56	0.33	0.06	0.01	1.37
NW	0.07	0.29	0.43	0.29	0.08	0.00	1.15
NNW	0.06	0.31	0.40	0.38	0.00	0.00	1.14
TOTAL	1.36	8.88	9.80	4.00	0.18	0.02	24.25

STABILITY CLASS E

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
		WIND SPEED (m/s)					
N	0.11	0.41	0.26	0.01	0.00	0.00	0.80
NNE	0.03	0.38	0.30	0.00	0.00	0.00	0.71
NE	0.10	0.97	0.89	0.00	0.00	0.00	1.96
ENE	0.18	1.14	0.31	0.00	0.00	0.00	1.63
E	0.25	1.28	0.69	0.00	0.00	0.00	2.21
ESE	0.10	1.10	0.51	0.00	0.00	0.00	1.71
SE	0.11	0.76	0.39	0.00	0.00	0.00	1.27
SSE	0.13	0.59	0.16	0.00	0.00	0.00	0.88
S	0.10	0.57	0.17	0.00	0.00	0.00	0.85
SSW	0.05	0.43	0.09	0.00	0.00	0.00	0.57
SW	0.06	0.42	0.07	0.00	0.00	0.00	0.55
WSW	0.03	0.39	0.21	0.00	0.00	0.00	0.63
W	0.07	0.31	0.22	0.00	0.00	0.00	0.59
WNW	0.13	0.48	0.24	0.00	0.00	0.00	0.85
NW	0.10	0.49	0.27	0.00	0.00	0.00	0.87
NNW	0.07	0.19	0.19	0.00	0.00	0.00	0.46
TOTAL	1.63	9.92	4.96	0.01	0.00	0.00	16.52

STABILTY CLASS F

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
		WIND SPEED (m/s)					
N	1.14	0.91	0.00	0.00	0.00	0.00	2.05
NNE	0.31	0.46	0.00	0.00	0.00	0.00	0.76
NE	0.95	1.61	0.00	0.00	0.00	0.00	2.56
ENE	1.86	2.65	0.00	0.00	0.00	0.00	4.51
E	2.05	3.01	0.00	0.00	0.00	0.00	5.07
ESE	1.50	2.25	0.01	0.00	0.00	0.00	3.75
SE	0.58	1.07	0.01	0.00	0.00	0.00	1.67
SSE	0.53	0.79	0.00	0.00	0.00	0.00	1.31
S	0.34	0.74	0.00	0.00	0.00	0.00	1.08
SSW	0.08	0.40	0.00	0.00	0.00	0.00	0.48
SW	0.43	0.74	0.00	0.00	0.00	0.00	1.18
WSW	0.34	0.54	0.00	0.00	0.00	0.00	0.88
W	0.33	0.41	0.00	0.00	0.00	0.00	0.74
WNW	0.66	0.66	0.00	0.00	0.00	0.00	1.32
NW	1.03	1.23	0.00	0.00	0.00	0.00	2.26
NNW	0.56	0.39	0.00	0.00	0.00	0.00	0.95
TOTAL	12.69	17.86	0.02	0.00	0.00	0.00	30.57

STAR DECK OUTPUT DERIVED FROM TAMPA (1986) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

ALL STABILITY CLASSES

DIRECTION	<1.54	1.54 – <3.09	3.09 – <5.14	5.14 – <8.23	8.23 – <10.8	>= 10.8	TOTAL
	WIND SPEED (m/s)						
N	1.43	2.13	1.43	0.46	0.00	0.00	5.44
NNE	0.47	1.55	1.22	0.23	0.00	0.00	3.47
NE	1.35	4.04	2.46	0.57	0.00	0.00	8.42
ENE	2.35	5.45	2.34	0.47	0.00	0.00	10.61
E	2.64	6.54	3.34	0.37	0.00	0.01	12.89
ESE	1.83	4.98	2.16	0.17	0.00	0.00	9.13
SE	0.90	3.32	1.85	0.38	0.00	0.00	6.44
SSE	0.86	2.57	0.88	0.10	0.00	0.00	4.41
S	0.69	2.57	1.65	0.23	0.00	0.01	5.15
SSW	0.29	1.95	1.29	0.15	0.00	0.00	3.68
SW	0.61	2.42	0.91	0.03	0.01	0.00	3.98
WSW	0.51	2.50	1.95	0.19	0.00	0.00	5.16
W	0.68	2.64	3.91	0.58	0.03	0.00	7.85
WNW	0.94	1.93	1.58	0.43	0.06	0.01	4.94
NW	1.24	2.29	1.19	0.30	0.08	0.00	5.10
NNW	0.80	1.13	0.94	0.42	0.00	0.00	3.29
TOTAL	17.56	48.01	29.09	5.08	0.18	0.03	99.95

STAR DECK OUTPUT DERIVED FROM TAMPA (1986) PREPROCESSED DATA (FDER) (UNITS:PERCENT JOINT FREQUENCY)

10.5.6.2 Summary of On-Site Hourly Surface Meteorological Monitoring Data

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 04-30-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: WIND DIRECTION | FROM: 10/ 15 /91

AGENCY: PRIVATE | METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE | TO: 10/ 31 /91

PROJECT: BACKGOUND SURVEILLANCE | UNITS: DEGREES

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
15	41	41	51	46	53	25	25	37	65	80	109	129	167	284	26	13	10	15	71	67	24	169	245	265	24
16	256	264	278	287	292	335	333	343	345	350	347	339	324	314	315	321	298	290	293	300	309	328	331	342	24
17	354	352	357	13	24	81	51	12	30	46	49	53	56	71	92	98	80	62	26	32	56	64	73	52	24
18	44	37	28	32	26	30	36	42	49	57	67	74	69	85	70	66	70	71	71	67	53	46	28	8	24
19	24	18	15	4	10	6	15	13	16	31	39	46	36	29	30	23	48	57	77	61	41	41	53	41	24
20	28	19	19	23	19	19	34	19	29	40	59	48	89	83	83	70	65	62	68	69	69	50	52	51	24
21	51	38	48	39	24	36	19	26	49	78	83	75	79	81	69	76	69	59	69	79	86	76	36	39	24
22	37	30	38	37	43	32	24	34	47	53	65	57	63	71	66	73	60	63	70	68	68	45	41	26	24
23	41	20	23	18	17	28	37	42	58	79	92	92	80	88	80	80	86	84	75	76	73	55	50	46	24
24	45	45	45	50	46	46	40	39	54	71	78	71	86	98	91	86	79	76	73	64	66	59	51	47	24
25	33	45	43	47	50	48	53	55	69	75	83	81	82	94	46	53	60	70	58	46	41	53	54	43	24
26	33	27	29	34	32	39	43	42	54	69	87	113	102	88	34	43	32	69	74	66	49	60	41	38	24
27	55	55	32	22	8	28	50	41	56	74	75	85	74	68	63	57	60	56	63	65	68	60	35	39	24
28	33	20	27	7	18	31	40	27	33	40	53	57	54	34	51	68	74	69	61	60	50	42	39	29	24
29	28	17	15	0	0	6	357	4	18	40	51	55	98	74	53	55	67	63	60	59	37	41	46	34	24
30	34	44	24	35	25	36	30	51	72	82	86	74	62	66	68	63	56	62	56	60	49	38	34	40	24
31	36	40	25	40	30	10	15	20	50	51	85	297	305	283	273	323	340	21	42	57	49	79	109	128	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 408

% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 04-30-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: WIND DIRECTION | FROM: 11/ 1 /91

AGENCY: PRIVATE | METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE | TO: 11/ 30 /91

PROJECT: BACKGOUND SURVEILLANCE | UNITS: DEGREES

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	130	140	142	123	144	152	154	161	176	177	171	193	200	212	207	215	188	155	176	268	261	201	143	170	24
2	171	198	217	114	137	166	173	172	183	183	185	202	210	231	224	221	299	356	27	333	23	7	322	318	24
3	344	331	333	345	6	8	18	25	32	59	79	56	332	349	350	1	10	10	17	10	11	7	9	351	24
4	359	349	12	19	4	357	2	11	7	12	21	21	26	23	17	27	9	1	1	357	2	16	14	353	24
5	343	345	358	11	7	359	2	1	3	12	23	14	26	38	39	31	32	23	18	11	10	8	12	9	24
6	1	358	21	5	355	353	358	2	4	354	18	30	16	355	31	354	10	358	2	360	359	24	17	18	24
7	18	16	14	20	15	14	22	28	19	14	27	345	358	3	13	31	9	353	1	8	39	50	39	12	24
8	14	18	9	18	38	15	5	359	337	344	358	349	336	335	346	354	355	358	350	342	350	9	349	336	24
9	335	335	355	358	336	347	340	333	352	345	335	345	333	329	320	321	329	360	350	353	3	348	345	359	24
10	338	355	308	309	297	324	316	323	321	318	306	314	307	290	286	280	292	294	301	295	304	149	162	179	24
11	193	180	201	218	227	227	244	231	274	307	313	290	290	282	288	303	308	310	313	309	301	325	80	94	24
12	344	338	325	346	358	345	344	351	8	7	41	205	269	327	302	311	325	300	300	305	305	313	328	346	24
13	357	353	353	356	3	3	350	355	21	21	27	36	33	30	40	59	63	45	47	40	40	31	29	19	24
14	15	16	22	27	26	29	24	24	40	48	75	97	98	113	95	99	61	62	61	70	71	69	65	35	24
15	23	39	34	23	25	35	33	27	57	83	94	87	77	71	51	87	74	67	75	61	77	71	40	5	24
16	5	9	1	17	25	17	27	37	46	69	70	58	43	43	44	44	47	63	60	48	41	48	47	45	24
17	40	43	36	44	40	38	43	42	47	61	77	81	76	74	78	76	80	79	56	47	49	61	54	56	24
18	54	38	36	27	26	38	46	59	61	101	108	117	98	101	93	78	79	82	82	87	89	86	70	72	24
19	65	65	66	66	73	91	82	65	70	96	108	108	99	113	106	100	99	84	82	85	87	93	83	80	24
20	85	97	102	106	99	82	92	101	114	118	132	133	136	124	116	110	88	79	91	108	113	120	132	129	24
21	104	102	90	80	77	82	98	106	113	133	137	135	127	125	131	138	135	132	124	112	146	147	153	159	24
22	164	150	157	142	127	147	171	148	135	164	167	176	190	191	183	194	202	210	215	220	152	173	193	189	24
23	210	199	174	180	189	241	284	292	287	323	341	11	300	293	262	228	265	268	270	289	301	303	305	300	24
24	296	294	297	296	296	305	317	314	320	345	339	339	326	319	298	316	312	313	309	311	329	333	345	348	24
25	352	352	2	3	6	5	358	0	7	11	14	20	28	23	34	25	24	11	7	1	2	32	27	10	24
26	8	5	359	357	5	4	6	10	10	17	23	28	21	33	39	40	34	31	40	35	25	20	13	6	24
27	9	10	15	5	2	358	0	6	13	24	30	43	44	57	55	53	61	62	44	35	29	23	16	13	24
28	6	5	360	2	2	1	7	8	20	47	65	79	81	73	75	82	74	72	62	57	49	42	40	48	24
29	45	39	46	37	39	38	40	40	53	76	104	120	95	90	83	83	86	83	77	86	86	76	81	86	24
30	65	93	92	104	81	87	93	89	98	106	116	121	124	111	114	101	99	103	89	85	91	100	109	98	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 720

% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND DIRECTION
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: DEGREES

FROM: 12/ 1 /91
TO: 12/ 31 /91

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	78	78	90	107	103	95	93	105	113	124	135	125	124	119	121	137	140	132	110	95	103	112	123	136	24
2	114	119	121	126	111	116	122	123	130	140	144	141	156	153	153	155	143	136	122	130	143	173	170	145	24
3	136	145	159	175	185	184	177	177	176	174	186	206	206	211	209	218	218	214	218	232	220	244	309	315	24
4	311	325	318	310	321	339	344	353	347	353	354	351	349	359	346	336	352	357	354	333	335	346	360	12	24
5	5	4	353	353	359	355	6	1	6	8	32	40	50	64	73	62	70	49	22	20	14	31	31	18	24
6	5	2	9	17	10	17	19	13	25	34	53	61	65	56	70	86	99	54	44	53	69	58	26	36	24
7	48	44	42	55	82	37	3	10	6	41	73	93	101	66	59	49	40	80	86	61	70	80	92	92	24
8	97	83	96	107	19	9	24	35	48	80	118	123	88	79	59	46	45	44	54	73	67	74	78	80	24
9	23	11	337	21	23	35	16	348	39	61	140	149	119	122	94	300	249	86	281	294	314	342	45	124	24
10	176	276	256	244	250	231	273	252	196	227	235	284	276	269	273	277	274	272	288	298	330	333	26	52	24
11	30	32	19	14	3	2	13	18	30	44	48	64	51	100	66	32	50	16	37	27	26	15	39	61	24
12	55	45	40	43	49	48	28	40	39	57	68	75	999	999	113	104	85	81	74	79	89	92	91	62	22
13	76	71	42	26	25	26	29	34	38	68	112	132	147	153	155	115	128	94	90	110	96	112	134	176	24
14	163	160	159	159	134	188	198	211	136	201	206	224	242	258	279	295	285	284	279	293	300	329	347	9	24
15	13	27	20	9	10	7	15	8	15	24	26	28	14	19	33	24	17	27	25	15	10	9	6	6	24
16	3	4	4	5	8	10	11	13	17	27	25	17	22	20	15	15	28	32	19	21	39	53	34	17	24
17	8	10	8	5	3	4	1	356	1	19	40	61	65	82	69	89	103	78	48	44	46	42	21	4	24
18	321	342	347	357	10	25	29	27	42	48	52	17	302	300	306	276	340	357	349	347	347	357	4	11	24
19	23	6	2	7	13	7	6	12	21	33	38	48	57	58	57	57	53	56	54	54	52	52	57	55	24
20	53	55	57	54	55	56	46	40	49	58	76	84	84	92	89	86	88	85	66	43	55	55	103	37	24
21	27	53	65	71	265	338	7	21	19	52	90	118	40	335	356	28	166	77	83	62	64	77	85	100	24
22	64	28	359	26	50	8	13	5	360	64	263	293	274	272	268	325	290	122	83	53	276	342	17	9	24
23	318	304	67	187	243	259	186	214	206	191	203	231	237	235	238	239	234	236	240	231	248	201	175	189	24
24	174	209	233	228	233	246	244	214	226	236	272	280	298	298	295	303	309	306	293	259	286	322	334	341	24
25	330	336	332	349	356	350	353	355	11	16	39	66	91	304	305	65	65	337	282	310	312	28	63	35	24
26	37	25	36	13	27	39	38	45	46	55	78	114	153	156	188	186	188	181	240	312	346	337	106	141	24
27	82	61	61	82	129	82	131	130	134	135	149	155	153	150	139	148	114	85	79	78	89	89	87	83	24
28	86	111	82	41	61	54	70	58	147	147	169	176	175	186	201	211	221	240	260	287	266	203	195	206	24
29	228	208	218	283	284	310	308	303	297	319	317	300	296	305	314	299	304	308	318	315	318	331	271	268	24
30	271	265	269	109	162	169	286	345	339	355	354	330	308	298	293	313	331	13	26	337	328	305	341	7	24
31	15	8	10	18	35	22	8	351	30	18	15	24	13	29	29	24	22	24	9	8	23	24	18	17	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 742
% DATA RECOVERY: 99.7

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 04-30-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: WIND DIRECTION | FROM: 01/ 1 /92

AGENCY: PRIVATE | METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE | TO: 01/ 31 /92

PROJECT: BACKGOUND SURVEILLANCE | UNITS: DEGREES

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	12	17	25	24	3	7	31	41	35	33	37	37	38	44	41	32	14	353	16	8	31	22	42	35	24
2	66	23	16	25	25	57	35	27	23	28	28	36	43	48	45	47	44	35	20	14	329	313	299	304	24
3	312	305	314	283	234	282	294	288	307	310	304	301	296	295	294	286	288	277	286	295	283	284	275	276	24
4	277	289	309	301	296	287	284	290	283	287	291	292	297	288	284	290	287	291	300	314	320	324	286	290	24
5	288	333	325	312	292	288	292	326	322	295	296	292	281	270	308	282	292	256	278	276	309	314	307	283	24
6	251	190	143	182	239	277	152	176	188	202	229	258	271	282	265	272	268	268	272	279	281	291	295	296	24
7	298	301	306	288	289	305	322	331	350	15	24	9	332	318	311	344	341	44	47	58	57	67	68	61	24
8	51	44	38	4	32	42	27	39	53	73	82	105	136	141	140	128	118	134	114	81	104	113	121	131	24
9	128	132	138	153	299	67	335	264	131	175	184	195	203	212	240	236	243	264	259	266	228	228	220	224	24
10	216	197	230	249	234	228	236	219	237	250	255	259	271	272	286	302	310	302	316	311	294	296	319	323	24
11	336	345	351	352	352	356	358	355	360	25	39	29	41	35	51	63	84	108	107	79	67	46	40	39	24
12	42	45	46	52	52	67	57	82	85	77	122	139	138	137	144	136	130	124	108	124	130	144	150	153	24
13	160	163	159	152	153	157	157	159	159	175	186	191	206	223	215	212	210	201	205	200	189	193	194	196	24
14	192	196	194	199	197	264	255	256	282	286	281	277	274	273	277	274	278	276	284	298	301	301	315	322	24
15	328	320	333	4	358	353	358	350	359	352	347	329	999	999	999	306	318	327	313	304	311	311	327	326	21
16	333	351	4	352	347	348	345	359	349	346	344	327	320	319	316	313	307	298	307	311	324	321	333	340	24
17	350	353	9	15	17	19	17	17	25	30	30	328	999	999	999	310	313	348	19	341	315	299	348	357	21
18	3	349	358	2	14	29	20	26	28	59	83	161	201	207	231	162	199	154	61	163	146	97	66	54	24
19	71	138	195	17	43	77	119	154	169	169	157	186	184	196	212	228	321	8	12	19	17	20	13	8	24
20	7	7	1	357	357	348	346	353	999	343	344	341	335	340	352	358	360	2	8	2	355	319	333	339	23
21	334	331	343	349	353	350	347	353	7	15	31	47	47	47	64	40	37	55	36	52	71	75	69	66	24
22	63	64	57	62	52	48	47	31	57	94	119	121	119	116	132	136	129	125	120	100	108	116	123	127	24
23	133	143	159	165	175	162	166	171	178	183	199	210	215	225	249	228	240	225	228	225	221	217	255	284	24
24	273	275	284	286	295	310	320	317	320	317	332	339	326	301	304	314	311	305	296	306	309	327	333	347	24
25	348	357	3	359	360	12	13	7	11	30	32	37	34	47	77	45	26	359	357	349	355	351	6	1	24
26	5	13	5	354	359	0	6	358	3	25	31	40	45	65	85	82	70	71	39	25	41	41	44	38	24
27	28	26	34	37	28	33	17	25	50	85	95	117	115	96	109	144	144	143	134	123	72	60	60	69	24
28	94	84	86	88	109	108	113	92	106	136	143	153	143	160	157	181	149	127	136	119	16	14	38	75	24
29	62	88	91	105	120	133	120	142	109	190	205	238	233	237	263	315	312	314	328	12	37	48	58	44	24
30	39	36	35	58	31	89	223	124	157	211	199	224	225	219	221	222	224	225	227	236	266	279	284	279	24
31	279	277	275	282	281	291	296	303	314	295	293	304	307	297	291	294	293	286	271	264	275	286	289	286	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 737

% DATA RECOVERY: 99.1

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND DIRECTION
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: DEGREES

FROM: 02/ 1 /92
TO: 02/ 14 /92

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	289	290	297	291	301	310	298	298	296	312	325	322	317	302	296	301	303	295	292	309	320	309	306	19	24
2	26	3	328	322	359	7	21	16	22	39	51	48	47	48	54	58	37	46	39	45	45	47	51	47	24
3	37	43	37	33	359	10	31	23	31	51	69	66	38	66	35	47	44	46	37	61	80	92	89	78	24
4	70	60	76	139	166	155	62	42	58	102	121	143	143	147	147	180	160	147	131	126	121	127	142	130	24
5	127	121	120	118	137	216	290	147	117	121	145	176	189	181	183	184	200	201	192	207	215	219	198	205	24
6	207	191	206	197	208	204	214	234	245	255	273	276	271	272	274	276	283	290	291	296	291	287	301	289	24
7	283	299	299	298	298	304	291	298	293	301	308	303	325	279	245	262	265	268	270	263	304	309	244	265	24
8	280	287	281	280	279	234	236	268	296	317	303	289	281	285	287	270	251	254	264	280	288	293	305	319	24
9	334	335	352	8	6	11	13	25	25	32	49	49	59	67	45	27	19	7	357	17	24	35	26	7	24
10	2	6	19	13	10	11	20	24	19	47	47	56	59	70	65	52	51	31	35	41	48	40	25	10	24
11	10	19	22	13	11	9	10	21	17	14	9	3	340	349	11	22	11	38	37	27	41	65	53	57	24
12	63	62	44	39	37	21	24	25	41	29	25	32	33	35	25	9	40	33	24	80	180	72	100	118	24
13	108	70	88	92	103	84	103	72	53	69	67	159	251	259	315	302	302	293	312	308	332	20	94	331	24
14	22	42	329	16	18	26	41	42	42	66	110	120	183	194	244	260	249	308	277	286	334	17	171	102	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 336
% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 10/ 15 /91
TO: 10/ 31 /91

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
15	2.6	3.4	3.5	4.0	4.1	2.7	3.0	3.6	3.3	4.3	6.4	6.6	6.8	5.4	4.3	8.0	7.6	7.2	6.3	3.7	1.7	2.0	3.1	4.0	4.5	24
16	3.6	3.9	3.9	2.7	3.8	10.2	9.4	7.9	9.9	9.5	8.5	8.8	10.2	8.7	8.4	7.3	5.6	5.3	6.6	6.0	6.2	4.6	5.8	5.4	6.8	24
17	4.3	4.9	5.2	3.6	3.4	2.9	2.1	2.6	5.5	7.3	7.2	6.2	5.9	6.0	6.2	5.0	5.9	3.7	3.5	3.6	5.0	4.6	5.2	4.1	4.7	24
18	3.8	4.2	4.4	4.1	4.3	4.3	3.6	4.8	8.1	10.5	11.3	10.8	11.0	11.5	10.2	10.7	9.6	8.0	6.3	6.1	6.1	5.3	4.6	4.5	7.0	24
19	4.6	3.7	3.9	4.6	5.1	5.7	5.7	5.7	6.9	9.3	9.6	7.9	6.3	7.0	7.0	7.2	7.7	5.4	5.3	4.1	5.1	5.6	3.7	4.6	5.9	24
20	4.8	4.8	3.9	4.4	4.9	4.2	4.2	4.8	7.2	7.6	6.4	5.1	4.9	6.0	7.3	6.3	7.2	6.2	5.2	5.4	6.0	6.0	5.6	4.9	5.6	24
21	4.5	4.8	5.4	3.7	3.4	4.8	4.4	4.0	5.2	7.4	8.0	7.4	7.3	6.2	6.5	8.5	9.3	7.6	6.8	7.4	6.6	4.8	4.3	4.8	6.0	24
22	4.8	4.9	4.3	4.3	4.3	4.7	4.3	5.6	7.3	9.7	9.6	8.8	8.3	8.6	9.3	9.9	8.5	7.3	6.3	5.1	5.6	4.9	3.5	3.3	6.4	24
23	4.6	3.3	3.3	3.7	4.2	4.1	4.2	5.1	7.8	11.1	13.4	13.4	14.0	10.7	13.8	14.6	15.1	13.5	8.0	7.8	6.7	5.7	5.1	5.0	8.3	24
24	5.1	5.7	6.5	6.6	6.9	6.3	5.2	5.7	8.7	11.9	13.7	12.3	14.9	15.7	13.8	12.0	14.6	11.8	7.7	8.2	9.3	7.9	5.5	5.4	9.2	24
25	4.5	4.8	5.5	6.0	5.8	5.8	5.6	6.6	9.0	12.8	15.4	16.9	17.0	17.2	8.5	9.7	10.2	6.7	5.4	5.7	6.6	7.8	7.9	5.9	8.6	24
26	4.6	5.0	4.7	5.6	5.5	6.2	5.2	6.2	8.2	10.4	11.5	12.5	10.4	8.2	7.2	8.2	5.3	5.4	7.7	6.3	5.7	4.9	5.0	4.8	6.9	24
27	4.8	4.5	4.0	4.2	3.9	3.4	3.8	4.9	7.9	10.9	11.4	11.4	10.7	9.5	9.7	9.2	8.9	8.4	5.9	6.8	4.7	4.3	4.2	3.9	6.7	24
28	3.4	3.5	4.0	3.1	2.9	2.2	2.0	2.7	4.9	4.7	5.5	5.9	5.6	7.1	8.2	7.9	7.3	4.4	4.7	6.6	7.3	6.1	6.8	4.7	5.1	24
29	4.0	3.8	3.9	3.4	3.5	3.2	3.1	3.3	4.4	6.7	12.9	11.1	9.1	4.6	7.0	13.8	14.4	11.8	10.4	6.5	6.0	6.8	7.0	4.4	6.9	24
30	4.8	4.4	4.6	5.0	5.2	6.1	5.8	6.5	8.8	12.3	14.8	14.1	12.5	11.7	13.5	13.2	11.6	9.6	6.4	8.0	8.3	7.5	4.6	3.9	8.5	24
31	4.4	4.7	4.6	3.7	3.1	3.0	2.9	3.2	4.8	4.0	3.1	3.2	3.1	4.9	3.6	2.6	2.5	3.7	3.2	3.0	3.0	3.7	4.6	5.0	3.6	24
AVG	4.3	4.4	4.4	4.3	4.4	4.7	4.4	4.9	6.9	8.8	9.9	9.6	9.3	8.8	8.5	9.1	8.9	7.4	6.2	5.9	5.9	5.4	5.1	4.6		
MIN	2.6	3.3	3.3	2.7	2.9	2.2	2.0	2.6	3.3	4.0	3.1	3.2	3.1	4.6	3.6	2.6	2.5	3.7	3.2	3.0	1.7	2.0	3.1	3.3		
MAX	5.1	5.7	6.5	6.6	6.9	10.2	9.4	7.9	9.9	12.8	15.4	16.9	17.0	17.2	13.8	14.6	15.1	13.5	10.4	8.2	9.3	7.9	7.9	5.9		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 6.3
MINIMUM: 1.7
MAXIMUM: 17.2
OBSERVATIONS: 408
% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 11/ 1 /91
TO: 11/ 30 /91

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	4.2	5.1	3.4	3.7	4.3	3.0	4.5	4.8	6.9	10.5	10.3	9.1	7.7	6.7	6.6	4.7	3.0	4.5	5.0	3.0	3.9	1.7	4.9	4.5	5.2	24
2	7.2	6.1	3.7	2.5	4.3	4.7	2.5	2.5	7.3	10.5	10.5	10.2	7.0	5.1	3.2	4.8	3.7	2.2	2.1	1.6	2.1	1.4	2.1	2.8	4.6	24
3	2.2	4.6	6.5	5.3	4.7	4.1	4.4	4.7	6.7	6.8	5.1	3.7	5.5	7.1	8.5	8.8	8.3	7.6	6.9	6.6	6.2	7.2	7.5	7.7	6.1	24
4	7.0	7.9	5.9	5.8	6.8	8.3	8.2	8.0	7.5	9.1	9.1	10.4	9.8	8.3	7.5	8.1	6.4	5.6	7.0	6.4	5.6	6.4	5.5	5.4	7.3	24
5	7.6	7.5	6.3	6.6	5.7	6.4	6.2	7.3	8.5	8.4	8.2	6.7	6.4	7.7	7.4	7.4	5.6	4.6	4.3	4.8	3.9	4.1	4.8	4.5	6.3	24
6	4.7	4.8	4.6	4.3	4.8	4.8	4.6	3.9	5.0	4.7	6.2	6.3	6.1	5.5	6.6	5.7	5.6	3.9	3.9	4.3	4.6	4.2	4.2	4.9	4.9	24
7	4.3	4.4	4.4	5.4	3.6	3.6	4.9	6.4	6.0	5.7	6.2	8.8	7.0	6.6	6.2	6.7	4.8	4.6	5.5	4.9	8.1	9.6	6.0	4.3	5.7	24
8	5.1	4.2	4.1	4.6	4.5	4.7	4.1	5.1	6.7	8.3	8.0	8.3	8.7	10.4	8.7	7.6	6.5	4.3	3.9	5.1	4.8	5.0	5.5	8.2	6.1	24
9	11.4	10.9	10.1	6.5	8.4	6.3	6.1	6.9	6.1	8.5	8.8	7.6	8.4	7.6	9.3	8.1	7.4	9.4	8.3	6.6	4.8	4.6	6.1	3.3	7.6	24
10	4.5	3.9	3.4	4.0	6.2	7.1	4.1	3.4	4.9	6.7	8.1	8.3	8.3	8.0	8.4	8.5	7.4	5.9	3.5	3.1	1.4	2.7	4.0	3.9	5.4	24
11	3.0	4.0	3.9	4.0	1.7	1.8	2.4	1.7	2.7	5.2	6.1	8.7	8.2	7.2	6.8	7.5	7.1	5.4	5.0	5.8	5.6	3.2	2.2	1.6	4.6	24
12	1.4	2.1	3.5	4.4	3.7	3.2	4.0	3.5	4.1	4.5	5.1	3.5	3.9	5.9	5.5	4.7	4.3	4.1	6.3	4.7	4.9	5.0	5.9	4.3	4.3	24
13	4.8	5.3	5.2	5.5	4.1	4.4	5.0	5.6	6.9	8.2	9.2	9.4	8.8	8.8	8.5	9.0	7.2	5.1	5.3	5.3	4.4	4.7	5.1	4.5	6.3	24
14	4.3	4.1	4.1	5.6	5.7	5.0	4.2	4.5	5.3	6.5	9.2	9.8	7.8	6.1	6.2	5.8	3.6	4.3	4.7	5.6	5.4	5.0	3.9	3.7	5.4	24
15	4.4	4.1	4.1	3.7	3.7	3.6	3.4	3.1	5.3	7.6	10.2	9.1	8.9	8.0	6.0	8.2	8.4	4.4	5.1	4.1	4.1	3.1	2.7	3.4	5.4	24
16	3.1	3.4	3.4	4.2	2.9	2.7	3.5	4.1	4.0	8.0	7.8	9.9	10.0	10.6	9.3	8.8	7.7	5.4	4.3	3.0	3.5	4.0	4.3	4.2	5.5	24
17	4.2	4.1	3.7	4.0	4.0	4.9	3.9	4.2	6.2	8.5	10.2	11.7	11.7	11.2	11.5	11.2	10.4	6.4	4.6	4.5	4.4	4.1	5.0	5.2	6.7	24
18	3.9	3.9	3.9	3.6	3.2	4.0	2.9	2.8	4.3	5.8	9.7	9.9	9.4	9.7	9.5	8.5	7.6	7.9	8.4	8.8	7.4	5.2	4.1	4.4	6.2	24
19	4.2	5.1	5.0	4.2	5.2	6.5	7.5	6.1	7.5	11.6	12.9	13.3	12.7	12.7	13.0	12.3	10.8	10.3	7.6	6.6	7.6	7.0	5.7	4.7	8.3	24
20	5.8	4.8	5.4	5.8	4.2	4.5	5.4	8.6	10.0	11.3	12.9	14.2	13.3	9.8	9.9	9.8	8.9	6.1	7.6	7.4	4.5	4.6	5.3	4.8	7.7	24
21	2.7	3.8	3.5	3.8	3.5	3.8	4.0	3.6	5.8	8.1	10.6	12.7	13.3	14.3	14.4	12.0	10.2	6.0	5.1	4.5	6.5	5.8	5.9	5.0	7.0	24
22	3.8	4.6	4.0	5.2	5.7	7.2	5.9	2.4	4.1	10.2	15.4	14.1	11.4	10.0	8.5	9.2	5.7	5.1	2.0	2.9	3.2	4.2	4.4	4.9	6.4	24
23	4.7	3.4	3.2	2.8	2.5	2.4	3.7	4.7	3.7	5.7	3.7	2.1	2.5	3.3	3.1	3.5	6.3	6.5	5.8	6.1	7.1	5.2	5.1	4.7	4.2	24
24	5.1	4.4	5.0	4.8	5.4	4.4	3.2	1.8	3.9	8.6	10.9	10.1	10.3	8.9	9.6	10.7	9.1	6.3	5.7	6.2	6.5	7.4	7.6	6.9	6.8	24
25	6.2	7.9	7.2	7.1	5.4	5.1	5.2	5.9	7.9	11.5	10.9	11.4	10.6	8.6	8.1	6.9	5.9	3.8	4.3	4.7	4.7	3.0	3.1	3.4	6.6	24
26	3.7	5.4	5.1	4.7	6.3	6.1	5.8	6.4	8.0	8.5	10.3	11.6	10.3	9.7	10.3	9.2	7.9	7.1	8.8	8.1	8.0	7.0	5.8	5.5	7.5	24
27	5.6	6.2	5.3	5.1	5.0	4.9	5.1	5.1	6.0	7.3	8.7	11.6	9.8	10.6	11.7	10.7	10.3	6.4	5.6	8.5	9.3	7.1	6.6	5.6	7.4	24
28	5.7	6.0	5.0	4.3	4.8	4.5	4.1	4.8	5.4	8.0	11.5	15.8	15.2	14.0	14.3	16.6	12.4	9.2	6.5	7.2	6.1	5.0	5.2	4.6	8.2	24
29	4.3	3.8	3.7	3.7	4.5	4.5	4.4	4.9	6.6	10.3	14.9	11.7	14.0	15.6	16.8	14.6	11.0	9.6	6.2	7.1	8.2	6.2	5.3	6.6	8.3	24
30	3.9	6.2	6.1	5.5	4.5	7.2	6.1	6.8	7.4	9.2	12.3	12.2	12.5	10.0	11.8	12.7	11.5	8.2	5.2	6.1	5.4	6.8	6.9	4.8	7.9	24
AVG	4.8	5.1	4.8	4.7	4.6	4.8	4.6	4.8	6.0	8.1	9.4	9.7	9.3	8.9	8.9	8.7	7.5	6.0	5.5	5.5	5.4	5.0	5.0	4.7		
MIN	1.4	2.1	3.2	2.5	1.7	1.8	2.4	1.7	2.7	4.5	3.7	2.1	2.5	3.3	3.1	3.5	3.0	2.2	2.0	1.6	1.4	1.4	2.1	1.6		
MAX	11.4	10.9	10.1	7.1	8.4	8.3	8.2	8.6	10.0	11.6	15.4	15.8	15.2	15.6	16.8	16.6	12.4	10.3	8.8	8.8	9.3	9.6	7.6	8.2		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 6.3
MINIMUM: 1.4
MAXIMUM: 16.8
OBSERVATIONS: 720
% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 12/ 1 /91
TO: 12/ 31 /91

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	4.2	3.8	4.6	6.5	5.8	5.1	5.5	5.6	7.0	8.8	10.4	10.0	9.7	8.3	8.0	7.5	7.4	4.3	3.2	4.0	4.5	5.4	5.7	5.8	6.3	24
2	4.0	4.2	4.1	4.9	6.1	5.0	6.2	5.7	6.6	9.4	12.2	13.6	13.4	13.4	10.8	8.9	7.4	5.9	4.7	8.4	9.6	4.7	5.4	7.3	7.6	24
3	6.4	9.8	9.8	10.7	9.8	9.6	9.0	10.0	12.5	14.3	15.4	14.6	16.5	18.3	17.8	15.7	14.2	10.6	8.9	8.2	7.6	8.0	11.6	9.1	11.6	24
4	9.9	11.6	8.4	9.8	11.9	10.7	9.5	7.5	8.5	8.1	7.1	7.3	7.8	8.2	7.9	7.4	6.1	3.8	2.7	3.2	1.9	3.9	6.5	4.4	7.3	24
5	5.6	5.3	4.8	5.5	5.9	7.1	6.0	6.0	7.2	7.9	8.7	8.6	9.3	9.6	10.2	9.5	8.5	3.7	3.4	4.0	4.3	3.6	3.8	3.5	6.3	24
6	4.0	4.5	5.3	5.5	4.7	4.9	4.5	4.0	5.0	5.8	7.4	8.4	7.9	7.1	6.7	8.4	7.5	3.0	3.1	5.1	4.9	4.3	4.2	5.0	5.5	24
7	5.0	4.7	4.1	4.0	4.0	3.0	2.8	3.7	3.3	4.0	2.9	5.7	7.0	6.3	6.7	6.5	4.3	3.1	1.2	2.2	4.4	3.7	4.2	4.7	4.2	24
8	6.4	4.1	4.2	6.6	3.4	4.6	4.7	3.9	5.1	6.9	11.4	10.0	6.5	6.3	6.3	6.0	6.9	3.8	4.3	4.2	4.7	4.4	3.1	2.9	5.4	24
9	2.1	1.3	2.2	2.5	2.7	2.7	2.0	1.6	1.9	2.0	3.5	4.6	5.6	5.1	2.6	2.1	1.0	0.2	1.1	2.0	3.1	1.4	1.3	2.5	2.4	24
10	2.0	1.1	1.0	1.3	0.8	2.0	1.9	1.2	3.2	3.9	5.4	8.4	8.4	7.9	7.7	7.9	5.4	6.2	4.3	3.1	5.3	2.9	3.8	5.0	4.2	24
11	3.2	2.3	2.9	2.9	3.4	3.7	3.6	4.3	5.0	4.9	4.2	4.5	3.3	4.5	4.2	2.7	4.9	2.6	2.8	3.3	3.7	4.0	4.4	3.3	3.7	24
12	3.6	5.0	4.6	5.0	4.4	5.0	4.2	3.6	4.9	5.1	4.6	6.6	99.9	99.9	7.6	11.9	10.2	5.4	3.6	5.8	6.6	5.4	4.6	3.2	5.5	22
13	3.5	3.1	2.9	2.6	3.0	2.7	2.8	3.3	3.9	4.7	7.3	8.7	9.2	8.9	6.2	6.6	5.5	2.1	2.8	3.7	4.5	5.4	5.7	4.8	4.7	24
14	3.9	4.4	3.3	2.5	3.4	2.9	2.6	1.3	2.1	4.5	8.9	7.8	6.7	6.3	6.4	7.2	8.4	6.7	4.5	3.8	3.9	7.0	4.0	4.1	4.9	24
15	5.6	5.4	4.0	4.1	4.2	6.0	6.6	6.5	8.8	11.5	11.6	11.8	11.0	10.2	10.7	8.3	8.7	10.0	8.4	6.2	6.4	7.2	8.4	7.3	7.9	24
16	7.6	7.8	7.2	7.1	9.3	8.9	7.1	6.5	7.3	11.2	10.3	10.3	10.5	8.8	8.3	7.8	7.2	6.6	5.1	5.3	5.8	6.9	6.1	4.7	7.7	24
17	6.4	6.9	7.0	6.7	5.7	6.3	4.7	5.1	5.4	6.0	7.8	9.6	10.3	9.8	8.8	8.3	7.4	3.5	2.6	3.2	3.2	2.6	2.5	2.7	5.9	24
18	3.8	5.0	4.7	3.9	4.8	5.0	4.4	3.9	4.4	5.9	5.7	5.3	3.7	4.1	4.1	3.5	3.0	3.1	3.3	5.4	5.5	5.9	5.5	5.3	4.6	24
19	4.8	6.2	5.9	6.5	5.7	6.0	7.1	6.3	7.3	10.8	14.2	17.9	20.9	21.0	20.4	20.8	19.1	16.0	17.2	15.4	15.3	14.0	15.0	12.8	12.8	24
20	11.6	11.7	10.9	12.3	10.1	7.6	5.6	5.0	5.6	8.0	16.3	20.2	20.1	18.0	19.3	16.9	14.3	12.9	6.7	5.7	5.6	4.6	4.3	2.5	10.7	24
21	3.2	4.6	3.5	2.7	1.5	2.1	2.9	3.4	4.3	5.0	7.2	4.8	2.9	3.1	3.4	2.6	1.3	2.5	2.8	3.4	4.5	4.4	4.6	3.5	3.5	24
22	2.6	1.4	1.9	1.8	1.7	1.8	2.6	2.1	1.2	1.3	2.6	3.2	3.2	3.8	2.8	2.9	1.6	1.1	1.3	2.7	2.0	2.8	2.3	2.8	2.2	24
23	3.2	2.6	2.4	1.3	1.3	1.1	3.2	2.0	1.3	2.8	4.9	8.1	9.7	9.7	10.0	9.3	7.5	5.3	4.7	3.1	3.2	4.5	4.6	5.4	4.6	24
24	8.7	8.7	5.4	6.1	6.9	7.4	5.3	4.2	4.6	6.4	7.1	7.9	8.3	8.7	7.0	6.4	5.2	3.7	3.3	3.3	4.9	7.7	7.4	5.4	6.2	24
25	4.5	4.0	3.3	3.1	2.6	2.8	2.7	3.1	3.9	5.2	5.2	4.9	2.5	2.7	2.6	3.0	2.6	1.6	1.5	1.4	1.5	1.6	2.0	2.6	3.0	24
26	3.6	3.4	4.5	3.2	2.9	3.6	4.2	6.4	5.9	5.9	7.1	7.6	8.2	8.8	9.6	7.6	5.4	3.2	1.2	2.1	3.3	2.2	4.4	2.4	4.9	24
27	2.8	3.0	3.3	2.9	2.5	2.7	3.7	4.2	4.6	5.7	9.0	10.0	9.0	8.3	7.1	5.9	5.2	3.6	2.7	5.1	6.0	6.0	4.7	4.0	5.1	24
28	2.7	1.6	1.6	2.8	3.5	2.4	2.1	1.2	2.2	3.7	5.1	9.0	10.7	12.3	10.0	6.9	7.3	4.0	4.4	5.0	3.8	1.9	2.2	2.0	4.5	24
29	1.2	2.4	2.5	2.4	4.2	5.5	5.2	3.6	3.9	6.5	8.5	9.4	10.3	9.6	8.2	8.4	7.1	4.7	4.1	4.5	4.7	3.5	2.1	2.2	5.2	24
30	1.5	1.5	2.0	1.3	1.1	1.1	2.8	3.3	3.6	4.8	5.3	7.8	9.1	8.1	7.4	6.0	4.3	3.0	2.4	3.0	2.8	3.8	3.3	3.8	3.9	24
31	4.4	3.8	4.5	4.4	2.9	3.3	3.4	5.2	5.0	4.9	6.3	8.1	7.3	8.7	8.6	8.0	7.6	7.0	6.4	7.6	7.7	7.2	7.7	7.3	6.1	24
AVG	4.6	4.7	4.4	4.6	4.5	4.6	4.5	4.3	5.0	6.3	7.9	8.9	9.0	8.9	8.3	7.8	6.9	4.9	4.2	4.6	5.0	4.9	5.0	4.6		
MIN	1.2	1.1	1.0	1.3	0.8	1.1	1.9	1.2	1.2	1.3	2.6	3.2	2.5	2.7	2.6	2.1	1.0	0.2	1.1	1.4	1.5	1.4	1.3	2.0		
MAX	11.6	11.7	10.9	12.3	11.9	10.7	9.5	10.0	12.5	14.3	16.3	20.2	20.9	21.0	20.4	20.8	19.1	16.0	17.2	15.4	15.3	14.0	15.0	12.8		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 5.8
MINIMUM: 0.2
MAXIMUM: 21.0
OBSERVATIONS: 742
% DATA RECOVERY: 99.7

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 01/ 1 /92
TO: 01/ 31 /92

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	4.7	4.9	5.0	3.2	3.4	4.4	5.5	6.4	7.7	7.4	8.7	9.1	10.7	8.7	7.7	6.5	5.8	7.5	6.5	5.4	4.5	5.1	4.8	4.2	6.2	24
2	4.8	5.2	4.4	5.5	5.8	6.8	6.3	5.6	5.1	7.2	8.0	9.0	10.7	11.7	10.6	11.0	8.7	5.3	3.8	3.6	3.0	3.8	4.6	5.1	6.5	24
3	3.9	4.1	3.7	2.9	3.9	4.9	5.9	7.4	7.4	8.7	12.1	12.8	13.0	13.9	13.5	12.9	13.6	11.1	8.9	5.0	4.3	3.6	4.3	6.6	7.9	24
4	7.0	8.2	8.8	7.5	10.7	10.4	7.8	7.1	9.6	13.1	14.8	15.6	14.1	14.3	13.1	12.9	12.4	11.2	9.7	9.4	9.1	7.9	5.8	4.7	10.2	24
5	4.0	5.1	3.9	4.2	3.2	2.8	3.8	6.2	5.8	6.1	7.1	6.9	5.5	4.6	5.1	3.7	2.6	5.0	4.6	4.9	4.4	4.0	2.5	2.1	4.5	24
6	0.8	1.3	2.4	1.4	1.5	1.1	2.3	3.4	4.8	6.1	7.1	8.1	10.6	10.3	11.3	10.6	10.3	8.0	5.9	5.0	5.0	5.8	4.0	3.8	5.5	24
7	3.0	3.6	3.1	3.9	3.9	3.9	2.9	2.5	3.5	4.3	5.4	4.5	4.1	4.7	4.2	4.0	4.1	3.0	2.8	4.0	3.9	4.9	5.0	4.2	3.9	24
8	3.1	3.4	3.7	2.9	4.7	3.3	3.3	3.4	3.2	5.4	6.5	8.6	10.7	9.7	8.3	10.2	8.4	4.7	3.4	4.4	5.9	6.8	6.8	5.3	5.7	24
9	5.5	5.2	6.3	4.4	1.4	1.6	1.7	1.2	1.1	4.8	10.5	11.5	11.3	10.8	9.2	7.8	8.2	6.6	5.4	4.4	3.5	2.8	3.3	2.8	5.5	24
10	3.2	3.8	4.0	4.3	3.4	4.7	7.3	5.5	4.6	5.5	4.3	5.8	9.0	10.7	10.5	10.5	11.3	7.4	9.6	8.9	4.2	5.6	6.7	6.0	6.5	24
11	7.4	8.1	7.8	6.6	5.1	4.2	4.4	4.2	5.2	7.3	6.4	7.1	6.3	7.4	7.4	6.7	6.4	4.0	2.8	2.3	3.5	3.0	3.5	5.0	5.5	24
12	4.4	5.2	5.1	5.1	5.3	5.0	4.4	5.6	4.2	5.9	12.9	14.2	11.4	10.3	10.1	8.8	7.6	6.6	3.7	5.7	7.3	9.5	10.0	6.9	7.3	24
13	4.9	6.2	6.6	7.7	7.1	6.3	5.1	4.8	7.5	13.5	17.2	16.7	14.6	12.9	15.1	16.1	16.0	13.5	10.9	8.0	8.6	11.0	10.3	10.8	10.5	24
14	11.0	12.4	13.1	12.5	16.0	13.1	8.3	7.5	8.7	9.3	13.0	15.3	15.4	16.1	15.0	15.1	13.5	12.7	9.3	8.7	6.6	5.0	5.3	5.9	11.2	24
15	6.0	6.2	6.0	5.9	6.0	8.0	6.5	6.1	7.5	7.9	7.9	8.5	99.9	99.9	99.9	7.3	7.2	6.3	6.4	6.6	8.1	6.7	7.1	7.3	6.9	21
16	6.3	3.5	5.0	6.1	4.8	4.6	6.3	4.7	9.3	9.8	11.5	11.3	12.5	12.2	12.5	10.9	6.8	5.3	4.7	4.6	4.7	3.9	3.9	3.9	7.0	24
17	4.1	4.4	3.7	4.3	3.8	4.0	4.6	4.2	5.2	5.9	4.1	4.2	99.9	99.9	99.9	3.7	4.6	3.1	3.3	3.5	3.7	4.7	4.2	3.3	4.1	21
18	3.9	4.7	4.3	3.4	3.9	3.6	3.9	4.1	3.7	4.9	4.6	7.0	6.1	6.7	4.4	5.4	4.6	2.5	2.5	3.3	2.7	2.6	3.9	4.0	4.2	24
19	2.8	2.1	2.1	2.7	3.1	3.6	6.2	6.2	7.4	8.4	7.0	7.7	8.8	8.5	7.9	5.8	8.2	9.1	8.7	9.2	8.7	10.1	9.3	8.9	6.8	24
20	9.0	9.3	9.5	9.0	8.8	9.2	8.1	6.4	99.9	9.3	9.8	10.4	10.4	10.0	9.4	9.1	8.0	5.6	4.0	4.3	4.5	4.3	5.1	4.9	7.8	23
21	5.4	4.6	5.0	3.7	4.2	4.6	5.6	4.2	4.9	7.5	8.5	6.8	6.7	6.6	7.2	7.0	6.4	4.1	3.3	4.4	5.4	5.1	3.4	4.1	5.4	24
22	4.5	4.7	4.8	4.6	3.7	4.6	3.5	3.8	5.5	8.8	13.5	14.2	12.9	11.6	10.9	11.6	10.5	9.8	6.6	7.2	9.0	11.2	10.7	8.6	8.2	24
23	8.9	7.7	6.2	6.8	8.5	12.5	16.5	17.3	17.3	18.9	15.3	17.7	18.0	19.2	15.5	10.6	10.3	7.5	6.3	6.7	6.4	6.5	9.0	8.9	11.6	24
24	5.7	5.5	7.2	6.9	7.2	10.2	12.1	11.5	10.8	9.2	9.6	9.0	9.5	9.6	13.2	13.8	12.2	8.2	5.7	4.8	5.1	5.9	6.2	4.8	8.5	24
25	5.9	5.1	4.8	4.9	5.5	4.1	4.2	4.7	4.9	7.6	8.8	8.6	8.3	7.1	5.2	4.2	4.4	4.1	4.7	4.2	4.4	3.6	3.7	4.6	5.3	24
26	4.9	3.3	4.6	6.0	4.8	3.9	4.0	4.0	6.2	5.9	6.1	8.8	10.0	10.5	12.2	10.1	9.1	6.5	3.6	3.4	4.5	4.9	5.5	5.1	6.2	24
27	5.5	5.5	5.7	5.7	5.0	5.1	4.8	4.0	4.9	8.5	12.0	17.9	16.1	13.9	12.7	12.6	9.8	7.9	9.3	6.8	3.9	3.9	4.1	5.0	7.9	24
28	4.8	4.3	4.4	4.3	3.8	4.8	4.6	3.9	3.1	7.1	9.9	11.7	9.0	9.4	8.3	8.3	5.8	5.8	7.1	6.1	3.9	3.1	3.2	3.4	5.8	24
29	2.7	3.3	2.6	2.6	3.8	3.7	2.4	2.6	1.9	1.9	3.3	4.9	5.6	4.8	5.1	4.8	4.0	4.1	5.6	5.1	6.2	6.7	6.7	6.0	4.2	24
30	5.5	3.8	3.3	3.1	1.7	3.7	2.1	1.9	5.1	4.3	7.2	7.5	7.4	10.0	11.3	13.8	15.3	14.0	12.6	10.1	8.5	8.2	10.0	8.9	7.5	24
31	8.2	9.0	9.1	10.9	11.8	8.8	10.2	9.1	9.9	9.9	10.9	13.1	12.7	13.2	12.7	13.2	12.5	11.2	8.4	9.0	7.7	7.8	8.0	7.1	10.2	24
AVG	5.2	5.3	5.4	5.3	5.3	5.5	5.6	5.5	6.2	7.8	9.2	10.1	10.4	10.3	10.0	9.3	8.7	7.2	6.1	5.8	5.5	5.7	5.8	5.6		
MIN	0.8	1.3	2.1	1.4	1.4	1.1	1.7	1.2	1.1	1.9	3.3	4.2	4.1	4.6	4.2	3.7	2.6	2.5	2.5	2.3	2.7	2.6	2.5	2.1		
MAX	11.0	12.4	13.1	12.5	16.0	13.1	16.5	17.3	17.3	18.9	17.2	17.9	18.0	19.2	15.5	16.1	16.0	14.0	12.6	10.1	9.1	11.2	10.7	10.8		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 6.9
MINIMUM: 0.8
MAXIMUM: 19.2
OBSERVATIONS: 737
% DATA RECOVERY: 99.1

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 04-30-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: WIND SPEED | FROM: 02/ 1 /92
AGENCY: PRIVATE | METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE | TO: 02/ 14 /92
PROJECT: BACKGOUND SURVEILLANCE | UNITS: MILES PER HOUR

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	7.6	7.8	7.1	7.0	6.2	6.7	6.6	6.2	5.3	6.7	9.2	11.4	11.5	11.1	12.0	12.3	11.0	8.0	7.2	7.6	5.1	4.4	4.5	5.5	7.8	24
2	5.3	3.9	3.0	3.1	4.2	4.6	4.3	4.7	4.9	6.3	8.5	9.1	7.2	7.1	8.3	9.1	8.2	7.9	7.3	8.9	7.6	8.8	7.0	9.2	6.6	24
3	6.9	6.0	5.0	3.9	4.0	3.5	4.2	4.5	6.5	8.7	7.3	6.2	4.1	5.6	5.8	5.9	6.6	5.2	3.6	4.1	5.3	4.9	4.6	4.4	5.3	24
4	4.1	4.8	3.3	3.8	3.5	2.9	2.7	3.3	4.6	8.3	10.9	11.1	10.2	10.3	10.7	11.2	10.8	7.9	6.1	6.5	7.2	7.2	7.0	7.6	6.9	24
5	7.2	5.8	5.4	8.8	9.9	13.5	3.1	5.6	8.4	15.2	12.6	15.8	17.6	18.4	16.8	16.2	13.8	12.3	14.5	11.2	11.8	7.1	5.4	10.2	11.1	24
6	8.4	8.5	8.4	7.3	7.5	8.6	6.9	8.5	9.2	9.8	12.8	14.9	15.7	17.2	18.6	16.8	14.9	14.5	14.3	12.4	11.8	12.7	11.8	11.8	11.8	24
7	12.8	10.5	11.3	10.3	10.5	10.6	11.7	10.4	9.2	8.6	8.8	8.6	7.3	5.8	7.6	12.3	10.5	9.3	7.8	9.3	10.1	8.1	4.1	5.8	9.2	24
8	6.6	5.4	5.6	4.4	5.2	3.6	3.3	4.0	5.1	8.1	7.5	7.8	10.2	9.4	9.2	10.1	11.8	8.9	7.6	7.7	6.0	6.5	6.3	5.4	6.9	24
9	5.6	5.5	5.5	4.7	4.7	4.6	5.5	5.8	7.2	11.0	10.7	7.5	7.5	6.2	7.4	6.3	6.8	4.9	3.8	4.3	5.7	8.7	8.1	6.5	6.4	24
10	7.0	6.3	4.4	5.9	5.0	5.3	4.6	4.0	5.0	6.7	8.6	9.3	10.7	10.9	10.3	9.1	9.4	6.9	6.2	6.2	5.3	6.1	4.9	5.1	6.8	24
11	4.5	6.3	6.5	6.2	6.2	5.0	6.2	6.2	6.0	5.8	6.3	6.9	5.9	7.7	7.7	7.3	7.1	6.6	4.9	4.1	4.7	5.5	4.8	3.9	5.9	24
12	2.8	2.9	3.6	5.7	5.6	6.2	5.3	6.2	6.8	7.1	6.6	6.1	7.6	6.4	5.6	5.7	6.1	4.0	2.3	2.2	1.3	3.5	4.3	3.5	4.9	24
13	3.5	2.7	1.6	2.5	2.2	1.5	2.2	3.0	3.9	3.4	3.3	3.1	3.5	4.4	4.7	4.8	3.9	3.7	4.4	3.8	3.2	2.0	2.9	2.1	3.2	24
14	2.7	2.2	1.8	1.9	2.5	3.2	3.1	2.5	3.6	4.9	5.8	5.0	5.2	4.9	6.1	4.5	3.4	1.5	5.4	4.3	3.0	2.7	2.0	4.4	3.6	24
AVG	6.1	5.6	5.2	5.4	5.5	5.7	5.0	5.3	6.1	7.9	8.5	8.8	8.9	9.0	9.3	9.4	8.9	7.3	6.8	6.6	6.3	6.3	5.6	6.1		
MIN	2.7	2.2	1.6	1.9	2.2	1.5	2.2	2.5	3.6	3.4	3.3	3.1	3.5	4.4	4.7	4.5	3.4	1.5	2.3	2.2	1.3	2.0	2.0	2.1		
MAX	12.8	10.5	11.3	10.3	10.5	13.5	11.7	10.4	9.2	15.2	12.8	15.8	17.6	18.4	18.6	16.8	14.9	14.5	14.5	12.4	11.8	12.7	11.8	11.8		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 6.9
MINIMUM: 1.3
MAXIMUM: 18.6
OBSERVATIONS: 336
% DATA RECOVERY: 100.0

JOINT FREQUENCY DISTRIBUTION
HOMELAND FLORIDA
FLORIDA POWER CORPORATION - POLK COUNTY SITE
OCTOBER 15-31 1991

DIRECTION	.5-3MPH	3.1-7MPH	7.1-12MPH	12.1-18MPH	18.1-24MPH	24.1-32MPH	GT 32 MPH	TOTAL	AVG.SPEED
N	0.25	3.43	0.49	0.00	0.00	0.00	0.00	4.17	4.6
NNE	1.96	15.44	1.23	0.00	0.00	0.00	0.00	18.63	4.4
NE	0.98	25.49	6.37	0.49	0.00	0.00	0.00	33.33	5.8
ENE	0.25	9.80	12.25	1.96	0.00	0.00	0.00	24.26	8.0
E	0.25	2.45	2.94	4.17	0.00	0.00	0.00	9.80	10.5
ESE	0.00	0.49	0.25	0.25	0.00	0.00	0.00	0.98	8.5
SE	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.49	5.8
SSE	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	6.8
S	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.25	2.0
SSW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
SW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
WSW	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.49	3.3
W	0.00	0.98	0.00	0.00	0.00	0.00	0.00	0.98	3.8
WNW	0.25	1.96	0.00	0.00	0.00	0.00	0.00	2.21	4.8
NW	0.25	0.49	0.98	0.00	0.00	0.00	0.00	1.72	6.6
NNW	0.25	0.74	1.47	0.00	0.00	0.00	0.00	2.45	7.3
CALM								0.00	
TOTAL	4.66	62.50	25.98	6.86	0.00	0.00	0.00	100.00	6.5

NUMBER OF OBSERVATIONS: 408

Units: Percent Joint Frequency Wind Speed vs Wind Direction

E101531.91

JOINT FREQUENCY DISTRIBUTION
HOMELAND FLORIDA
FLORIDA POWER CORPORATION - POLK COUNTY SITE
NOVEMBER 1991

DIRECTION	.5-3MPH	3.1-7MPH	7.1-12MPH	12.1-18MPH	18.1-24MPH	24.1-32MPH	GT 32 MPH	TOTAL	AVG.SPEED
N	0.42	15.00	3.75	0.00	0.00	0.00	0.00	19.17	5.6
NNE	0.69	9.86	4.03	0.00	0.00	0.00	0.00	14.58	6.0
NE	0.42	7.36	3.19	0.00	0.00	0.00	0.00	10.97	5.8
ENE	0.14	4.44	3.19	0.42	0.00	0.00	0.00	8.19	7.0
E	0.28	4.58	4.44	1.39	0.00	0.00	0.00	10.69	8.0
ESE	0.28	1.67	1.67	0.97	0.00	0.00	0.00	4.58	8.4
SE	0.00	1.94	0.69	1.11	0.00	0.00	0.00	3.75	8.4
SSE	0.42	1.67	0.28	0.14	0.00	0.00	0.00	2.50	5.3
S	0.69	1.25	1.25	0.14	0.00	0.00	0.00	3.33	6.5
SSW	0.28	1.53	0.56	0.00	0.00	0.00	0.00	2.36	5.8
SW	0.69	0.97	0.00	0.00	0.00	0.00	0.00	1.67	3.3
WSW	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.28	2.4
W	0.28	0.83	0.14	0.00	0.00	0.00	0.00	1.25	4.9
WNW	0.14	3.06	1.25	0.00	0.00	0.00	0.00	4.44	5.7
NW	0.56	3.61	1.53	0.00	0.00	0.00	0.00	5.69	5.6
NNW	0.56	2.92	3.06	0.00	0.00	0.00	0.00	6.53	6.6
CALM								0.00	
TOTAL	6.11	60.69	29.03	4.17	0.00	0.00	0.00	100.00	6.3

NUMBER OF OBSERVATIONS: 720

Units: Percent Joint Frequency Wind Speed vs Wind Direction

E110130.91

JOINT FREQUENCY DISTRIBUTION
HOMELAND FLORIDA
FLORIDA POWER CORPORATION - POLK COUNTY SITE
DECEMBER 1991

DIRECTION	.5-3MPH	3.1-7MPH	7.1-12MPH	12.1-18MPH	18.1-24MPH	24.1-32MPH	GT 32 MPH	TOTAL	AVG.SPEED
N	1.75	7.68	2.83	0.00	0.00	0.00	0.00	12.26	5.2
NNE	3.10	7.41	4.45	0.00	0.00	0.00	0.00	14.96	5.5
NE	2.29	7.82	1.21	1.21	0.13	0.00	0.00	12.67	5.9
ENE	1.89	4.58	1.62	0.27	0.54	0.00	0.00	8.89	6.2
E	1.89	4.18	0.81	0.54	0.40	0.00	0.00	7.82	6.1
ESE	0.40	3.50	1.21	0.00	0.00	0.00	0.00	5.12	5.8
SE	0.54	1.89	1.89	0.27	0.00	0.00	0.00	4.58	6.7
SSE	0.54	0.94	1.48	0.27	0.00	0.00	0.00	3.23	7.0
S	0.67	1.21	1.35	0.54	0.00	0.00	0.00	3.77	7.2
SSW	0.94	0.67	0.40	0.40	0.13	0.00	0.00	2.56	7.0
SW	0.54	1.35	1.21	0.27	0.00	0.00	0.00	3.37	6.6
WSW	0.94	0.81	0.67	0.00	0.00	0.00	0.00	2.43	4.6
W	1.75	1.35	0.81	0.00	0.00	0.00	0.00	3.91	4.0
WNW	0.81	2.16	1.35	0.00	0.00	0.00	0.00	4.31	5.3
NW	0.94	2.02	1.75	0.00	0.00	0.00	0.00	4.72	5.9
NNW	1.62	2.70	0.94	0.00	0.00	0.00	0.00	5.26	4.4
CALM								0.13	
TOTAL	20.62	50.27	23.99	3.77	1.21	0.00	0.00	100.00	5.8

NUMBER OF OBSERVATIONS: 742

Units: Percent Joint Frequency Wind Speed vs Wind Direction

E120131.91

JOINT FREQUENCY DISTRIBUTION
HOMELAND FLORIDA
FLORIDA POWER CORPORATION - POLK COUNTY SITE
JANUARY 1992

DIRECTION	.5-3MPH	3.1-7MPH	7.1-12MPH	12.1-18MPH	18.1-24MPH	24.1-32MPH	GT 32 MPH	TOTAL	AVG.SPEED
N	0.14	7.87	2.17	0.00	0.00	0.00	0.00	10.18	5.5
NNE	0.27	7.19	1.90	0.00	0.00	0.00	0.00	9.36	5.3
NE	0.41	6.65	2.58	0.00	0.00	0.00	0.00	9.63	5.9
ENE	0.54	4.61	0.41	0.00	0.00	0.00	0.00	5.56	4.8
E	0.41	1.76	0.68	0.27	0.00	0.00	0.00	3.12	6.1
ESE	0.54	2.04	0.81	0.95	0.00	0.00	0.00	4.34	7.7
SE	0.81	1.22	3.39	0.27	0.00	0.00	0.00	5.70	7.6
SSE	0.27	2.31	0.95	0.27	0.00	0.00	0.00	3.80	6.9
S	0.41	0.41	1.09	0.68	0.14	0.00	0.00	2.71	9.3
SSW	0.14	0.95	1.63	1.36	0.00	0.00	0.00	4.07	10.1
SW	0.41	2.04	1.36	0.95	0.14	0.00	0.00	4.88	8.0
WSW	0.27	0.95	0.95	0.14	0.00	0.00	0.00	2.31	6.6
W	0.27	2.31	2.44	1.22	0.00	0.00	0.00	6.24	8.6
WNW	0.81	3.80	4.75	2.44	0.00	0.00	0.00	11.80	8.1
NW	0.27	5.16	2.99	1.36	0.00	0.00	0.00	9.77	7.2
NNW	0.41	3.80	2.31	0.00	0.00	0.00	0.00	6.51	6.3
CALM								0.00	
TOTAL	6.38	53.05	30.39	9.91	0.27	0.00	0.00	100.00	6.9

NUMBER OF OBSERVATIONS: 737

Units: Percent Joint Frequency Wind Speed vs Wind Direction

E010131.92

JOINT FREQUENCY DISTRIBUTION
HOMELAND FLORIDA
FLORIDA POWER CORPORATION - POLK COUNTY SITE
FEBRUARY 1-14 1992

DIRECTION	.5-3MPH	3.1-7MPH	7.1-12MPH	12.1-18MPH	18.1-24MPH	24.1-32MPH	GT 32 MPH	TOTAL	AVG.SPEED
N	0.00	7.14	0.89	0.00	0.00	0.00	0.00	8.04	5.4
NNE	1.79	11.01	1.79	0.00	0.00	0.00	0.00	14.58	5.3
NE	0.60	8.93	6.25	0.00	0.00	0.00	0.00	15.77	6.5
ENE	1.49	4.46	1.79	0.00	0.00	0.00	0.00	7.74	5.3
E	1.49	1.19	0.00	0.00	0.00	0.00	0.00	2.68	3.3
ESE	0.60	2.08	1.49	0.30	0.00	0.00	0.00	4.46	6.4
SE	0.00	1.19	1.79	0.30	0.00	0.00	0.00	3.27	8.1
SSE	0.30	0.89	1.19	0.00	0.00	0.00	0.00	2.38	6.8
S	0.60	0.30	0.60	1.19	0.30	0.00	0.00	2.98	11.3
SSW	0.00	0.60	2.08	0.89	0.00	0.00	0.00	3.57	9.4
SW	0.00	0.89	0.89	0.30	0.00	0.00	0.00	2.08	7.8
WSW	0.00	1.19	1.49	0.00	0.00	0.00	0.00	2.68	7.2
W	0.00	2.98	2.38	1.79	0.30	0.00	0.00	7.44	9.3
WNW	0.00	4.17	7.14	2.08	0.00	0.00	0.00	13.39	8.9
NW	0.30	3.27	2.98	0.00	0.00	0.00	0.00	6.55	6.8
NNW	1.19	1.19	0.00	0.00	0.00	0.00	0.00	2.38	3.8
CALM								0.00	
TOTAL	8.33	51.49	32.74	6.85	0.60	0.00	0.00	100.00	6.9

NUMBER OF OBSERVATIONS: 336

Units: Percent Joint Frequency Wind Speed vs Wind Direction

E020114.92

10.5.6.3 Summary of On-Site Hourly Air Quality Monitoring Data

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 10/ 15 /91
TO: 10/ 31 /91

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
15	34	29	27	29	28	24	15	12	25	43	47	47	43	36	36	34	37	36	36	33	28	21	25	23	31.2	24
16	21	19	17	19	17	29	32	29	32	36	41	47	55	59	62	65	62	55	50	41	40	38	42	40	39.5	24
17	37	37	35	25	19	7	6	22	25	38	52	59	64	66	65	63	60	48	41	36	30	34	34	33	39.0	24
18	27	27	28	24	23	15	7	19	34	47	54	56	57	62	58	56	54	50	45	42	40	36	34	33	38.7	24
19	34	29	24	26	28	30	30	33	39	47	50	55	56	61	61	58	54	44	38	32	29	33	33	31	39.8	24
20	31	28	24	25	27	26	28	29	38	43	43	48	48	43	40	42	44	39	33	31	32	29	31	31	34.7	24
21	30	30	28	26	23	18	14	11	21	27	29	999	999	30	30	33	31	28	26	28	28	25	22	22	25.5	22
22	21	21	23	23	21	18	15	16	23	32	39	44	45	46	50	50	49	46	35	28	23	16	19	16	30.0	24
23	17	16	9	10	8	6	5	11	19	28	31	30	31	29	31	32	31	29	26	24	24	19	17	18	20.9	24
24	19	19	20	22	21	19	14	16	25	35	38	39	41	41	40	38	35	32	30	28	30	28	26	24	28.3	24
25	20	15	18	21	20	18	16	21	28	36	39	39	38	36	31	31	30	26	24	22	22	22	22	21	25.7	24
26	19	16	17	16	16	16	16	18	25	32	34	34	33	32	31	33	31	27	30	28	24	23	23	21	24.8	24
27	20	20	17	18	17	18	16	19	26	34	38	38	39	40	40	39	38	36	30	30	26	24	19	18	27.5	24
28	16	18	16	14	14	9	2	5	19	999	999	999	41	42	41	41	43	35	26	31	29	24	26	24	24.6	21
29	19	18	13	9	9	10	10	8	13	22	34	37	35	36	37	38	40	39	37	32	32	33	33	26	25.8	24
30	29	28	29	30	29	29	26	30	37	42	44	45	44	44	46	47	44	41	34	35	36	32	30	26	35.7	24
31	21	22	23	13	19	22	21	17	27	40	46	51	54	63	72	76	76	61	36	25	18	16	28	31	36.6	24
AVG	24	23	22	21	20	18	16	19	27	36	41	45	45	45	45	46	45	40	34	31	29	27	27	26		
MIN	16	15	9	9	8	6	2	5	13	22	29	30	31	29	30	31	30	26	24	22	18	16	17	16		
MAX	37	37	35	30	29	30	32	33	39	47	54	59	64	66	72	76	76	61	50	42	40	38	42	40		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 31
MINIMUM: 2
MAXIMUM: 76
OBSERVATIONS: 403
% DATA RECOVERY: 98.8

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 11/ 1 /91
TO: 11/ 30 /91

DAY	HOUR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	30	30	24	18	19	15	4	11	31	48	56	56	53	54	53	52	47	10	12	32	33	15	10	15	30.3	24
2	19	21	22	8	12	15	17	16	25	30	33	37	36	36	37	33	28	22	7	11	10	3	3	9	20.4	24
3	8	7	15	35	29	28	24	21	24	26	33	44	48	52	50	47	36	29	22	27	27	29	31	29	30.0	24
4	31	31	31	30	32	34	31	26	24	32	35	999	999	999	40	38	35	31	29	30	29	26	23	22	30.5	21
5	24	27	28	29	29	25	23	22	23	28	29	32	31	34	36	35	30	26	20	9	7	9	10	21	24.5	24
6	30	34	33	33	33	30	28	18	24	28	37	47	53	56	56	56	59	50	40	28	30	29	23	22	36.5	24
7	31	31	33	32	30	27	25	31	31	33	41	45	48	52	56	55	50	45	44	38	40	50	45	43	39.8	24
8	43	35	33	36	44	44	38	36	41	49	61	65	67	73	73	76	75	64	55	52	52	51	60	60	53.5	24
9	57	55	56	45	46	47	38	38	33	33	31	33	49	59	63	62	60	41	35	38	36	31	28	24	43.3	24
10	21	17	14	17	18	18	20	21	22	29	32	33	37	37	48	54	55	52	45	38	33	17	7	8	28.9	24
11	19	19	14	12	10	8	12	14	27	40	47	48	999	999	999	61	59	52	41	37	34	35	16	15	29.5	21
12	29	32	31	32	28	28	28	23	18	30	43	51	56	61	60	56	62	51	34	39	34	39	43	37	39.4	24
13	36	45	44	41	35	29	26	24	24	34	44	55	59	64	68	69	63	51	47	42	38	36	25	26	42.7	24
14	29	30	31	29	28	26	21	13	19	34	51	58	59	59	58	58	56	47	41	42	44	41	33	27	38.9	24
15	29	25	21	22	21	18	14	9	21	41	49	50	51	52	51	54	47	33	30	22	26	17	17	19	30.8	24
16	16	17	15	6	4	5	4	5	12	34	41	43	43	42	41	42	39	32	23	14	17	17	15	20	22.8	24
17	20	20	19	21	21	20	18	17	27	34	38	39	40	40	44	44	44	41	30	33	29	26	30	31	30.3	24
18	29	25	23	20	18	13	7	6	17	32	999	999	999	41	42	43	40	36	32	30	27	24	20	20	26.0	21
19	20	21	22	22	25	30	31	26	26	35	40	44	999	999	999	999	41	37	33	29	27	25	24	23	29.0	20
20	23	20	23	23	24	21	17	22	28	33	36	39	40	39	41	41	36	31	29	30	22	18	17	18	28.0	24
21	17	15	14	13	13	10	7	9	20	29	36	40	40	42	43	43	51	46	30	26	25	22	23	19	26.4	24
22	22	15	14	13	15	15	13	8	16	30	35	36	38	38	39	42	40	34	29	23	9	7	15	15	23.4	24
23	20	19	15	12	11	13	5	4	9	15	19	24	33	44	47	55	38	50	33	30	39	36	34	32	26.5	24
24	33	30	33	32	31	30	28	29	32	37	36	37	38	40	45	42	42	39	33	31	29	26	30	34	34.0	24
25	35	34	32	28	27	26	21	21	25	32	34	38	41	44	45	42	39	30	22	20	10	8	11	10	28.1	24
26	9	6	8	11	20	26	23	22	25	30	34	38	39	39	41	46	46	36	42	39	34	37	38	36	30.2	24
27	38	37	36	32	26	25	19	17	19	24	30	34	38	43	44	42	42	34	30	29	24	23	27	27	30.8	24
28	28	27	23	21	20	19	17	17	19	27	36	40	41	41	41	41	39	36	31	30	28	25	23	21	28.8	24
29	20	17	16	16	17	17	14	14	19	29	33	32	31	34	35	35	32	29	26	26	25	23	22	21	24.3	24
30	21	19	20	21	18	20	21	21	23	26	30	31	32	33	33	32	32	29	22	23	21	21	20	18	24.5	24
AVG	26	25	25	24	23	23	20	19	23	32	38	42	44	46	48	48	45	38	32	30	28	26	24	24		
MIN	8	6	8	6	4	5	4	4	9	15	19	24	31	33	33	32	28	10	7	9	7	3	3	8		
MAX	57	55	56	45	46	47	38	38	41	49	61	65	67	73	73	76	75	64	55	52	52	51	60	60		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 31
MINIMUM: 3
MAXIMUM: 76
OBSERVATIONS: 707
% DATA RECOVERY: 98.2

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 04-30-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: OZONE | FROM: 12/ 1 /91
AGENCY: PRIVATE | METHOD: INSTRUMENTAL UV DASIBI CORP. | TO: 12/ 31 /91
PROJECT: BACKGOUND SURVEILLANCE | UNITS: PARTS PER BILLION (VOL/VOL)

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	18	16	16	17	19	17	17	17	21	25	27	29	29	30	30	31	31	21	9	15	13	14	15	13	20.4	24
2	11	9	8	11	14	12	12	12	13	17	23	27	31	999	35	39	31	28	23	28	26	22	19	16	20.3	23
3	16	16	15	18	18	18	18	17	17	20	22	26	31	30	29	29	29	26	25	24	23	22	26	34	22.9	24
4	35	35	33	25	20	21	15	14	13	18	20	22	26	29	30	30	26	18	18	18	16	14	16	22	22.3	24
5	25	23	23	24	24	23	17	16	20	25	28	31	35	43	45	999	44	25	24	15	17	8	9	11	24.1	23
6	7	7	13	15	15	14	9	9	10	16	28	39	45	48	48	44	40	18	9	19	20	19	24	18	22.3	24
7	22	20	15	13	15	16	16	11	10	18	28	38	43	45	46	48	49	33	23	20	19	24	19	21	25.5	24
8	25	27	20	27	26	20	23	17	19	31	37	38	38	38	37	38	35	25	21	25	21	18	16	14	26.5	24
9	19	15	13	8	8	7	6	6	9	23	36	999	999	999	999	40	34	25	12	18	12	7	7	4	15.4	20
10	4	3	4	4	4	4	7	6	8	21	35	37	39	28	29	26	25	20	7	8	19	18	13	18	16.1	24
11	15	12	11	8	7	5	6	8	15	24	31	36	40	45	46	45	41	32	12	21	8	6	11	13	20.8	24
12	14	15	18	19	18	17	13	13	15	18	27	37	38	38	37	37	34	25	18	23	24	23	21	18	23.3	24
13	19	19	13	13	14	12	11	5	9	24	32	33	36	36	37	36	33	11	7	5	10	14	14	15	19.1	24
14	13	12	7	9	9	9	12	10	6	18	27	31	32	33	33	40	32	27	16	17	13	17	19	14	19.0	24
15	19	22	21	19	20	24	25	24	25	27	31	35	40	44	47	47	38	31	28	24	28	30	32	31	29.7	24
16	32	32	31	29	31	29	27	22	24	31	32	35	999	999	40	39	37	31	27	24	18	18	21	22	28.7	22
17	21	31	32	29	28	27	21	18	20	26	35	41	45	47	47	48	48	34	8	13	10	8	14	10	27.5	24
18	5	6	19	20	15	11	9	11	12	24	36	46	51	56	58	58	57	43	33	23	21	34	33	33	29.8	24
19	30	29	34	32	28	24	18	16	20	29	33	40	44	43	44	43	40	39	40	40	40	38	40	40	34.3	24
20	40	40	39	40	40	36	26	20	22	30	38	41	40	39	41	41	40	40	32	25	29	26	22	19	33.6	24
21	16	23	24	19	13	14	18	13	17	30	41	45	45	45	45	42	38	23	18	11	15	21	20	22	25.8	24
22	21	22	17	11	7	4	8	7	13	22	38	43	47	48	49	51	51	43	31	22	32	18	17	15	26.5	24
23	12	6	6	5	3	4	4	5	8	24	42	44	46	46	48	50	49	43	37	31	28	24	24	23	25.5	24
24	24	30	27	25	25	27	27	19	21	26	30	33	34	37	39	999	37	35	33	34	26	29	30	32	29.6	23
25	33	29	26	25	25	23	21	21	22	24	29	38	45	46	46	47	45	34	32	31	22	6	9	15	28.9	24
26	25	27	22	16	12	10	9	11	17	20	24	30	36	41	41	41	39	34	33	16	12	9	9	19	23.0	24
27	14	9	9	7	9	7	5	5	9	18	29	33	35	36	38	39	36	21	13	19	25	23	22	21	20.1	24
28	19	16	9	12	15	12	8	5	4	11	21	26	29	32	33	32	34	34	29	22	21	10	11	13	19.1	24
29	9	11	17	15	15	13	13	17	18	25	30	34	35	35	37	37	36	33	28	26	23	24	20	22	23.9	24
30	18	16	14	11	4	5	16	20	21	27	31	32	38	41	43	43	43	34	17	23	25	16	9	10	23.2	24
31	10	9	11	13	10	9	7	8	9	14	19	25	30	31	30	29	24	22	20	22	24	26	25	24	18.8	24
AVG	19	19	18	17	16	15	14	13	15	23	30	35	38	40	40	40	38	29	22	21	21	19	19	19		
MIN	4	3	4	4	3	4	4	5	4	11	19	22	26	28	29	26	24	11	7	5	8	6	7	4		
MAX	40	40	39	40	40	36	27	24	25	31	42	46	51	56	58	58	57	43	40	40	40	38	40	40		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 24
MINIMUM: 3
MAXIMUM: 58
OBSERVATIONS: 735
% DATA RECOVERY: 98.8

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 01/ 1 /92
TO: 01/ 31 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	25	26	26	26	24	21	23	28	28	27	28	31	37	36	35	36	33	29	24	21	17	16	20	23	26.7	24
2	23	23	26	27	27	28	26	23	24	28	27	31	999	999	999	37	35	29	22	17	17	7	6	7	23.3	21
3	5	5	8	6	6	7	7	8	14	24	999	999	37	38	41	42	40	31	29	28	23	22	20	20	21.0	22
4	26	31	32	32	35	36	34	31	32	33	33	33	33	35	36	36	32	29	30	29	31	29	25	22	31.5	24
5	20	21	21	18	15	13	12	12	13	14	18	24	32	37	41	43	44	26	16	25	27	25	19	21	23.2	24
6	17	13	4	3	11	10	3	3	8	21	33	35	41	40	45	43	42	32	19	16	20	22	18	16	21.5	24
7	17	15	16	16	13	13	10	4	12	20	33	45	55	54	53	52	48	27	6	11	16	20	29	22	25.3	24
8	21	23	15	17	16	8	11	5	7	34	40	47	49	51	52	51	51	38	16	22	29	32	27	26	28.7	24
9	27	25	30	25	21	12	5	8	5	21	39	42	44	999	999	50	50	47	39	34	29	25	21	20	28.1	22
10	19	14	19	20	20	19	25	24	24	25	24	28	34	26	34	41	40	38	35	39	36	33	29	26	28.0	24
11	23	27	29	29	27	25	24	22	26	28	33	36	38	38	40	41	43	27	10	6	15	15	12	16	26.3	24
12	20	25	23	26	26	22	20	22	25	33	41	45	45	45	45	48	50	45	33	36	36	39	39	32	34.2	24
13	32	28	25	26	27	23	14	19	20	30	34	36	40	37	37	37	36	32	29	27	24	26	25	24	28.7	24
14	22	22	23	24	24	23	21	19	25	35	39	39	41	41	999	999	37	31	27	28	26	23	18	18	27.5	22
15	19	18	17	13	14	19	14	12	15	19	20	21	999	999	999	999	999	999	999	999	999	999	999	999	16.8	12
16	999	999	999	999	999	999	999	999	999	999	999	999	999	43	45	45	43	38	31	26	26	20	17	12	31.5	11
17	13	17	14	16	13	15	12	7	12	16	27	34	36	41	44	46	47	46	11	17	8	3	3	3	20.9	24
18	2	4	6	8	8	7	9	5	10	25	45	50	54	56	53	52	50	35	14	20	17	18	20	16	24.3	24
19	17	19	19	6	4	12	18	23	30	29	20	22	21	23	25	25	18	18	23	20	19	21	22	25	20.0	24
20	26	27	999	999	999	999	999	16	17	17	23	25	24	26	34	47	41	999	999	8	7	9	11	10	21.6	17
21	13	17	21	21	18	15	16	13	12	23	26	30	37	38	41	42	37	19	5	6	13	19	18	18	21.6	24
22	27	32	23	21	15	7	5	3	17	36	40	43	44	47	51	49	48	46	42	40	33	34	31	30	31.8	24
23	29	26	24	22	22	21	20	19	19	19	21	24	26	31	999	999	29	25	24	22	21	19	20	24	23.0	22
24	28	34	32	35	35	37	35	31	28	25	27	32	34	35	42	42	41	39	34	28	29	27	25	17	32.2	24
25	7	26	23	14	20	20	20	20	21	26	33	37	40	43	47	47	47	45	32	30	25	22	10	20	28.1	24
26	24	21	21	18	17	23	21	21	20	25	34	37	44	51	54	57	55	45	28	32	20	25	29	32	31.4	24
27	31	31	28	26	27	25	21	12	18	35	40	42	41	42	50	43	41	35	37	25	21	16	18	20	30.2	24
28	21	22	21	20	18	14	11	10	12	22	29	32	30	31	30	29	18	17	16	17	15	12	7	8	19.3	24
29	7	8	8	4	4	3	2	1	2	8	19	22	27	30	30	30	30	26	16	12	14	20	20	20	15.1	24
30	23	19	14	10	6	5	8	8	13	19	20	22	25	999	26	25	25	24	23	21	18	17	22	20	18.0	23
31	17	18	17	20	24	24	24	24	24	25	26	28	27	32	37	39	39	39	37	29	24	22	26	22	26.8	24
AVG	20	21	20	19	19	17	16	15	18	25	30	34	37	39	41	42	40	33	24	23	22	21	20	20		
MIN	2	4	4	3	4	3	2	1	2	8	18	21	21	23	25	25	18	17	5	6	7	3	3	3		
MAX	32	34	32	35	35	37	35	31	32	36	45	50	55	56	54	57	55	47	42	40	36	39	39	32		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 25
MINIMUM: 1
MAXIMUM: 57
OBSERVATIONS: 700
% DATA RECOVERY: 94.1

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 02/ 1 /92
TO: 02/ 14 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	25	30	29	31	32	31	30	32	31	34	42	46	50	49	56	53	51	46	41	40	42	39	35	29	38.5	24
2	28	30	25	24	22	17	18	24	27	34	40	42	46	48	48	50	47	45	41	39	36	38	35	33	34.9	24
3	32	31	29	23	28	17	12	8	15	29	39	45	999	999	999	999	999	999	21	22	27	27	27	24	25.3	18
4	27	26	25	17	22	19	2	2	9	32	41	47	50	50	46	47	47	44	38	36	35	32	30	29	31.4	24
5	27	21	18	17	18	31	37	24	26	33	38	40	38	37	36	38	38	37	36	35	40	36	32	33	31.9	24
6	33	31	30	29	30	29	28	30	35	34	35	36	42	43	38	33	33	32	30	28	28	26	27	26	31.9	24
7	27	24	23	24	25	26	27	27	26	25	25	27	31	34	38	43	41	28	23	26	27	32	30	27	28.6	24
8	21	19	12	25	27	24	15	24	26	30	31	33	36	33	37	41	32	42	39	31	29	26	22	29	28.5	24
9	32	27	27	27	27	25	22	21	28	34	38	40	44	48	50	50	47	42	36	32	25	34	35	32	34.3	24
10	36	38	33	31	30	27	20	13	16	24	40	45	999	999	51	50	53	48	42	37	31	30	25	18	33.5	22
11	22	24	27	29	29	27	26	22	22	21	24	28	31	42	51	55	56	48	38	33	23	26	23	18	31.0	24
12	15	16	12	9	11	8	6	12	12	16	20	24	30	37	45	51	51	50	30	23	21	16	20	19	23.1	24
13	21	15	13	5	14	22	15	15	23	24	28	42	56	68	67	67	62	56	37	26	24	14	2	3	30.0	24
14	3	6	4	2	2	2	2	2	10	42	53	51	53	53	54	60	60	57	52	41	19	17	12	7	27.7	24
AVG	25	24	22	21	23	22	19	18	22	29	35	39	42	45	47	49	48	44	36	32	29	28	25	23		
MIN	3	6	4	2	2	2	2	2	9	16	20	24	30	33	36	33	32	28	21	22	19	14	2	3		
MAX	36	38	33	31	32	31	37	32	35	42	53	51	56	68	67	67	62	57	52	41	42	39	35	33		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 31
MINIMUM: 2
MAXIMUM: 68
OBSERVATIONS: 328
% DATA RECOVERY: 97.6

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 11/ 1 /91
TO: 11/ 30 /91

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
2	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	10	2	0	0	0	0	0	0.9	23
3	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	0	0	0	2	0.3	23
4	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
5	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	1	0	0.2	23
6	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
7	999	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0	0.0	21
8	999	0	0	0	0	0	0	0	0	1	1	1	2	1	3	1	0	1	1	0	0	1	1	5	0.8	23
9	999	5	2	7	0	0	0	0	0	0	0	9	4	1	2	4	3	0	2	0	0	0	0	0	1.7	23
10	999	0	1	2	4	4	3	1	9	7	7	7	6	9	7	1	4	0	0	2	0	0	0	0	3.2	23
11	999	1	3	16	14	12	7	2	8	19	22	8	1	3	4	1	0	0	0	0	8	1	4	0	5.8	23
12	999	0	0	0	0	0	0	0	0	0	1	2	1	11	5	7	7	7	21	18	17	16	9	3	5.4	23
13	999	1	1	1	0	0	0	0	0	3	2	1	1	1	1	0	0	0	0	0	0	0	1	2	0.7	23
14	999	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	1	1	0	0	0	0	0	0.1	21
15	999	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0.2	23
16	999	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
17	999	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0.3	23
18	999	0	0	0	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0.0	21
19	999	0	0	0	0	0	0	0	0	0	999	999	999	999	999	999	0	0	0	0	0	0	0	0	0.0	17
20	999	0	0	0	0	0	0	0	0	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0.0	8
21	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0	0	0	0	0	0.0	5
22	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0.1	23
23	999	0	0	0	0	0	4	9	1	4	1	1	5	7	5	4	25	8	13	9	0	0	5	5	4.6	23
24	999	5	4	1	0	2	3	3	3	10	7	3	0	2	1	2	0	0	2	1	4	0	0	0	2.3	23
25	999	0	1	0	0	0	0	0	1	2	999	999	3	2	1	2	2	1	1	1	3	3	2	1	1.2	21
26	999	2	1	0	1	1	1	2	3	2	2	2	3	2	3	2	1	1	0	0	3	3	1	1	1.6	23
27	999	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	1	2	0	0	0.3	23
28	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
29	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
30	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
AVG	999	1	0	1	1	1	1	1	1	2	2	2	1	1	1	1	2	1	2	1	1	1	1	1		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	5	4	16	14	12	7	9	9	19	22	9	6	11	7	7	25	10	21	18	17	16	9	5		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 1
MINIMUM: 0
MAXIMUM: 25
OBSERVATIONS: 643
% DATA RECOVERY: 89.3

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 04-30-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: SULFUR DIOXIDE | FROM: 10/ 15 /91
AGENCY: PRIVATE | METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE | TO: 10/ 31 /91
PROJECT: BACKGOUND SURVEILLANCE | UNITS: PARTS PER BILLION (VOL/VOL)

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
15	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
16	999	0	0	1	1	0	0	0	2	0	2	3	0	4	2	4	4	5	2	1	2	10	6	1	2.2	23
17	999	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0	0.0	21
18	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
19	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
20	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
21	999	0	0	0	0	0	0	0	0	0	999	999	999	1	1	1	1	1	1	0	0	0	0	0	0.3	20
22	999	1	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	2	1	0	0	0	0	0	0.4	23
23	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
24	999	0	0	0	0	0	0	0	0	0	999	999	999	999	0	0	0	0	0	0	0	0	0	0	0.0	19
25	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
26	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
27	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
28	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
29	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
30	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
31	999	0	0	0	0	0	0	0	0	0	0	999	999	8	7	5	4	0	0	0	0	0	0	0	1.1	21
AVG	999	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	1	0	0		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	1	0	1	1	0	0	1	2	1	2	3	0	8	7	5	4	5	2	1	2	10	6	1		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 0
MINIMUM: 0
MAXIMUM: 10
OBSERVATIONS: 380
% DATA RECOVERY: 93.1

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 12/ 1 /91
TO: 12/ 31 /91

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
2	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
3	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
4	999	3	0	0	0	0	2	0	2	0	0	0	0	0	0	0	3	5	0	1	0	0	0	0	0.7	23
5	999	0	0	0	0	0	1	0	0	0	0	0	999	999	999	999	0	0	0	0	0	0	0	0	0.1	19
6	999	0	0	0	0	0	0	0	0	0	0	0	0	999	0	0	0	0	0	0	0	0	0	0	0.0	22
7	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
8	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
9	999	0	0	0	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	2	2	2	2	0.4	21
10	999	0	0	0	0	0	0	1	3	16	14	18	3	17	14	17	22	15	16	7	0	0	0	0	7.1	23
11	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
12	999	0	0	0	0	0	0	0	0	0	0	0	999	999	999	0	0	0	0	0	0	0	0	0	0.0	20
13	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
14	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	22	11	49	21	8	1	0	0	5.8	23
15	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
16	999	0	0	0	0	1	1	1	3	3	5	4	1	0	2	2	1	0	0	0	0	0	0	0	1.0	23
17	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
18	999	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	2	3	1	0	3	2	0	0.7	23
19	999	0	0	0	0	0	0	0	0	1	1	0	999	999	0	0	0	0	0	0	0	0	0	0	0.1	21
20	999	0	0	0	0	0	0	0	0	0	0	0	0	999	999	999	999	999	999	999	999	999	999	999	0.0	12
21	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0	0	0	0	0	0	0	0	0.0	8
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0.2	24
23	0	0	0	0	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0.0	4
24	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	13	12	15	12	14	12	10	12.6	7
25	999	999	999	999	10	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	9	11	10	10	9.8	20
26	999	10	10	10	10	9	10	10	9	10	10	10	10	10	10	10	10	10	10	10	17	20	15	11	10.9	23
27	999	10	10	10	9	10	10	10	10	10	9	9	9	9	10	10	10	10	10	10	10	10	10	9	9.7	23
28	999	10	10	9	9	9	9	10	10	10	10	10	10	10	11	11	11	9	10	11	10	10	10	10	10.0	23
29	999	10	9	9	10	11	10	10	11	14	15	10	10	10	10	11	10	11	10	12	16	15	11	13	11.2	23
30	999	12	11	12	12	11	11	11	11	13	11	15	999	999	999	999	3	2	3	3	4	3	2	1	7.9	19
31	999	1	1	1	1	1	1	1	1	1	2	1	1	2	2	2	2	2	1	1	1	1	1	1	1.3	23
AVG	0	2	2	2	2	2	2	2	3	3	3	3	2	3	3	4	4	3	5	4	3	3	3	2		
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	0	12	11	12	12	11	11	11	11	16	15	18	10	17	14	22	22	15	49	21	17	20	15	13		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 3
MINIMUM: 0
MAXIMUM: 49
OBSERVATIONS: 634
% DATA RECOVERY: 85.2

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 04-30-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 01/ 1 /92
TO: 01/ 31 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0.6	23
2	999	0	0	0	0	0	0	0	0	0	1	999	999	1	999	0	0	1	1	1	1	1	7	3	0.9	20
3	999	3	3	4	4	1	19	10	2	2	999	999	2	3	2	3	3	9	6	1	7	2	7	7	4.8	21
4	999	5	2	2	2	3	5	13	5	3	4	4	4	4	6	6	6	6	3	3	3	5	4	5	4.5	23
5	999	8	4	5	6	10	10	10	11	19	13	10	7	9	7	11	15	28	46	24	9	3	2	3	11.7	23
6	999	6	3	3	3	4	4	3	6	17	2	12	7	11	13	12	7	17	20	16	7	4	6	5	8.2	23
7	999	4	3	4	8	5	4	2	3	3	3	2	2	1	2	6	5	3	4	3	4	3	3	7	3.7	23
8	999	4	4	3	2	2	1	1	2	2	2	1	1	1	1	1	1	2	4	3	2	1	2	1	1.9	23
9	999	1	1	1	1	1	1	1	3	2	1	2	999	999	999	1	1	1	1	1	2	1	1	1	1.3	20
10	999	1	1	2	11	3	5	1	1	9	12	6	1	40	9	5	5	2	1	1	5	3	4	7	5.9	23
11	999	3	2	2	2	3	3	2	3	4	4	4	3	4	4	4	4	4	5	5	4	4	4	3	3.5	23
12	999	2	2	1	1	1	1	1	2	1	2	2	1	1	1	1	2	2	2	2	2	1	1	1	1.4	23
13	999	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	2	5	7	18	1	1	1	1	2.3	23
14	999	1	1	5	5	2	1	2	7	2	2	8	5	4	6	5	8	12	13	3	2	1	2	2	4.3	23
15	999	6	5	5	2	2	2	2	2	2	2	6	999	999	999	5	7	4	2	1	1	25	9	2	4.6	20
16	999	3	2	9	21	2	2	15	15	22	10	2	5	3	2	1	3	3	4	5	8	8	6	5	6.8	23
17	999	2	2	2	2	2	3	4	7	27	15	9	13	9	999	999	999	999	11	14	10	10	14	15	9.0	19
18	999	12	9	7	6	5	5	999	999	999	999	999	999	999	999	0	0	0	0	0	0	0	0	0	2.9	15
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
20	0	0	999	999	999	999	999	0	0	3	0	999	3	7	3	999	999	999	0	0	0	0	1	2	1.3	15
21	3	3	3	3	2	1	0	0	1	1	3	4	2	999	999	2	2	1	2	2	1	0	0	0	1.6	22
22	999	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	23
23	999	0	0	0	0	0	0	0	0	0	999	999	999	2	0	0	0	2	0	0	0	0	0	19	1.1	20
24	999	2	2	2	2	0	1	1	1	3	0	0	1	3	0	0	0	0	0	3	2	2	0	12	1.6	23
25	999	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
26	999	0	0	0	0	0	0	0	0	0	1	3	2	0	1	1	1	2	3	3	3	1	0	0	0.9	23
27	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
28	999	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
29	999	0	0	0	0	0	0	0	0	0	8	3	0	0	0	0	0	3	12	0	0	0	0	0	1.1	23
30	999	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	11	1	0	0	0.6	21
31	999	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	8	7	4	9	1.5	23
AVG	1	2	2	2	3	2	2	2	2	4	3	3	3	4	2	2	3	4	5	4	3	3	3	4		
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	3	12	9	9	21	10	19	15	15	27	15	12	13	40	13	12	15	28	46	24	11	25	14	19		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 3
MINIMUM: 0
MAXIMUM: 46
OBSERVATIONS: 677
% DATA RECOVERY: 91.0

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

04-30-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 02/ 1 /92
TO: 02/ 14 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	0	2	1	2	3	2	0	1	7	1	1	2	4	1	0	0	0	0	0	3	2	1	3	1.6	23
2	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
3	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
4	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
5	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.0	23
6	999	0	0	0	0	0	0	0	3	9	8	999	999	999	6	2	0	2	2	1	2	1	0	0	1.8	20
7	999	1	0	0	1	0	1	0	1	0	1	2	1	2	10	14	16	34	33	23	5	1	2	2	6.5	23
8	999	10	5	1	4	5	5	6	9	9	11	15	16	21	18	15	28	17	11	12	5	3	3	4	10.1	23
9	999	4	5	2	1	1	1	2	2	3	3	3	2	2	1	1	2	2	2	2	1	1	1	1	2.0	23
10	999	1	1	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0.3	23
11	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0.1	23
12	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	0.2	23
13	999	0	0	0	0	0	0	0	0	0	0	0	999	999	999	3	1	2	23	15	8	7	8	4	3.5	20
14	999	3	1	1	0	1	1	2	1	1	1	0	0	0	1	0	0	0	12	24	50	21	13	11	6.3	23
AVG	999	1	1	0	1	1	1	1	1	2	2	2	2	2	3	3	3	4	6	6	5	3	2	2		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	10	5	2	4	5	5	6	9	9	11	15	16	21	18	15	28	34	33	24	50	21	13	11		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 2
MINIMUM: 0
MAXIMUM: 50
OBSERVATIONS: 316
% DATA RECOVERY: 94.0

10.5.6.4 Summary of On-Site PM_{10} Monitoring Data

EBASCO ENVIRONMENTAL FLORIDA POWER CORPORATION POLK COUNTY SITE (HOMELAND)	AIR QUALITY SUMMARY	FROM: 10/15/91 TO: 02/14/92
	POLLUTANT: PARTICILATE,PM10 METHOD: VACUUM SAMPLER UNITS: MICROGRAMS PER CUBIC METER	
STATE: FLORIDA AGENCY: PRIVATE PROJECT: BACKGROUND SURVEILLANCE		

DATE	CONCENTRATION
OCT 15 ,1991	18.9
OCT 21 ,1991	8.6
OCT 27 ,1991	12.8
NOV 01 ,1991	14.7
NOV 08 ,1991	38.1
NOV 14 ,1991	17.0
NOV 20 ,1991	10.5
NOV 27 ,1991	14.6
DEC 08 ,1991	9.8
DEC 14 ,1991	12.2
DEC 20 ,1991	18.1
DEC 22 ,1991	18.1
DEC 26 ,1991	24.1
JAN 01 ,1992	11.4
JAN 06 ,1992	21.3
JAN 13 ,1992	16.4
JAN 19 ,1992	24.8
JAN 25 ,1992	18.2
JAN 31 ,1992	17.5
FEB 07 ,1992	14.5

SUMMARY

AVG	17.1
MIN	8.6
MAX	38.1
OBS	20.0
% RECOV.	100.0

10.5.6.5 Air Quality Models

The principal air quality models utilized in the Air Quality Impact Analyses were the ISCST Model (Version 90346) and MESOPUFF-II. These are both EPA and FDER approved models. The models and their use are described in detail in Sections 5.6 and 10.1.5 and those descriptions are not repeated here.

Florida Power
CORPORATION

January 8, 1993

Mr. Hamilton S. Oven
Florida Department of Environmental
Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Dear Mr. Oven:

Re: Polk County Site
Site Certification Application Addendum (PA 92-33)

Enclosed is an Addendum to Florida Power Corporation's (FPC) Site Certification Application (SCA) for a new power plant complex at the Polk County Site. The Addendum represents the final eight months of air quality data collected at the site. The material should be inserted in Volume 6, behind the existing material contained in Section 10.5.6.2.

Should there be any questions regarding this Addendum or any aspect of the application, please call me at (813) 866-5529.

Very truly yours,

Kathy Small

Kathleen L. Small
Environmental Project Manager

Enclosure

cc: All Parties

pag\KLS\1993\Oven.Let

10.5.6.2 Summary of On-Site Hourly Surface Meteorological Monitoring Data (2/15/92 - 10/14/92)

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND DIRECTION
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: DEGREES

FROM: 02/ 15 /92
TO: 02/ 29 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
15	142	163	185	180	153	120	136	131	150	177	182	184	191	203	219	220	240	250	256	226	189	202	230	235	24
16	227	207	204	208	215	193	206	195	173	196	189	203	225	240	282	278	288	333	316	323	91	154	64	153	24
17	288	20	124	155	194	162	149	113	137	162	184	186	191	200	213	221	227	234	260	306	340	2	169	172	24
18	175	186	184	200	248	206	115	85	124	203	214	179	195	193	194	224	204	219	241	254	243	219	219	213	24
19	212	218	206	227	209	207	212	221	239	230	225	223	232	254	282	280	279	303	328	329	37	37	315	143	24
20	281	308	307	320	334	354	7	8	17	28	32	32	37	40	42	61	58	55	69	57	58	49	47	38	24
21	38	34	34	41	34	24	31	34	37	53	63	68	72	75	63	60	56	59	61	58	57	58	55	61	24
22	67	38	53	45	45	38	42	61	79	92	92	116	92	91	102	62	56	48	73	71	91	72	138	121	24
23	110	139	172	150	134	148	144	150	163	168	178	183	197	205	221	233	232	237	258	260	266	262	238	129	24
24	136	119	126	211	140	151	141	130	139	140	125	156	148	113	90	68	353	87	262	300	346	265	20	63	24
25	77	114	164	109	93	64	80	110	136	140	156	165	176	185	203	224	248	221	189	199	206	254	259	207	24
26	200	195	204	206	214	213	221	225	264	259	266	266	262	262	267	268	272	274	275	273	272	272	279	277	24
27	281	285	285	290	294	290	293	295	289	289	284	292	286	269	267	268	273	287	295	297	289	279	260	264	24
28	261	276	296	305	297	309	304	315	333	330	299	293	282	273	261	265	267	264	262	264	259	246	255	251	24
29	259	252	256	259	238	236	224	219	245	288	284	293	291	297	290	287	285	285	286	264	272	292	284	241	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 360
% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND DIRECTION
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: DEGREES

FROM: 03/ 1 /92
TO: 03/ 31 /92

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	237	237	276	296	287	336	58	76	352	346	11	86	111	139	112	79	293	350	352	4	76	342	302	322	24
2	350	12	322	345	347	339	350	19	34	41	58	71	91	114	73	74	29	49	17	56	82	54	339	23	24
3	39	40	35	39	50	58	62	58	47	163	105	107	87	103	100	92	92	100	100	98	96	104	93	82	24
4	75	71	63	61	68	66	62	38	19	65	99	122	135	128	129	144	159	169	136	78	133	69	65	111	24
5	87	65	79	73	80	73	91	107	110	108	112	114	109	100	119	108	98	101	96	90	96	98	91	95	24
6	93	89	91	85	99	85	83	91	116	135	149	157	169	191	200	213	281	241	251	260	267	252	225	142	24
7	91	107	149	178	199	206	214	215	204	201	228	239	245	267	277	279	268	272	268	259	253	266	276	294	24
8	291	298	296	303	311	325	341	303	298	287	299	325	358	314	329	263	289	212	64	295	296	317	288	297	24
9	330	342	17	22	35	37	35	58	67	119	134	140	143	133	143	135	115	91	213	311	104	116	122	121	24
10	128	155	166	165	166	175	172	168	178	188	192	195	206	206	206	206	213	218	214	212	226	312	311	278	24
11	200	216	241	255	263	294	303	310	310	310	321	325	320	298	277	277	281	287	310	297	305	324	322	321	24
12	318	328	350	1	1	24	359	2	15	49	90	128	99	341	332	342	23	202	304	304	303	305	341	324	24
13	228	148	336	309	298	247	257	282	303	310	302	314	295	290	285	288	293	305	308	301	293	287	308	311	24
14	312	313	321	325	340	330	353	1	19	26	28	31	334	287	286	260	272	278	278	275	292	298	298	279	24
15	296	294	296	303	293	287	287	295	290	305	308	301	289	286	285	291	286	274	266	267	275	277	273	264	24
16	265	260	275	292	277	283	350	18	33	29	29	34	27	43	22	25	22	57	66	67	68	69	56	44	24
17	42	43	41	44	59	66	49	61	83	116	136	119	153	114	141	158	183	138	127	145	92	109	125	147	24
18	127	122	136	148	152	156	132	117	142	154	162	166	161	178	193	205	218	231	224	239	239	210	179	142	24
19	171	181	184	198	197	190	192	198	209	223	239	250	259	270	269	261	273	269	269	257	256	262	262	266	24
20	260	262	259	250	252	256	262	267	285	293	286	285	284	286	283	286	285	270	284	296	302	294	297	305	24
21	332	348	351	348	337	351	341	354	20	42	43	48	43	5	61	327	314	291	348	340	311	357	31	354	24
22	343	344	345	29	31	42	29	49	80	104	133	175	184	203	204	216	233	244	279	217	151	157	154	179	24
23	183	181	188	171	171	172	184	195	226	255	269	279	272	276	275	284	283	300	302	298	301	305	301	338	24
24	357	17	22	18	7	9	13	13	20	25	30	33	48	59	55	49	41	50	57	60	51	45	46	55	24
25	62	65	63	65	64	59	61	64	84	102	106	109	101	97	107	103	111	153	152	179	190	245	302	299	24
26	288	356	350	317	303	292	275	263	284	303	307	308	297	289	288	297	289	293	291	293	293	279	284	294	24
27	288	280	284	280	311	2	30	102	226	288	297	317	291	279	272	269	270	274	278	277	283	279	299	302	24
28	317	319	305	302	326	338	5	28	36	45	54	67	54	37	30	338	350	11	10	2	13	48	72	72	24
29	67	63	58	65	55	29	45	60	76	134	207	220	238	236	243	240	263	279	293	329	0	14	42	47	24
30	46	343	274	228	192	185	88	102	151	180	199	209	230	243	243	256	261	265	220	191	176	180	191	198	24
31	217	238	240	253	254	260	265	279	284	288	278	272	268	272	261	261	265	268	266	269	269	297	317	309	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 744
% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL AIR QUALITY/METEOROLOGY DATA SUMMARY 12-13-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: POLLUTANT: WIND DIRECTION FROM: 04/ 1 /92
AGENCY: PRIVATE METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE TO: 04/ 30 /92
PROJECT: BACKGOUND SURVEILLANCE UNITS: DEGREES

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	298	254	262	286	290	279	44	244	277	288	263	281	273	280	268	247	247	266	260	264	263	279	287	258	24
2	262	259	271	270	260	271	257	253	311	357	340	301	999	276	290	287	295	300	314	317	295	308	318	303	23
3	313	324	349	12	9	24	31	19	24	31	39	23	30	8	5	14	325	349	16	235	241	211	297	309	24
4	326	333	348	354	350	354	2	359	353	341	347	305	272	281	278	274	269	271	270	268	260	250	257	250	24
5	239	263	271	289	288	282	284	307	328	339	356	2	29	23	11	30	22	60	62	64	67	62	49	44	24
6	46	47	58	62	51	60	61	81	94	104	94	92	93	999	97	91	95	95	92	85	98	103	104	124	23
7	140	146	123	83	51	64	61	75	108	127	136	147	161	196	999	148	125	129	143	146	126	122	125	136	23
8	163	173	186	216	254	305	313	317	355	999	999	28	50	47	58	56	61	84	82	78	85	78	75	67	22
9	61	63	60	72	80	56	53	51	64	74	83	95	98	99	101	97	92	84	88	84	90	84	84	96	24
10	69	58	68	24	7	21	38	46	85	103	109	120	113	140	150	129	132	94	182	165	60	164	157	149	24
11	106	74	95	74	95	102	112	130	140	144	162	183	195	188	197	119	82	125	144	109	125	141	1	339	24
12	45	1	32	297	93	80	66	37	124	92	76	276	290	285	290	61	38	45	35	10	11	357	105	251	24
13	279	323	335	310	323	347	5	355	3	7	2	37	33	34	32	38	32	29	29	25	27	25	25	28	24
14	26	20	14	8	20	22	19	22	32	50	58	62	54	51	64	63	54	55	57	50	43	47	39	34	24
15	27	21	21	21	19	24	12	36	55	62	83	88	87	80	84	78	82	85	85	88	93	86	74	72	24
16	55	51	54	53	48	44	47	57	84	92	92	85	94	93	89	87	88	98	96	85	80	80	86	68	24
17	63	73	76	73	66	67	49	73	109	114	109	95	88	90	92	110	93	94	89	94	107	107	94	115	24
18	93	85	67	62	61	48	44	82	117	131	127	143	138	159	150	148	148	132	114	97	111	113	109	111	24
19	110	105	117	93	93	94	98	109	119	118	130	126	127	128	132	188	151	166	185	162	165	167	154	84	24
20	123	155	160	177	192	152	134	148	145	154	142	140	135	138	157	159	132	118	171	190	130	178	209	132	24
21	147	138	144	150	147	145	143	144	156	153	215	230	168	117	87	75	117	137	132	130	137	144	184	206	24
22	134	212	82	146	140	123	109	134	159	175	189	211	168	182	121	327	352	298	154	144	132	253	149	101	24
23	98	91	106	108	112	123	133	141	132	125	146	113	110	104	100	103	88	81	26	296	134	74	92	119	24
24	124	84	1	7	353	30	63	112	247	230	291	291	231	84	211	272	296	291	281	271	308	334	311	306	24
25	299	298	306	302	329	303	301	297	305	299	273	280	273	245	258	266	275	277	272	262	262	259	260	261	24
26	263	263	278	306	332	342	349	353	358	359	352	330	316	293	297	299	297	296	296	300	293	295	296	306	24
27	305	308	321	341	347	347	344	342	333	328	309	311	312	307	311	299	299	301	302	304	298	288	280	278	24
28	279	283	292	326	336	336	350	349	338	329	317	301	304	299	307	315	328	323	324	309	309	305	322	333	24
29	337	327	299	306	314	327	342	346	355	5	354	351	344	341	8	7	6	24	33	45	47	54	23	34	24
30	34	14	351	323	24	344	347	342	10	50	290	289	278	281	234	280	319	321	62	283	284	299	331	331	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 715
% DATA RECOVERY: 99.3

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: — POLLUTANT: WIND DIRECTION — FROM: 05/ 1 /92

AGENCY: PRIVATE — METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE — TO: 05/ 31 /92

PROJECT: BACKGOUND SURVEILLANCE — UNITS: DEGREES

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	313	294	287	292	308	314	316	309	312	322	314	315	332	324	344	1	345	278	270	227	109	78	65	32	24
2	220	246	330	7	320	298	329	318	283	283	270	285	292	8	34	7	20	15	46	189	295	352	157	130	24
3	156	166	189	189	221	189	273	341	339	338	314	288	276	277	273	282	275	271	274	270	270	275	271	270	24
4	261	267	270	260	253	270	252	251	275	295	286	288	280	272	259	244	259	276	272	263	264	265	271	8	24
5	275	251	244	229	211	223	231	265	281	274	265	235	259	279	263	228	248	265	258	261	258	254	258	267	24
6	270	270	263	286	280	279	268	268	258	233	219	230	237	250	273	267	270	270	271	276	278	274	315	334	24
7	2	22	22	340	359	340	331	331	316	304	307	264	261	263	280	304	305	304	302	302	300	293	286	332	24
8	347	37	306	285	208	174	198	207	246	286	294	289	285	280	279	277	268	260	262	258	249	241	225	232	24
9	213	302	273	250	174	176	277	349	306	327	249	217	233	245	284	284	248	180	126	283	314	9	6	8	24
10	17	14	29	33	32	34	24	46	50	74	73	84	37	73	60	70	108	104	26	17	102	112	110	31	24
11	302	329	312	19	19	14	25	342	250	237	23	999	25	67	89	79	49	73	86	99	102	112	146	133	23
12	285	281	267	321	32	49	48	61	50	283	198	326	198	73	30	315	54	40	306	321	107	128	129	110	24
13	155	153	166	193	200	236	170	209	232	244	268	241	252	259	263	267	266	260	267	262	245	240	232	239	24
14	233	238	242	261	249	270	239	259	278	281	282	269	277	285	292	284	270	270	266	268	267	286	294	304	24
15	309	297	288	119	147	155	163	156	140	180	190	203	212	227	214	250	264	264	318	61	115	111	122	161	24
16	122	99	53	48	64	86	91	93	98	91	91	86	71	81	100	89	90	80	72	65	67	71	64	68	24
17	62	62	59	57	60	64	56	76	83	82	54	60	99	99	89	84	87	84	78	71	79	59	50	45	24
18	25	33	40	38	26	25	33	53	63	70	71	68	73	999	83	77	67	72	70	68	80	71	66	42	23
19	59	34	26	6	22	20	1	48	69	78	84	84	84	85	88	80	75	82	85	86	83	83	75	72	24
20	55	39	56	35	31	37	40	55	72	70	74	74	58	70	74	68	66	76	79	84	86	63	53	42	24
21	34	31	19	20	18	20	18	28	37	47	52	52	58	51	61	94	85	83	88	77	71	66	53	31	24
22	35	67	25	33	53	68	5	25	48	60	54	58	60	62	69	55	60	64	67	73	63	49	36	22	24
23	26	4	350	2	7	12	26	31	9	35	31	35	33	46	47	4	20	358	49	77	74	74	57	37	24
24	23	10	29	339	303	323	37	30	298	307	307	16	358	357	334	319	303	264	265	274	285	302	26	5	24
25	340	256	262	170	189	201	212	253	290	281	281	253	246	254	267	283	275	269	268	268	267	271	270	287	24
26	263	257	122	137	162	180	198	224	240	259	243	247	250	241	261	268	270	272	273	265	262	260	264	270	24
27	267	268	275	273	289	223	178	185	186	224	257	237	259	238	255	289	289	47	290	340	2	55	42	350	24
28	296	241	235	332	42	267	211	236	265	294	248	242	230	236	226	233	227	226	269	272	278	309	283	356	24
29	112	192	188	187	214	159	97	155	180	185	186	193	192	198	226	219	277	280	274	275	278	25	56	82	24
30	104	110	119	98	166	166	174	191	212	212	202	190	223	271	283	169	107	122	85	71	42	74	106	146	24
31	182	209	164	347	39	1	356	346	312	298	50	103	114	65	96	89	37	5	63	295	320	45	319	340	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 742

% DATA RECOVERY: 99.7

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND DIRECTION
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: DEGREES

FROM: 06/ 1 /92
TO: 06/ 30 /92

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	349	34	15	13	17	360	23	14	9	278	304	257	289	271	285	298	318	315	312	285	328	306	216	275	24
2	302	315	331	324	10	39	96	57	144	197	226	99	110	51	274	163	189	112	138	101	134	104	94	78	24
3	138	163	179	190	151	132	117	126	137	136	134	140	156	156	140	108	127	132	148	178	170	163	173	176	24
4	169	178	174	180	204	215	221	241	243	246	249	263	273	279	280	270	264	265	264	262	255	218	211	214	24
5	211	218	214	217	215	218	216	226	224	222	235	256	243	259	269	265	265	263	257	246	247	228	203	207	24
6	212	226	231	248	261	239	130	128	181	199	232	265	234	174	176	275	64	341	93	91	135	171	177	169	24
7	119	104	152	146	122	134	136	167	204	198	155	173	186	153	126	130	138	207	258	304	124	136	58	56	24
8	999	113	163	132	124	140	90	63	89	134	167	163	162	153	118	87	86	98	201	224	48	133	268	100	23
9	109	96	112	135	107	146	181	159	162	183	198	187	189	222	204	213	267	279	275	256	183	234	116	154	24
10	154	183	203	205	220	244	241	232	262	274	272	279	267	262	271	280	281	294	314	317	325	317	309	302	24
11	297	247	283	143	322	311	296	303	297	285	289	292	281	290	281	287	281	287	293	296	287	295	317	306	24
12	333	81	212	240	267	273	288	290	276	283	277	268	280	278	276	287	299	298	278	263	109	145	170	185	24
13	179	193	195	201	198	203	179	209	235	238	246	237	247	267	284	278	286	67	115	85	107	108	112	162	24
14	186	189	191	207	199	173	194	208	225	248	246	252	265	253	273	274	276	290	316	302	355	29	147	177	24
15	164	189	178	145	183	194	186	207	221	224	229	237	237	232	277	265	249	245	132	110	118	151	190	202	24
16	200	185	195	210	300	200	60	240	340	360	10	999	999	999	999	999	999	999	999	999	999	999	999	999	11
17	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0
18	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0
19	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0
20	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0
21	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0
22	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0
23	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	242	212	191	163	171	190	206	192	8
24	127	132	180	186	203	210	159	183	207	207	185	183	210	225	225	222	202	216	235	237	206	190	99	103	24
25	129	92	112	113	112	120	134	127	999	999	999	133	135	189	172	177	173	179	181	198	162	162	189	186	21
26	189	173	159	157	166	218	225	219	221	225	227	226	235	222	217	221	224	217	212	211	224	222	199	197	24
27	188	194	214	212	188	191	180	190	207	227	224	252	296	313	15	266	286	293	202	165	175	175	181	182	24
28	183	185	200	202	200	194	175	185	214	184	176	226	275	217	199	205	220	206	198	175	186	208	202	196	24
29	180	194	190	196	194	197	999	999	203	216	230	243	262	277	305	232	189	237	199	143	160	149	168	180	22
30	172	176	184	181	185	206	187	204	215	227	224	183	222	224	244	239	229	232	235	251	234	229	233	218	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 541
% DATA RECOVERY: 75.1

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: WIND DIRECTION | FROM: 07/ 1 /92

AGENCY: PRIVATE | METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE | TO: 07/ 31 /92

PROJECT: BACKGOUND SURVEILLANCE | UNITS: DEGREES

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	194	211	210	173	195	196	192	197	214	218	217	239	238	231	232	241	263	281	290	312	312	312	323	7	24
2	33	71	166	320	114	110	119	109	130	152	189	188	227	248	235	239	273	275	267	290	294	305	300	301	24
3	316	314	309	313	317	305	292	302	304	302	279	273	273	300	314	310	298	288	302	291	275	308	305	304	24
4	286	288	298	322	333	318	324	340	345	343	345	338	331	324	328	336	327	307	72	0	297	306	295	305	24
5	52	156	23	354	332	359	20	39	61	65	63	59	339	329	338	337	327	350	357	344	283	313	32	4	24
6	16	29	60	83	93	180	293	294	290	278	286	281	277	269	272	276	284	283	273	271	260	236	197	186	24
7	206	222	232	224	211	181	205	271	282	262	258	228	243	240	242	248	238	198	197	163	150	208	186	222	24
8	182	131	170	156	197	173	187	208	133	165	220	253	261	250	210	226	244	322	26	352	212	33	67	29	24
9	357	144	193	159	193	176	179	200	219	236	248	234	237	264	322	129	151	135	178	197	311	174	145	212	24
10	182	184	190	165	175	63	38	217	277	294	325	315	311	308	302	257	172	999	116	58	195	245	280	75	23
11	130	206	193	203	283	340	82	11	306	339	357	12	50	80	87	113	130	107	111	121	136	146	195	196	24
12	141	143	166	164	159	149	215	221	135	181	202	216	180	99	185	247	229	171	2	6	87	59	87	84	24
13	37	28	80	83	358	45	72	99	115	168	171	233	259	235	29	306	128	70	146	168	73	99	20	16	24
14	99	136	147	144	140	175	135	167	187	211	254	267	228	301	20	240	274	315	257	193	268	108	22	131	24
15	213	88	89	109	66	85	82	116	156	179	187	214	205	216	236	229	182	193	283	358	32	36	105	98	24
16	97	356	41	119	132	125	131	142	156	149	170	176	167	178	176	167	196	190	191	58	112	225	25	52	24
17	64	83	64	68	71	41	62	95	134	134	128	141	128	119	93	106	105	95	102	106	101	30	33	68	24
18	10	19	89	57	68	86	123	115	124	127	105	99	98	94	105	168	231	158	168	158	83	999	999	84	22
19	46	49	96	78	115	131	129	109	118	157	199	246	20	190	161	143	112	159	193	350	103	63	224	248	24
20	61	5	25	26	33	48	63	76	97	106	90	90	74	83	100	119	149	136	134	144	118	113	62	87	24
21	83	99	90	64	63	82	67	89	100	127	141	105	102	105	120	166	179	105	227	285	269	54	39	27	24
22	64	73	90	79	62	109	126	125	126	146	139	157	137	119	93	104	111	110	128	116	104	100	116	109	24
23	109	104	55	77	57	92	91	109	123	132	147	124	143	107	143	103	101	148	219	292	324	349	350	43	24
24	53	81	108	120	99	69	70	102	145	151	166	185	240	196	276	236	279	253	271	290	198	76	52	92	24
25	118	124	126	119	87	85	92	126	141	144	164	154	219	33	260	305	123	139	110	69	210	253	270	228	24
26	209	281	184	165	145	52	40	38	52	14	344	330	116	277	206	201	237	217	280	292	304	314	316	335	24
27	310	347	80	138	185	174	214	198	343	309	247	272	260	242	247	258	263	279	286	283	289	297	314	310	24
28	263	207	261	219	214	297	340	201	287	283	258	247	243	258	258	269	260	270	273	275	267	279	293	302	24
29	303	302	194	169	167	192	272	259	254	287	280	285	245	256	267	261	264	262	272	269	283	276	262	239	24
30	192	186	255	207	220	150	189	205	216	261	294	263	253	246	291	251	222	230	239	251	172	123	211	207	24
31	192	181	165	93	175	195	53	230	297	316	286	268	274	269	317	25	24	78	203	223	206	162	179	250	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 741

% DATA RECOVERY: 99.6

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND DIRECTION
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: DEGREES

FROM: 08/ 1 /92
TO: 08/ 31 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	213	193	182	176	177	186	138	235	295	305	296	265	260	267	276	293	276	279	316	109	152	151	86	191	24
2	193	206	84	141	164	149	46	84	214	226	233	254	285	248	210	290	190	100	198	313	357	91	213	124	24
3	131	113	110	102	198	164	216	246	248	261	291	325	270	206	211	232	211	249	351	90	198	197	191	161	24
4	211	228	187	176	179	172	166	191	215	254	256	267	223	280	323	272	228	153	149	180	177	175	180	184	24
5	191	168	172	150	131	278	96	189	217	226	247	196	154	244	330	32	99	67	66	131	161	107	90	173	24
6	132	112	152	133	89	69	84	110	94	104	999	999	194	173	86	145	146	170	239	55	37	45	147	137	22
7	103	36	46	76	66	27	51	53	46	72	91	6	37	155	236	220	234	287	342	34	354	15	79	100	24
8	91	93	93	101	115	77	80	69	117	165	182	186	226	263	98	299	208	234	249	236	198	201	242	241	24
9	206	192	190	199	185	196	199	195	208	282	209	291	216	187	187	248	275	277	223	218	223	291	285	289	24
10	289	300	210	259	309	317	281	263	290	300	999	199	237	252	241	309	24	351	332	210	311	223	133	186	23
11	123	53	70	83	106	94	101	119	137	140	156	174	171	186	207	186	81	88	82	46	68	91	121	127	24
12	70	108	127	108	90	82	92	105	127	145	149	166	202	251	275	47	95	111	129	136	125	129	102	122	24
13	130	129	131	106	127	122	148	161	172	186	188	183	193	208	203	206	188	204	50	159	174	124	216	177	24
14	156	193	176	170	163	160	174	170	177	182	192	201	205	230	244	285	42	49	28	166	146	125	134	142	24
15	156	140	209	167	150	133	145	191	211	177	189	201	184	305	302	301	11	106	110	72	160	124	115	129	24
16	133	135	108	152	143	107	102	138	148	166	197	210	223	142	66	183	200	201	206	107	116	135	132	122	24
17	138	139	145	104	62	118	128	161	167	159	165	201	202	175	181	249	267	278	294	280	284	122	105	81	24
18	78	114	74	311	135	150	128	124	184	237	273	209	265	240	240	273	253	294	332	328	360	97	129	157	24
19	173	182	174	238	271	305	344	67	132	125	142	241	235	224	225	220	109	141	156	252	238	352	78	83	24
20	163	159	174	176	165	205	161	223	227	291	288	247	239	202	223	255	211	269	299	138	92	46	90	108	24
21	94	248	34	63	58	40	56	71	94	131	169	128	124	132	152	147	123	170	194	171	148	48	22	36	24
22	36	39	52	59	57	52	68	86	91	104	104	97	115	129	202	44	111	72	20	15	56	59	28	351	24
23	23	61	62	54	46	18	353	28	50	64	60	61	55	32	68	51	51	3	25	61	40	20	38	34	24
24	36	39	50	50	50	48	59	66	71	73	95	99	106	109	103	106	112	100	93	96	97	91	95	94	24
25	88	95	95	90	89	89	87	105	116	113	103	107	111	101	97	99	100	103	96	86	90	91	93	75	24
26	76	82	83	77	73	74	68	70	98	110	92	86	71	78	75	70	83	90	74	86	105	100	124	134	24
27	100	100	95	128	138	160	140	117	166	185	200	247	261	221	259	206	220	254	268	278	279	255	212	219	24
28	204	155	158	194	184	193	208	199	211	220	225	241	170	57	319	273	262	258	252	241	235	183	187	187	24
29	163	167	174	167	186	185	174	181	188	221	222	257	285	299	272	281	324	291	86	133	151	179	162	169	24
30	199	206	199	210	219	234	153	198	134	182	175	143	174	206	215	287	333	169	167	125	153	193	198	63	24
31	85	107	175	41	97	34	81	97	69	128	167	275	146	179	254	190	200	269	105	95	125	67	85	49	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 741
% DATA RECOVERY: 99.6

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND DIRECTION
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: DEGREES

FROM: 09/ 1 /92
TO: 09/ 30 /92

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	68	93	38	47	27	63	61	68	93	119	113	89	86	141	89	87	128	114	39	82	21	350	53	23	24
2	348	42	16	330	29	50	53	65	81	90	94	120	113	114	71	57	88	122	96	93	97	86	71	30	24
3	37	62	77	69	58	42	62	80	93	124	130	139	154	133	80	44	5	43	16	54	75	70	64	68	24
4	39	53	55	46	57	68	72	63	94	108	121	118	83	93	86	70	55	89	285	68	153	45	66	86	24
5	90	101	102	86	77	88	97	116	132	138	136	142	140	136	121	128	139	78	104	84	80	92	103	96	24
6	106	101	94	85	76	52	63	74	96	115	106	111	83	76	120	86	89	72	54	50	74	72	72	83	24
7	83	76	78	78	76	41	50	63	79	91	77	75	64	51	66	68	84	78	70	86	64	74	74	53	24
8	73	97	66	111	16	6	9	12	40	35	46	45	15	28	39	47	32	56	41	13	63	52	58	57	24
9	31	339	32	6	19	9	19	32	26	18	30	45	16	7	33	82	106	100	94	79	109	106	124	114	24
10	125	111	81	128	107	111	101	142	173	208	239	230	312	295	211	335	27	79	99	108	143	163	75	75	24
11	145	161	175	158	117	196	210	185	210	282	293	302	289	274	263	295	30	44	9	35	317	73	33	8	24
12	353	9	335	27	89	343	4	32	41	64	83	65	58	36	29	15	70	103	99	103	91	88	90	28	24
13	4	356	8	338	357	17	21	52	50	51	64	77	61	39	32	17	84	44	346	40	42	46	42	47	24
14	41	30	28	14	30	36	49	53	58	63	61	66	73	73	67	78	77	68	73	69	50	38	45	53	24
15	41	5	36	33	37	45	53	52	60	69	86	83	85	64	71	60	62	84	196	286	49	91	92	97	24
16	111	93	106	71	69	45	55	69	74	76	73	71	63	70	62	49	82	86	52	65	75	71	66	76	24
17	53	41	20	356	334	335	19	38	52	58	63	60	47	58	76	117	104	88	97	85	65	72	80	60	24
18	32	350	355	37	36	78	78	82	85	83	65	79	59	75	69	67	108	115	120	154	248	294	320	54	24
19	143	128	125	86	90	15	62	63	144	254	260	277	306	255	223	228	311	334	28	145	156	340	46	98	24
20	124	123	66	3	334	8	30	30	110	186	182	215	264	258	234	241	239	249	71	74	46	130	130	108	24
21	109	112	131	109	129	109	81	110	171	197	255	260	257	231	263	201	148	124	107	107	119	112	139	166	24
22	137	145	167	107	97	102	106	106	188	175	152	179	233	193	175	216	200	282	305	316	318	348	156	222	24
23	227	88	141	177	169	265	334	32	355	33	324	269	275	324	44	53	72	131	142	336	33	112	60	70	24
24	70	96	2	358	21	36	27	29	49	77	999	66	69	69	61	57	164	111	91	87	60	49	67	45	23
25	52	51	48	50	53	56	55	60	76	98	100	105	119	130	126	75	80	72	100	117	94	98	102	99	24
26	86	75	72	79	68	71	81	81	114	124	134	134	139	138	91	97	105	101	99	117	110	94	83	73	24
27	79	81	86	82	79	43	19	26	58	81	82	87	80	77	50	66	66	65	51	52	55	44	357	332	24
28	341	334	338	330	321	333	333	335	330	330	332	323	325	322	322	289	326	304	301	291	335	303	287	303	24
29	302	294	293	297	298	300	304	292	304	293	302	315	310	314	321	337	322	329	22	24	333	322	336	340	24
30	325	324	334	306	327	[illegible]	327	345	11	39	42	42	43	38	36	31	34	42	34	36	39	39	40	29	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 719
% DATA RECOVERY: 99.9

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND DIRECTION
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: DEGREES

FROM: 10/ 1 /92
TO: 10/ 14 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	OBS
1	4	11	17	37	42	53	52	54	62	69	76	83	86	79	73	69	67	56	58	61	63	60	55	64	24
2	73	80	56	48	34	43	63	64	63	64	69	72	67	68	66	60	75	68	71	73	71	74	76	84	24
3	88	89	97	102	101	107	111	112	118	117	121	119	116	117	132	145	164	169	155	149	155	150	153	155	24
4	158	160	182	195	193	196	200	194	207	223	249	253	254	258	253	246	256	259	264	262	262	262	270	294	24
5	309	323	302	289	283	255	273	263	279	295	288	292	296	292	290	291	304	308	331	334	330	328	327	333	24
6	335	335	329	327	324	322	316	318	307	340	321	359	346	11	346	302	319	306	316	295	297	299	307	302	24
7	299	339	346	18	19	33	35	38	49	60	51	46	75	64	67	67	64	61	60	56	48	43	39	39	24
8	35	38	42	33	26	28	20	43	60	113	146	174	207	227	234	235	203	262	276	306	228	258	244	217	24
9	206	213	213	206	154	154	150	169	217	283	291	275	289	296	296	283	271	269	281	300	314	307	313	315	24
10	307	317	316	309	320	314	34	6	0	1	295	311	343	345	315	331	344	355	334	359	61	76	95	99	24
11	100	57	56	109	58	13	84	174	99	38	349	288	296	302	272	296	297	292	286	235	296	295	293	303	24
12	318	316	333	329	357	345	8	1	14	31	23	30	23	330	343	331	327	335	328	332	332	329	3	327	24
13	316	344	314	320	333	312	346	348	15	25	36	335	347	30	23	44	43	50	55	40	77	53	37	57	24
14	43	44	38	38	29	33	35	36	62	80	87	100	93	90	97	94	79	86	71	69	70	75	50	43	24

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

OBSERVATIONS: 336
% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: WIND SPEED | FROM: 02/ 15 /92

AGENCY: PRIVATE | METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE | TO: 02/ 29 /92

PROJECT: BACKGOUND SURVEILLANCE | UNITS: MILES PER HOUR

DAY	HOUR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
15	7.0	4.4	5.2	4.2	4.9	3.7	3.9	2.6	5.7	11.4	15.1	14.5	13.3	12.4	10.6	9.5	12.4	10.5	7.5	3.8	5.5	6.7	6.7	6.4	7.8	24
16	5.0	3.6	4.0	5.0	5.0	6.4	6.4	5.5	6.9	6.4	7.8	11.9	9.4	8.8	6.9	6.9	6.6	4.8	3.0	2.4	2.2	2.9	2.4	2.1	5.5	24
17	2.6	1.7	2.7	4.1	2.1	4.7	4.0	4.2	6.1	6.5	10.7	11.4	15.1	12.9	11.2	10.7	8.4	6.3	4.9	10.2	8.7	3.4	6.9	8.3	7.0	24
18	7.9	7.5	5.9	5.8	4.7	5.8	3.9	4.6	4.3	6.9	7.7	8.4	8.5	7.4	7.8	4.9	6.7	6.7	6.1	7.4	5.1	5.6	5.0	6.1	6.3	24
19	6.5	5.7	5.3	7.4	7.4	9.3	8.4	7.0	6.7	7.7	8.5	8.7	9.2	9.1	9.0	10.4	8.0	7.2	7.0	3.4	2.4	2.6	2.7	1.9	6.7	24
20	2.2	2.0	2.0	3.4	6.0	5.1	4.2	5.7	9.8	14.3	12.1	12.3	11.1	11.1	11.2	10.1	9.6	10.4	9.4	9.1	9.2	8.7	9.5	7.5	8.2	24
21	6.2	6.2	4.9	6.0	5.4	6.0	5.2	5.9	7.4	9.5	11.0	11.9	10.8	10.9	11.0	11.2	11.2	12.2	8.8	8.0	8.4	8.2	7.5	7.5	8.4	24
22	7.3	6.1	6.2	5.0	5.0	4.9	4.5	4.6	8.5	11.5	11.5	9.2	12.1	10.1	11.6	9.1	8.4	7.5	7.0	6.6	6.8	3.7	8.4	6.9	7.6	24
23	4.9	3.7	3.5	5.0	4.1	3.0	4.8	7.5	7.7	8.9	11.8	13.6	11.8	10.5	7.9	6.5	8.6	6.6	5.7	6.3	4.1	3.7	2.6	2.9	6.5	24
24	2.7	3.9	3.7	1.8	5.0	5.9	3.1	3.4	6.7	4.3	6.4	6.8	4.7	5.5	7.6	5.4	3.7	6.2	6.7	6.8	4.9	3.0	5.7	4.4	4.9	24
25	8.0	3.7	3.7	4.6	5.8	4.9	4.5	5.7	7.5	9.7	10.3	11.5	8.0	11.5	9.6	13.2	11.5	7.9	7.3	9.6	11.9	13.4	6.2	4.2	8.1	24
26	6.3	5.8	6.4	7.8	8.4	7.7	8.0	8.7	10.5	8.8	11.2	13.5	13.4	15.1	18.1	17.8	16.3	12.8	11.9	12.6	12.1	10.6	10.6	9.6	11.0	24
27	9.9	11.9	11.1	12.6	9.8	9.4	8.8	7.7	6.7	8.9	10.9	11.1	9.5	9.8	11.2	13.0	11.0	9.5	8.3	5.0	5.5	5.3	4.2	5.1	9.0	24
28	4.7	5.1	7.2	7.1	6.0	5.6	4.8	4.9	7.9	7.2	8.1	10.0	10.9	13.4	14.1	13.7	12.5	10.9	8.4	8.1	5.9	5.8	6.6	7.5	8.2	24
29	7.0	7.2	8.0	7.6	6.0	5.6	5.1	4.9	6.9	9.9	12.3	10.7	9.3	10.0	9.3	9.8	8.6	7.4	5.4	6.7	5.6	5.6	4.9	4.6	7.4	24
AVG	5.9	5.2	5.3	5.8	5.7	5.9	5.3	5.5	7.3	8.8	10.4	11.0	10.5	10.6	10.5	10.1	9.6	8.5	7.2	7.1	6.6	5.9	6.0	5.7		
MIN	2.2	1.7	2.0	1.8	2.1	3.0	3.1	2.6	4.3	4.3	6.4	6.8	4.7	5.5	6.9	4.9	3.7	4.8	3.0	2.4	2.2	2.6	2.4	1.9		
MAX	9.9	11.9	11.1	12.6	9.8	9.4	8.8	8.7	10.5	14.3	15.1	14.5	15.1	15.1	18.1	17.8	16.3	12.8	11.9	12.6	12.1	13.4	10.6	9.6		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 7.5

MINIMUM: 1.7

MAXIMUM: 18.1

OBSERVATIONS: 360

% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 12-13-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: — POLLUTANT: WIND SPEED — FROM: 03/ 1 /92
AGENCY: PRIVATE — METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE — TO: 03/ 31 /92
PROJECT: BACKGOUND SURVEILLANCE — UNITS: MILES PER HOUR

DAY	HOUR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	3.8	3.2	2.5	2.3	2.1	3.1	2.0	1.6	3.2	4.0	3.6	4.2	6.2	6.2	4.6	4.6	2.8	2.3	3.5	3.5	4.1	3.2	3.5	4.2	3.5	24
2	2.8	3.7	2.3	4.5	4.0	4.7	4.4	4.1	5.2	5.6	6.7	6.7	6.8	6.0	5.8	4.3	4.1	2.6	2.8	2.6	6.1	4.4	2.1	2.3	4.4	24
3	3.4	2.6	2.8	3.4	3.2	3.2	3.3	2.4	2.0	3.9	4.2	7.8	9.4	8.8	7.6	7.5	7.2	6.5	6.9	6.7	7.0	5.6	5.3	4.3	5.2	24
4	4.0	4.2	4.3	4.1	3.3	3.8	3.9	4.1	4.5	6.4	10.9	13.3	12.0	10.4	8.6	6.7	7.2	7.7	5.8	5.6	3.4	3.2	8.3	6.4	6.3	24
5	5.5	4.1	3.8	4.9	5.1	5.5	6.0	6.5	9.9	13.0	13.9	13.3	12.5	11.9	11.2	11.9	11.3	11.7	11.7	9.6	10.4	8.7	6.7	6.2	9.0	24
6	6.4	5.9	5.4	3.6	4.3	4.2	3.8	4.6	9.9	13.2	13.5	12.0	12.2	11.3	9.3	6.9	4.9	9.5	8.1	6.0	5.8	5.5	2.9	2.8	7.2	24
7	3.3	3.3	3.6	4.4	6.5	6.0	6.2	6.5	5.6	6.3	6.7	6.9	7.7	11.1	12.3	11.9	11.5	8.8	6.6	5.9	6.1	6.5	6.5	6.5	6.9	24
8	6.3	7.6	6.6	5.9	4.8	5.9	3.8	3.8	4.8	4.7	4.8	4.8	7.2	4.8	5.1	4.2	2.8	2.2	2.1	4.6	5.6	3.4	2.3	2.3	4.6	24
9	3.5	4.1	3.3	3.6	3.7	3.2	4.1	3.5	4.1	8.0	10.7	10.8	10.9	10.2	11.3	9.9	8.5	7.9	5.8	4.7	4.4	6.1	4.5	5.1	6.3	24
10	5.2	6.0	6.4	5.8	5.9	5.4	5.7	6.6	11.9	14.6	14.9	13.8	15.5	17.1	17.8	18.5	16.4	15.0	15.5	12.6	11.5	11.2	8.1	5.8	11.1	24
11	5.2	6.2	7.0	6.6	7.3	11.9	11.1	12.7	12.5	10.1	8.1	9.0	7.2	7.4	6.6	8.2	8.6	7.3	7.6	7.6	7.4	5.7	3.9	4.8	7.9	24
12	4.4	4.2	5.1	5.1	4.5	4.3	3.9	5.3	5.1	5.4	5.9	4.5	2.9	5.1	6.5	4.5	3.4	2.1	3.7	6.6	6.2	6.5	3.5	3.1	4.7	24
13	3.2	2.7	3.7	5.3	3.5	2.7	4.0	3.9	4.6	6.1	7.8	8.3	8.0	8.1	7.8	8.3	8.5	8.9	7.8	5.4	5.0	4.0	5.4	4.7	5.7	24
14	6.7	6.4	5.7	5.5	4.4	3.6	3.3	3.6	5.7	6.3	5.8	6.6	5.4	5.1	6.4	5.1	4.7	6.3	6.2	6.0	7.0	6.0	5.6	4.7	5.5	24
15	5.6	6.8	6.2	5.2	3.5	3.5	3.1	5.1	8.1	9.1	9.8	8.7	8.2	8.6	9.5	10.8	10.8	9.8	8.4	7.3	7.8	6.9	6.1	7.2	7.3	24
16	7.2	7.6	6.4	7.5	5.7	4.6	6.1	8.8	11.3	11.0	10.4	8.9	8.5	7.7	7.3	6.7	7.1	9.1	9.0	8.9	9.2	7.8	6.0	5.5	7.8	24
17	5.0	4.3	3.6	3.6	4.8	4.8	3.6	4.2	6.6	10.9	10.1	7.4	7.4	5.7	5.8	5.3	5.0	4.3	6.3	6.2	7.2	9.4	7.6	5.6	6.0	24
18	4.9	5.0	6.4	5.8	6.5	3.9	3.9	5.3	10.4	13.7	14.9	14.5	14.0	14.0	11.0	9.8	8.3	5.7	6.3	5.4	5.9	5.1	4.9	6.0	8.0	24
19	6.1	8.3	10.3	8.6	7.2	8.2	9.5	9.4	13.0	14.5	16.4	16.7	17.1	16.5	17.6	16.6	15.0	14.8	9.8	8.0	8.5	8.5	8.2	8.6	11.6	24
20	9.1	10.6	8.7	7.1	6.4	7.0	6.1	6.7	9.9	13.1	16.8	16.5	16.6	16.2	15.4	14.9	14.6	12.4	11.2	11.1	9.4	9.2	7.9	6.9	11.0	24
21	6.7	6.7	6.4	5.6	3.7	3.4	6.0	5.7	8.1	7.6	8.2	7.2	6.0	5.5	4.4	3.7	4.5	3.9	3.5	2.9	5.9	5.1	3.0	3.6	5.3	24
22	3.4	2.5	3.5	3.1	4.1	2.3	2.4	3.8	4.9	6.6	8.1	11.6	13.9	12.6	10.6	4.8	4.7	4.8	2.5	3.6	6.4	6.8	6.4	8.0	5.9	24
23	8.0	12.1	9.1	10.1	9.7	7.8	7.4	7.4	10.0	12.6	12.8	14.1	13.1	14.4	14.1	12.7	11.9	9.7	6.4	4.9	6.8	6.6	5.1	3.4	9.6	24
24	2.0	2.7	5.3	6.8	6.3	6.1	4.7	6.5	10.0	10.5	11.2	11.7	10.6	9.5	11.1	13.2	13.9	15.0	14.3	12.2	9.7	8.4	8.2	7.9	9.1	24
25	8.1	8.8	8.9	6.7	5.7	6.0	6.0	5.9	10.5	17.1	16.6	19.1	16.1	16.8	18.0	17.6	16.2	14.7	10.9	8.4	6.3	4.0	2.6	3.0	10.6	24
26	2.6	3.6	2.8	2.6	2.6	2.6	2.9	2.6	5.8	9.1	9.8	11.3	10.1	10.4	11.0	9.3	9.7	8.8	7.7	5.5	5.4	4.4	4.8	4.3	6.2	24
27	4.6	3.9	3.1	1.3	3.1	2.4	3.2	1.4	2.6	4.4	5.6	5.6	5.8	6.9	5.0	6.8	7.2	7.8	6.9	6.8	4.2	4.4	3.7	4.6	4.6	24
28	4.1	5.1	4.8	5.0	5.0	4.1	4.8	5.6	7.5	11.0	8.7	7.2	5.7	5.5	5.3	5.6	5.3	4.7	3.2	3.8	4.5	3.9	5.7	4.6	5.4	24
29	4.9	4.6	4.8	5.3	5.2	4.6	4.2	5.3	5.7	5.1	7.3	6.5	5.3	5.8	4.5	3.0	3.4	4.6	3.3	3.2	4.3	4.2	4.2	3.6	4.7	24
30	2.3	3.2	2.6	2.6	8.1	6.4	3.2	4.3	4.7	8.1	9.8	9.8	8.9	9.7	9.4	10.8	11.2	7.6	8.4	14.1	10.0	11.4	8.8	10.4	7.7	24
31	9.5	8.3	8.2	7.7	7.6	5.8	6.0	8.2	11.3	11.1	11.5	11.3	11.5	10.9	12.8	12.0	11.5	10.7	9.3	7.7	6.6	6.5	5.3	4.5	9.0	24
AVG	5.1	5.4	5.3	5.1	5.1	4.9	4.8	5.3	7.4	9.1	9.9	10.0	9.8	9.7	9.5	8.9	8.5	8.0	7.1	6.7	6.7	6.2	5.4	5.2		
MIN	2.0	2.5	2.3	1.3	2.1	2.3	2.0	1.4	2.0	3.9	3.6	4.2	2.9	4.8	4.4	3.0	2.8	2.1	2.1	2.6	3.4	3.2	2.1	2.3		
MAX	9.5	12.1	10.3	10.1	9.7	11.9	11.1	12.7	13.0	17.1	16.8	19.1	17.1	17.1	18.0	18.5	16.4	15.0	15.5	14.1	11.5	11.4	8.8	10.4		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 7.0
MINIMUM: 1.3
MAXIMUM: 19.1
OBSERVATIONS: 744
% DATA RECOVERY: 100.0

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 04/ 1 /92
TO: 04/ 30 /92

DAY	HOUR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	4.5	3.6	4.6	4.2	3.5	3.2	2.0	1.9	4.4	5.9	6.6	7.8	7.8	7.8	7.0	6.8	8.2	8.6	11.0	10.6	8.4	6.5	6.2	5.8	6.1	24
2	5.2	5.1	5.7	6.2	6.0	4.1	3.0	4.0	7.1	6.3	4.5	4.9	99.9	7.3	8.3	7.9	7.9	8.4	8.5	8.5	5.3	6.6	7.0	7.0	6.3	23
3	5.9	6.9	5.3	4.5	5.3	4.3	4.1	6.4	8.0	9.7	8.3	6.0	4.5	3.7	4.9	4.9	4.9	4.1	2.1	1.2	2.1	2.7	4.8	4.8	5.0	24
4	5.4	4.9	3.9	5.4	5.3	5.0	4.1	4.8	7.8	9.3	6.9	4.8	6.1	6.9	8.4	10.9	12.0	11.0	8.0	6.7	6.6	7.3	6.1	6.5	6.8	24
5	5.8	4.4	4.1	3.6	3.8	4.8	4.1	5.2	9.0	8.8	8.7	7.9	8.3	7.6	6.7	7.2	6.8	12.4	12.3	11.8	11.1	10.2	8.4	8.0	7.5	24
6	6.5	6.2	5.5	5.2	5.3	5.7	6.1	7.7	13.8	16.6	15.9	14.8	15.6	99.9	12.8	12.6	10.4	8.2	6.9	5.1	4.9	4.4	8.3	11.7	9.1	23
7	17.1	12.1	6.4	2.3	3.2	3.8	3.9	4.9	8.5	10.3	11.1	11.9	8.8	6.6	99.9	9.2	7.4	7.5	7.7	5.9	4.3	4.6	4.8	5.7	7.3	23
8	5.4	4.7	2.8	3.0	2.3	2.6	3.5	3.6	4.2	99.9	99.9	7.8	7.8	7.2	6.8	5.8	5.7	4.9	5.4	7.7	7.4	5.1	4.6	5.7	5.2	22
9	9.4	7.1	5.5	6.0	5.4	4.9	5.2	4.6	5.6	7.0	8.0	9.4	10.0	9.1	8.7	9.4	9.4	10.6	9.9	9.1	7.7	6.3	6.8	5.4	7.5	24
10	3.9	3.9	3.6	3.6	4.0	3.3	3.3	4.1	7.5	10.2	8.3	8.6	8.4	8.7	8.9	7.6	10.7	14.0	15.8	5.5	4.4	3.6	7.4	6.1	6.9	24
11	4.2	3.8	3.8	3.4	4.3	5.3	5.8	7.0	10.0	12.2	12.4	9.8	8.2	6.9	7.5	8.7	9.7	7.6	5.7	5.1	7.0	5.0	2.1	3.7	6.6	24
12	2.7	5.1	5.4	6.3	6.4	4.4	2.7	1.7	2.4	3.1	3.5	2.8	3.2	6.6	6.7	10.8	5.5	3.7	2.8	2.3	2.7	3.7	2.6	1.8	4.1	24
13	2.3	3.1	3.2	3.4	2.6	2.7	3.2	5.5	7.3	8.8	9.2	11.5	11.4	11.8	12.1	13.7	14.2	15.7	12.5	10.2	11.7	10.8	10.5	10.1	8.6	24
14	8.8	7.2	6.6	6.4	6.4	7.0	5.9	7.5	10.7	13.5	17.0	16.3	14.6	14.5	14.1	13.8	15.1	14.7	11.5	9.1	7.3	6.4	5.8	5.8	10.3	24
15	5.7	5.6	5.0	5.2	4.6	4.4	2.7	5.8	9.6	11.9	13.7	13.3	13.5	13.3	14.0	14.0	14.4	13.7	11.8	8.9	7.2	4.7	3.4	4.0	8.8	24
16	4.3	4.0	5.1	5.6	6.3	5.3	5.6	5.9	11.8	14.9	13.2	11.8	15.1	16.2	15.6	15.6	14.1	14.4	11.5	10.4	10.3	9.4	7.3	4.7	9.9	24
17	4.6	4.4	4.4	4.5	4.3	4.6	4.0	5.6	10.4	13.8	10.9	9.5	10.1	10.2	10.1	9.7	10.5	10.5	10.0	9.1	7.5	6.3	5.5	5.7	7.8	24
18	4.4	4.0	4.2	4.4	4.3	4.0	4.5	5.0	9.4	11.5	11.4	11.4	9.3	9.1	9.8	9.8	9.0	8.4	6.1	8.9	9.2	9.3	9.3	8.8	7.7	24
19	7.4	5.7	5.3	6.2	6.3	5.0	5.3	9.9	12.9	15.2	15.4	16.4	15.9	14.2	14.6	7.8	10.7	6.1	4.2	4.9	7.5	8.0	4.0	2.3	8.8	24
20	3.6	4.9	8.5	8.9	4.4	4.0	3.7	6.0	7.1	10.9	13.6	13.1	15.1	15.4	14.1	16.9	13.1	9.1	5.9	7.0	4.9	5.2	2.2	4.9	8.4	24
21	6.6	7.2	7.1	8.8	8.2	7.4	7.9	9.4	12.5	12.4	10.3	5.7	5.4	3.5	5.6	7.5	9.0	7.6	7.9	8.7	8.9	6.7	4.8	3.1	7.6	24
22	3.1	1.7	1.8	2.3	3.7	3.7	3.3	3.9	5.7	5.2	4.9	4.3	3.9	4.5	3.4	3.2	2.0	2.1	6.6	6.8	4.9	3.4	3.3	3.5	3.8	24
23	3.6	3.8	5.1	5.1	5.1	4.6	4.9	6.8	8.9	6.7	6.2	6.2	5.4	6.1	4.2	4.0	5.4	9.0	6.2	4.3	6.8	2.6	2.6	3.4	5.3	24
24	1.9	1.6	1.5	1.7	1.6	1.7	2.2	1.4	1.6	2.7	2.4	2.3	2.7	4.5	3.1	8.5	5.9	6.0	4.1	4.4	2.7	3.5	4.4	3.8	3.2	24
25	4.7	5.3	5.0	4.5	2.6	2.6	3.6	4.3	5.1	6.3	6.9	6.8	7.9	8.0	9.0	11.1	10.3	11.0	9.3	6.6	6.5	6.7	7.9	8.2	6.7	24
26	7.4	7.0	7.1	7.0	7.0	7.7	7.9	8.6	9.1	9.0	8.9	8.9	8.7	8.6	9.4	11.8	11.8	11.2	9.9	8.4	7.3	8.0	7.8	5.8	8.5	24
27	5.8	5.0	4.1	7.3	11.3	10.1	6.7	7.6	11.1	13.5	11.1	11.8	13.9	15.6	13.5	13.9	12.3	11.9	10.3	8.4	5.5	4.8	4.5	4.9	9.4	24
28	5.1	4.4	5.5	8.8	8.8	9.5	8.5	7.7	11.8	11.8	13.2	15.5	16.8	17.5	15.8	15.2	13.2	11.9	9.7	7.4	6.2	5.2	6.3	4.8	10.0	24
29	4.1	3.9	4.2	4.8	4.3	4.6	4.2	5.9	8.3	9.3	8.7	8.8	8.2	7.9	7.0	7.1	6.5	5.6	3.5	3.1	5.5	3.5	3.5	3.4	5.7	24
30	3.7	3.0	2.5	1.8	1.7	2.2	3.0	3.3	4.0	3.4	3.5	4.3	3.9	3.8	4.2	3.9	2.7	2.0	2.1	4.6	5.4	4.4	3.2	2.6	3.3	24
AVG	5.4	5.0	4.8	5.0	4.9	4.7	4.5	5.5	8.2	9.7	9.5	9.1	9.3	9.1	9.2	9.6	9.3	9.1	8.0	7.0	6.6	5.8	5.5	5.4		
MIN	1.9	1.6	1.5	1.7	1.6	1.7	2.0	1.4	1.6	2.7	2.4	2.3	2.7	3.5	3.1	3.2	2.0	2.0	2.1	1.2	2.1	2.6	2.1	1.8		
MAX	17.1	12.1	8.5	8.9	11.3	10.1	8.5	9.9	13.8	16.6	17.0	16.4	16.8	17.5	15.8	16.9	15.1	15.7	15.8	11.8	11.7	10.8	10.5	11.7		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 7.1
MINIMUM: 1.2
MAXIMUM: 17.5
OBSERVATIONS: 715
% DATA RECOVERY: 99.3

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 05/ 1 /92
TO: 05/ 31 /92

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	2.4	3.2	2.3	3.3	3.5	3.7	3.7	4.6	7.4	8.6	7.0	6.8	6.1	5.5	3.8	4.5	4.1	6.1	6.8	4.3	4.0	3.8	5.1	3.7	4.8	24
2	1.6	2.2	1.6	2.4	1.9	2.0	2.5	3.0	3.0	3.0	3.2	3.3	4.2	4.6	4.6	5.4	4.7	3.8	1.9	2.6	4.0	2.7	3.6	5.5	3.2	24
3	3.9	3.7	3.2	2.3	1.7	1.4	2.0	4.0	6.8	7.3	6.6	6.5	7.6	8.0	8.3	8.9	9.8	8.9	8.3	6.8	5.7	4.4	4.3	4.0	5.6	24
4	4.9	3.9	4.4	3.9	3.6	3.5	4.5	4.9	6.8	8.1	8.3	7.6	8.5	9.0	9.1	10.5	10.6	10.6	9.2	7.1	7.1	6.0	4.2	2.3	6.6	24
5	1.6	2.7	3.4	3.3	3.9	2.9	2.7	3.7	4.1	4.5	4.8	5.7	5.4	5.3	4.9	6.2	7.7	9.7	8.9	7.5	6.5	7.4	6.4	5.1	5.2	24
6	4.2	3.8	5.0	4.6	4.5	4.3	4.2	4.8	4.3	4.3	5.6	8.1	9.0	7.6	9.4	10.9	10.6	8.6	9.2	8.7	6.0	4.6	3.6	3.8	6.2	24
7	4.8	4.5	3.3	4.9	4.5	4.3	4.7	6.1	5.0	4.8	4.5	6.2	10.8	13.8	13.9	12.6	11.8	11.2	9.9	7.6	7.2	5.7	4.7	5.9	7.2	24
8	4.3	2.3	1.6	1.9	2.9	4.6	5.0	6.8	8.6	13.2	13.8	12.0	12.1	13.8	12.8	11.6	10.2	9.4	7.6	6.7	5.6	4.3	4.1	4.1	7.5	24
9	3.7	2.7	2.0	1.7	3.7	3.0	1.7	1.5	3.5	4.5	4.4	4.7	4.8	4.6	3.8	4.2	3.5	3.1	2.9	6.4	6.0	4.2	3.8	4.0	3.7	24
10	4.1	3.7	4.0	4.6	3.8	3.9	3.1	5.4	5.6	4.5	6.3	6.1	6.3	5.5	4.8	4.9	4.0	2.7	2.5	3.7	5.8	6.4	2.9	2.5	4.5	24
11	1.8	1.5	2.3	3.9	3.0	2.7	2.3	2.2	3.0	3.3	5.3	99.9	10.2	8.7	8.1	9.4	7.9	9.1	9.2	7.7	7.1	5.5	4.8	3.8	5.3	23
12	2.1	1.9	1.6	1.3	1.1	2.3	2.6	3.1	2.5	3.3	3.1	4.3	4.1	3.9	4.0	4.1	5.0	3.3	2.1	3.6	7.8	5.8	5.9	5.0	3.5	24
13	4.9	3.3	3.6	5.2	4.5	2.4	2.2	4.2	3.9	3.9	5.3	8.9	9.4	10.2	11.9	10.8	10.3	12.0	10.6	9.1	8.1	7.9	7.4	7.9	7.0	24
14	8.4	9.1	8.5	6.4	9.9	4.1	5.0	6.2	7.6	7.0	6.5	7.8	7.9	9.0	9.8	9.4	8.7	7.2	6.0	5.8	6.0	4.5	3.3	4.3	7.0	24
15	4.1	2.9	3.1	2.0	1.2	2.0	3.3	4.1	5.7	7.4	9.5	7.5	7.1	6.7	5.9	4.8	9.7	8.1	6.8	6.5	6.0	8.4	7.1	4.4	5.6	24
16	3.4	3.2	3.7	3.7	4.0	5.3	5.4	8.6	10.4	11.0	10.5	8.2	8.7	10.9	11.1	6.7	10.2	11.8	9.9	9.9	8.7	8.3	7.8	6.9	7.8	24
17	6.0	5.9	4.7	3.8	3.9	4.5	4.9	6.8	8.8	10.9	10.4	13.4	15.0	11.9	7.7	10.6	13.5	13.5	12.4	9.5	6.3	5.8	6.7	5.6	8.4	24
18	4.1	5.3	4.6	4.7	4.5	4.4	5.5	9.7	12.3	13.2	13.0	12.0	13.2	99.9	14.0	14.3	13.4	13.6	12.7	10.1	6.4	4.7	4.2	4.1	8.9	23
19	3.9	4.2	3.8	3.3	3.1	3.1	3.3	6.3	10.2	12.0	12.1	14.2	14.5	14.3	14.1	13.3	13.9	14.6	12.4	9.9	8.9	8.3	5.2	4.6	8.9	24
20	3.7	4.4	3.2	3.2	4.2	4.2	4.5	7.6	9.4	10.1	11.3	12.3	11.0	12.1	12.1	12.6	12.2	12.8	10.4	9.0	6.2	7.7	9.3	4.8	8.3	24
21	4.4	5.2	5.8	5.7	4.2	4.8	5.8	9.2	9.5	9.4	10.6	9.4	8.6	8.7	10.4	14.5	14.4	14.5	12.5	11.4	7.8	5.3	3.8	4.6	8.4	24
22	5.0	5.8	3.6	5.3	9.2	4.5	3.4	6.9	10.7	11.7	12.4	10.6	10.1	10.6	11.1	10.4	10.3	12.6	12.2	11.5	8.6	6.8	4.9	4.6	8.5	24
23	5.1	4.0	4.5	4.1	5.0	4.6	6.2	6.4	6.2	6.7	6.6	6.4	6.3	5.7	7.0	6.0	5.6	5.7	5.7	8.4	8.0	6.7	3.7	3.1	5.7	24
24	2.4	3.2	1.6	1.9	2.5	3.2	1.9	2.2	3.6	5.5	6.3	7.2	6.3	6.5	6.1	5.6	5.4	9.8	8.2	6.8	5.0	3.9	2.8	2.6	4.6	24
25	1.4	1.5	2.4	3.0	4.4	4.1	2.7	3.9	5.6	5.5	6.2	6.4	7.8	7.7	8.0	9.9	9.5	9.7	8.7	7.8	5.7	5.9	4.4	3.3	5.6	24
26	3.1	3.1	3.2	3.3	3.1	3.8	3.2	3.8	4.9	6.1	7.0	7.8	8.2	8.9	9.0	9.2	9.6	9.0	8.2	7.7	7.7	6.6	6.6	6.7	6.2	24
27	6.5	5.5	4.4	5.0	2.6	2.9	4.5	5.3	5.3	6.1	4.7	4.4	4.3	6.2	7.2	8.2	7.1	6.0	3.0	6.2	4.1	3.7	3.5	3.4	5.0	24
28	3.2	1.9	1.9	2.9	2.2	2.7	2.7	3.7	3.8	5.1	5.5	6.5	7.1	6.3	7.3	6.7	6.8	6.3	8.6	7.4	6.6	4.0	4.9	4.0	4.9	24
29	3.6	3.4	2.5	4.7	4.0	2.7	2.5	4.1	8.3	9.3	8.1	9.1	7.5	6.7	6.8	7.8	9.1	9.5	8.4	6.0	2.6	3.0	5.8	6.0	5.9	24
30	4.8	3.7	4.0	3.1	2.9	5.7	7.2	6.9	7.3	7.8	6.6	5.2	4.7	6.1	5.3	4.8	5.2	11.0	7.4	8.6	6.4	3.6	2.1	1.8	5.5	24
31	2.5	3.4	2.3	1.4	2.9	2.5	3.2	2.1	2.5	3.3	4.3	4.6	4.8	4.4	4.5	5.0	4.5	6.7	6.1	3.1	5.9	4.5	3.4	3.4	3.8	24
AVG	3.9	3.7	3.4	3.6	3.8	3.6	3.8	5.1	6.3	7.1	7.4	7.8	8.1	8.1	8.3	8.5	8.7	9.1	8.0	7.3	6.4	5.5	4.8	4.4		
MIN	1.4	1.5	1.6	1.3	1.1	1.4	1.7	1.5	2.5	3.0	3.1	3.3	4.1	3.9	3.8	4.1	3.5	2.7	1.9	2.6	2.6	2.7	2.1	1.8		
MAX	8.4	9.1	8.5	6.4	9.9	5.7	7.2	9.7	12.3	13.2	13.8	14.2	15.0	14.3	14.1	14.5	14.4	14.6	12.7	11.5	8.9	8.4	9.3	7.9		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 6.1
MINIMUM: 1.1
MAXIMUM: 15.0
OBSERVATIONS: 742
% DATA RECOVERY: 99.7

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 12-13-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 06/ 1 /92
TO: 06/ 30 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	4.4	3.0	3.0	2.6	2.7	2.5	1.9	3.4	3.5	3.2	4.2	4.8	5.3	5.8	6.1	5.3	5.8	5.0	3.9	3.0	6.2	4.1	2.1	1.6	3.9	24
2	2.6	2.8	1.8	3.5	2.9	1.7	2.9	3.8	4.4	3.7	3.5	4.7	4.5	4.2	3.4	12.7	10.7	6.1	6.7	10.1	7.6	9.7	4.6	5.5	5.2	24
3	3.4	5.4	4.8	3.9	3.8	4.8	4.3	5.0	6.2	6.3	8.3	10.7	10.9	11.1	10.2	8.5	8.3	9.6	7.8	7.0	7.1	7.7	8.1	8.7	7.2	24
4	8.2	6.8	6.4	6.6	6.9	6.1	5.9	5.5	7.9	9.1	9.0	8.8	11.6	12.2	11.7	11.1	11.3	10.1	8.4	6.0	4.7	4.1	5.9	6.5	8.0	24
5	6.3	6.0	6.4	7.3	6.3	7.0	7.3	9.7	10.8	10.8	11.7	7.9	8.1	13.0	12.7	11.8	9.6	9.5	8.4	6.8	7.1	4.4	5.6	5.7	8.3	24
6	5.9	6.3	6.1	6.3	4.2	3.8	3.8	4.6	6.1	5.4	3.8	4.2	6.4	11.0	15.3	5.7	3.0	4.2	5.0	4.3	7.2	5.7	6.3	4.5	5.8	24
7	2.5	3.4	3.4	3.2	3.5	3.3	4.4	4.5	2.4	3.3	7.9	7.7	7.2	7.1	11.2	11.5	9.3	7.8	7.9	2.7	6.4	3.7	2.7	3.0	5.4	24
8	2.9	2.7	3.5	2.9	2.7	2.4	4.0	3.3	4.6	7.7	8.2	7.5	8.3	8.2	10.1	14.4	11.5	9.8	7.9	2.9	2.6	2.1	2.7	3.0	5.7	24
9	3.8	3.0	3.3	2.8	2.2	2.4	2.6	6.3	8.4	7.9	7.3	7.3	7.5	7.2	6.9	7.6	11.0	7.7	6.3	5.0	6.8	2.9	4.3	3.8	5.6	24
10	3.8	3.8	4.0	3.6	3.4	3.0	3.3	4.7	3.9	4.3	4.9	5.5	4.5	5.5	6.6	8.4	7.9	7.1	7.7	6.3	5.5	5.2	3.9	3.9	5.0	24
11	2.2	2.7	3.2	1.8	3.0	3.2	3.8	5.3	5.8	5.6	5.1	4.9	6.2	6.0	6.5	8.0	7.4	7.3	6.4	4.5	2.3	3.4	3.7	3.9	4.7	24
12	4.4	2.8	1.7	2.9	3.8	4.7	4.8	6.3	6.2	6.9	6.9	7.8	7.9	8.1	9.9	11.1	8.7	8.0	6.2	4.5	7.9	5.8	4.3	4.9	6.1	24
13	4.9	4.6	3.8	3.5	4.5	3.9	5.6	6.2	5.5	6.5	6.0	6.3	7.4	8.0	11.4	9.1	6.5	6.3	10.5	8.3	6.4	5.7	4.1	3.1	6.2	24
14	4.0	5.7	8.6	6.6	5.4	3.4	3.9	5.4	6.4	8.7	9.5	9.4	11.9	11.5	11.1	11.1	13.1	9.9	5.8	3.4	3.2	2.7	3.7	2.2	6.9	24
15	4.6	3.7	2.4	2.1	3.3	3.3	3.3	5.0	6.8	10.3	9.0	8.2	7.5	5.8	4.1	5.8	7.7	6.1	5.0	8.8	8.9	9.0	6.6	6.4	6.0	24
16	4.0	5.0	4.0	3.0	2.5	2.5	3.5	3.0	7.0	7.0	6.0	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	4.3	11
17	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	999.9	0
18	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	999.9	0
19	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	999.9	0
20	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	999.9	0
21	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	999.9	0
22	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	999.9	0
23	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	99.9	4.6	8.2	9.1	6.2	9.1	12.5	9.6	6.2	8.2	8
24	4.1	5.9	8.9	8.0	4.7	4.1	3.9	2.9	6.9	7.5	5.7	5.9	6.5	7.3	5.4	8.2	12.0	10.0	7.7	6.0	5.1	3.2	2.6	3.3	6.1	24
25	2.0	2.8	5.5	3.5	4.5	4.9	6.3	8.0	99.9	99.9	99.9	6.7	5.0	14.1	19.5	22.3	13.5	13.0	13.7	12.5	16.0	22.7	15.7	14.7	10.8	21
26	13.9	11.0	12.3	11.8	9.8	11.0	10.7	7.8	14.0	13.5	12.9	15.5	11.5	10.7	10.8	10.4	9.4	9.6	7.7	7.9	5.7	4.2	5.7	5.8	10.1	24
27	4.8	6.4	5.4	4.1	4.3	3.9	5.0	6.5	9.1	11.6	12.7	7.0	7.4	6.1	3.6	7.9	7.7	4.4	2.6	5.6	5.6	6.5	7.6	7.3	6.4	24
28	5.0	4.5	5.3	5.6	5.2	5.3	6.4	7.8	12.1	6.5	6.7	8.8	7.2	10.6	11.2	11.7	9.8	7.5	7.3	6.6	8.3	5.1	6.0	5.0	7.3	24
29	6.7	7.3	8.2	7.1	7.9	5.8	99.9	99.9	9.0	9.2	9.3	11.5	12.1	12.4	12.7	4.2	3.9	2.8	2.6	5.7	5.9	4.2	4.9	6.5	7.3	22
30	6.5	4.6	7.0	7.3	6.3	6.0	5.4	7.1	7.4	10.2	11.3	6.2	9.7	11.8	10.3	10.4	11.8	9.9	6.1	3.2	3.2	3.8	3.4	4.0	7.2	24
AVG	4.8	4.8	5.2	4.8	4.5	4.3	4.7	5.6	7.0	7.5	7.7	7.6	7.9	9.0	9.6	9.9	8.9	7.8	7.0	6.0	6.5	6.0	5.4	5.2		
MIN	2.0	2.7	1.7	1.8	2.2	1.7	1.9	2.9	2.4	3.2	3.5	4.2	4.5	4.2	3.4	4.2	3.0	2.8	2.6	2.7	2.3	2.1	2.1	1.6		
MAX	13.9	11.0	12.3	11.8	9.8	11.0	10.7	9.7	14.0	13.5	12.9	15.5	12.1	14.1	19.5	22.3	13.5	13.0	13.7	12.5	16.0	22.7	15.7	14.7		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 6.5
MINIMUM: 1.6
MAXIMUM: 22.7
OBSERVATIONS: 542
% DATA RECOVERY: 75.3

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 07/ 1 /92
TO: 07/ 31 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	3.8	3.9	2.9	3.4	3.8	3.9	4.1	6.6	9.2	9.4	9.1	9.1	8.1	8.7	8.3	6.9	6.8	5.4	4.3	4.4	4.0	3.5	2.5	2.3	5.6	24
2	2.0	2.1	2.7	1.2	2.2	2.0	2.4	3.4	4.6	4.9	6.0	4.6	4.8	4.5	4.3	3.9	2.2	3.0	3.5	4.4	4.1	3.5	3.7	3.6	3.5	24
3	3.2	1.8	1.7	2.3	2.8	2.5	3.4	5.3	6.4	5.9	5.4	5.9	6.3	7.1	7.8	7.9	6.2	5.0	4.8	4.3	5.3	4.7	4.0	3.4	4.7	24
4	5.0	6.2	7.1	6.4	6.1	4.7	4.1	6.6	8.6	7.8	7.9	7.0	7.0	6.9	6.1	6.4	6.2	3.7	4.1	3.2	4.2	4.4	3.4	3.0	5.7	24
5	2.2	1.9	2.1	1.5	3.2	3.1	3.2	3.0	3.4	5.3	4.4	4.3	4.5	5.3	4.5	3.9	4.5	3.9	2.5	2.2	3.8	4.5	4.1	3.2	3.5	24
6	3.2	3.0	2.9	2.6	1.4	0.7	1.1	2.1	2.2	3.0	3.1	5.3	6.2	6.4	6.5	7.4	8.1	7.2	5.4	5.9	4.9	4.3	7.2	7.6	4.5	24
7	6.5	6.4	4.0	4.3	2.9	2.9	1.6	3.0	3.6	3.8	3.8	4.4	4.6	5.3	5.1	12.4	6.1	6.4	4.9	3.8	5.1	4.0	2.9	2.5	4.6	24
8	2.0	2.5	2.2	2.6	2.4	1.8	2.2	1.0	2.3	4.8	4.5	4.5	3.9	3.6	4.2	3.6	3.0	5.5	6.7	3.3	3.0	3.6	2.8	1.7	3.2	24
9	1.7	4.1	2.9	2.0	3.7	3.6	3.6	3.9	4.7	4.3	3.8	2.9	3.1	3.1	2.8	3.3	3.9	5.1	3.2	3.0	2.0	4.6	5.6	4.3	3.5	24
10	4.8	7.0	3.8	3.4	2.7	1.6	1.4	2.5	3.2	3.4	4.1	4.4	3.6	4.5	2.8	3.3	5.7	99.9	6.9	4.0	4.0	3.6	3.7	1.5	3.7	23
11	4.3	2.4	3.1	2.4	1.5	1.4	1.3	1.1	1.8	3.8	4.1	3.6	4.7	5.1	4.3	5.2	5.6	4.7	7.0	8.0	4.5	3.2	0.7	3.2	3.6	24
12	2.9	3.0	3.4	2.5	3.3	3.0	2.2	2.4	4.7	7.4	5.2	3.3	4.4	3.9	3.1	3.2	9.7	9.5	4.2	3.0	2.9	4.1	3.9	2.7	4.1	24
13	1.9	2.6	2.2	1.6	1.6	2.2	2.1	2.1	4.0	6.0	4.8	4.2	3.6	6.0	8.8	7.1	9.5	3.7	3.0	1.5	2.7	1.6	1.5	1.5	3.6	24
14	2.4	2.5	2.6	3.3	2.3	3.2	2.4	3.8	4.2	4.1	3.4	3.4	3.0	2.6	3.0	2.7	6.2	9.4	10.7	9.3	3.0	4.0	4.7	4.3	4.2	24
15	3.9	2.3	2.3	3.1	1.6	1.7	2.2	3.8	6.6	6.0	5.0	4.2	3.8	3.6	4.3	2.9	10.4	12.9	6.0	3.4	3.4	5.5	2.6	3.5	4.4	24
16	2.5	1.0	1.3	2.5	3.9	4.5	5.2	5.7	7.2	7.9	8.5	8.0	8.5	9.2	8.6	6.9	3.9	7.6	4.4	6.8	4.8	3.7	2.3	2.1	5.3	24
17	2.5	2.2	2.6	3.2	2.1	2.0	2.7	4.2	6.6	6.3	5.9	5.3	4.9	4.5	5.3	8.3	7.5	7.2	9.2	5.1	3.5	3.6	3.2	3.9	4.7	24
18	2.5	1.8	3.1	3.6	3.2	2.1	2.3	4.3	5.7	4.3	4.7	4.7	4.9	4.3	4.0	2.8	10.9	9.2	5.1	3.4	2.7	99.9	99.9	2.5	4.2	22
19	1.5	1.6	2.0	1.9	2.7	3.2	3.6	2.9	3.2	4.5	3.6	3.1	2.5	3.5	11.7	4.9	6.0	4.5	2.5	1.8	2.3	1.6	1.9	1.2	3.3	24
20	1.2	1.4	2.1	2.8	3.4	3.3	3.5	5.1	6.4	6.5	5.7	5.1	6.9	6.1	9.2	10.0	8.3	6.1	3.4	2.4	3.1	3.6	2.5	3.2	4.6	24
21	2.6	2.8	3.1	2.0	1.9	2.5	2.9	3.2	4.0	5.8	5.6	5.7	6.2	6.4	10.7	10.4	5.2	5.5	3.0	3.6	1.2	1.8	2.3	2.5	4.2	24
22	1.8	2.4	2.9	1.6	2.6	3.4	3.8	4.4	6.5	8.2	7.9	5.7	5.3	5.0	4.9	11.1	14.2	11.5	6.9	3.6	2.5	4.6	5.0	3.7	5.4	24
23	4.7	4.2	2.7	2.9	2.5	4.0	3.9	5.7	8.8	7.9	6.4	5.9	4.1	4.5	8.8	3.4	4.8	3.9	4.7	3.3	3.4	2.8	3.8	2.8	4.6	24
24	3.2	4.1	4.0	4.7	3.6	3.1	3.3	5.6	8.5	11.0	8.9	5.3	4.0	5.9	4.8	6.3	3.9	6.4	3.0	2.2	0.8	1.7	1.9	2.4	4.5	24
25	3.5	4.1	4.0	2.7	2.6	3.1	3.0	4.2	6.2	6.4	5.2	5.1	4.4	2.4	2.7	2.5	5.0	2.4	1.6	2.5	4.5	3.8	1.7	2.6	3.6	24
26	3.3	1.4	2.2	2.0	1.2	1.9	1.8	2.2	3.3	4.0	3.6	3.0	3.1	3.8	3.7	2.8	3.2	1.8	4.8	4.2	4.6	2.3	1.0	0.8	2.8	24
27	1.3	1.1	2.2	2.7	1.7	1.9	1.3	0.7	2.0	2.3	3.7	4.6	4.9	5.4	5.4	6.0	5.7	6.5	5.7	5.0	4.7	4.9	3.9	3.7	3.6	24
28	1.7	3.3	2.0	0.9	1.1	1.3	0.9	2.2	4.1	4.3	4.1	5.2	6.1	7.4	6.7	6.2	6.8	6.4	6.5	5.8	6.0	5.0	4.7	4.1	4.3	24
29	2.9	2.5	1.6	2.4	3.0	2.8	1.2	1.5	2.2	4.1	4.5	4.9	4.9	4.4	5.0	5.5	5.6	6.3	5.8	5.8	4.8	3.8	3.3	5.1	3.9	24
30	2.3	2.7	1.5	1.1	1.6	2.4	1.9	1.5	2.8	3.1	3.8	3.8	4.8	16.9	7.4	2.9	3.6	3.5	2.7	2.5	2.3	1.9	3.0	3.5	3.5	24
31	4.0	3.1	2.9	1.7	2.1	2.2	1.0	1.2	2.9	4.1	3.9	4.4	3.8	5.0	8.5	7.2	3.9	2.7	2.7	4.8	4.1	2.3	2.3	1.5	3.4	24
AVG	2.9	2.9	2.8	2.6	2.6	2.6	2.6	3.4	4.8	5.5	5.2	4.9	4.9	5.5	5.9	5.7	6.2	5.9	4.8	4.1	3.6	3.6	3.2	3.0		
MIN	1.2	1.0	1.3	0.9	1.1	0.7	0.9	0.7	1.8	2.3	3.1	2.9	2.5	2.4	2.7	2.5	2.2	1.8	1.6	1.5	0.8	1.6	0.7	0.8		
MAX	6.5	7.0	7.1	6.4	6.1	4.7	5.2	6.6	9.2	11.0	9.1	9.1	8.5	16.9	11.7	12.4	14.2	12.9	10.7	9.3	6.0	5.5	7.2	7.6		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 4.1
MINIMUM: 0.7
MAXIMUM: 16.9
OBSERVATIONS: 741
% DATA RECOVERY: 99.6

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: — POLLUTANT: WIND SPEED — FROM: 08/ 1 /92

AGENCY: PRIVATE — METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE — TO: 08/ 31 /92

PROJECT: BACKGOUND SURVEILLANCE — UNITS: MILES PER HOUR

DAY	HOUR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	2.4	3.0	3.8	2.9	2.8	2.3	1.1	1.5	3.6	4.9	3.4	3.4	4.5	8.2	6.7	7.9	8.0	6.0	4.5	10.6	3.7	3.5	1.8	2.4	4.3	24
2	3.9	3.2	1.9	3.7	3.7	2.5	1.1	1.3	2.3	2.4	2.8	2.4	3.0	4.3	4.1	13.2	9.0	6.1	4.9	4.5	3.1	3.0	1.8	5.8	3.9	24
3	4.2	2.9	2.5	2.3	1.9	1.7	2.1	1.9	4.8	5.0	4.7	5.1	8.7	6.5	4.8	4.8	5.3	4.6	10.2	8.5	5.2	4.5	4.0	4.1	4.6	24
4	3.9	3.8	3.4	2.6	2.7	2.2	3.2	3.8	3.6	4.0	3.0	3.1	3.2	9.9	5.8	4.0	3.6	4.1	4.7	4.4	3.2	3.7	3.4	4.5	3.9	24
5	4.6	3.7	3.2	2.1	1.4	0.6	1.4	1.8	2.3	2.7	3.1	3.9	6.0	12.3	7.0	3.6	4.9	3.0	2.8	0.8	3.4	2.9	2.6	2.9	3.5	24
6	2.0	1.9	2.4	1.5	1.9	1.7	1.9	2.7	2.8	3.0	99.9	99.9	4.2	4.1	4.3	14.5	9.2	6.4	3.1	3.5	4.3	4.3	3.9	4.6	4.0	22
7	3.4	4.3	4.2	5.3	4.3	4.0	4.0	5.4	4.2	4.2	3.8	4.0	8.1	8.6	3.9	3.3	3.2	3.3	2.7	3.4	4.6	3.9	2.5	3.1	4.2	24
8	3.8	6.1	5.5	5.0	3.0	2.5	3.5	4.5	4.3	5.3	5.4	5.3	5.3	4.6	14.1	6.6	4.1	4.5	5.2	4.0	5.1	4.2	3.4	1.6	4.9	24
9	2.6	3.2	3.8	2.5	4.1	2.6	3.4	3.0	3.0	3.0	3.8	3.7	4.7	5.3	5.4	12.4	7.8	7.8	3.6	5.9	3.5	2.7	3.6	4.7	4.4	24
10	3.9	1.8	1.9	1.7	3.1	2.6	2.0	2.2	2.6	3.0	99.9	3.8	4.3	3.7	4.0	3.2	3.3	2.8	6.5	11.1	2.6	3.4	2.6	2.9	3.4	23
11	2.0	2.1	2.6	3.3	3.3	3.5	3.5	5.3	6.0	7.2	6.9	6.5	6.2	5.7	7.3	16.2	5.7	3.4	3.0	2.6	2.7	4.0	4.4	4.2	4.9	24
12	3.4	3.6	4.2	3.5	3.1	3.5	4.5	6.3	8.5	8.2	9.3	8.5	9.5	9.7	4.6	4.0	9.1	8.0	8.1	6.9	4.6	4.2	3.0	3.4	5.9	24
13	2.8	4.6	4.2	3.4	3.3	3.4	2.9	4.5	7.7	9.5	9.8	10.2	9.9	8.3	7.5	6.3	7.2	8.5	4.9	5.9	4.6	3.7	2.3	2.6	5.8	24
14	4.6	4.7	6.2	4.8	3.8	3.3	4.3	5.2	6.7	8.2	9.2	9.0	9.9	10.9	8.7	5.7	8.5	8.7	4.0	2.6	3.3	4.0	6.0	6.2	6.2	24
15	3.3	3.0	2.0	3.3	4.7	5.0	4.9	3.8	5.1	7.5	8.8	7.7	8.5	8.4	8.3	6.0	5.3	9.0	5.1	2.5	2.8	5.9	4.2	3.9	5.4	24
16	4.4	2.4	1.8	3.5	3.6	4.7	4.2	4.5	6.2	5.5	5.8	6.1	5.2	11.1	8.2	9.8	7.2	8.8	3.7	5.1	4.9	3.6	3.3	3.2	5.3	24
17	3.0	4.2	3.2	2.1	1.9	3.5	3.4	3.3	4.8	6.2	5.6	4.0	5.2	4.6	4.0	3.5	4.7	8.1	5.3	4.1	5.0	5.2	4.4	5.0	4.3	24
18	2.7	2.8	1.3	2.1	2.2	2.0	2.7	4.2	3.8	3.3	2.6	3.1	4.2	3.5	2.9	2.9	3.1	2.7	3.1	5.5	6.0	7.4	6.8	6.4	3.6	24
19	6.1	5.8	4.2	2.0	2.3	2.3	3.1	2.2	3.9	4.1	3.3	3.2	4.5	4.7	4.3	5.2	3.9	11.8	11.6	5.7	2.1	3.9	4.5	3.8	4.5	24
20	3.5	3.4	4.1	2.6	1.6	2.7	1.4	2.6	3.2	2.5	3.1	3.5	3.9	5.2	6.2	2.6	4.5	5.7	7.7	5.9	3.3	5.5	3.6	2.1	3.8	24
21	2.3	2.0	2.7	2.2	2.1	2.1	2.6	3.7	2.7	3.2	3.8	6.4	9.8	10.9	11.8	13.8	12.4	8.9	5.4	3.1	1.5	2.0	2.4	2.6	5.0	24
22	3.5	5.5	4.7	5.7	5.6	5.3	4.9	6.3	7.0	8.2	8.0	7.7	6.4	5.9	5.4	10.1	11.1	5.2	4.9	3.6	2.6	4.4	3.6	1.5	5.7	24
23	2.8	3.0	4.1	4.2	3.8	3.5	3.0	4.8	7.5	9.2	9.9	9.5	13.3	7.7	7.9	5.4	4.6	4.3	4.5	4.3	4.3	5.3	7.5	7.4	5.9	24
24	8.2	8.1	9.4	10.5	10.3	10.4	12.0	13.1	13.1	13.7	19.4	12.7	13.5	15.7	15.7	15.4	13.7	13.7	12.2	12.3	10.0	9.2	7.6	6.5	11.9	24
25	7.1	6.8	8.0	5.2	5.4	4.8	4.1	6.7	10.1	11.1	10.9	11.1	8.9	8.6	7.9	8.8	8.1	7.4	6.1	5.5	4.9	5.7	4.4	3.6	7.1	24
26	4.4	3.9	4.3	3.8	3.2	3.5	4.0	4.4	5.5	6.4	6.1	6.0	6.0	6.1	5.6	5.6	6.4	6.0	5.0	8.0	5.7	6.0	5.7	4.6	5.3	24
27	3.1	3.3	3.6	3.3	3.5	3.3	3.0	3.4	5.5	6.7	5.8	4.7	5.0	5.5	4.0	4.5	4.8	6.3	7.3	5.7	4.8	3.4	4.9	4.2	4.6	24
28	4.7	3.2	4.2	4.6	6.0	4.2	3.4	6.5	7.9	9.0	9.9	10.8	6.9	2.9	8.6	3.5	4.7	7.3	7.2	5.6	3.5	4.5	5.3	4.6	5.8	24
29	4.1	3.5	3.7	4.0	4.0	4.9	5.0	5.4	6.5	6.5	7.9	11.7	9.6	9.7	8.2	9.0	5.1	4.5	3.6	4.0	4.4	3.9	3.0	3.1	5.6	24
30	4.6	4.2	3.6	4.4	3.0	2.0	2.8	3.0	1.7	4.1	4.0	3.5	4.1	5.1	5.4	8.1	4.8	4.0	5.2	3.6	3.8	3.1	4.2	2.5	3.9	24
31	2.4	2.2	1.2	1.8	1.7	2.1	2.0	2.7	2.3	2.8	3.3	2.8	4.3	4.6	3.6	2.7	4.6	2.9	5.4	5.7	4.1	3.7	3.0	2.0	3.1	24
AVG	3.8	3.7	3.7	3.5	3.5	3.3	3.4	4.2	5.1	5.8	6.3	6.1	6.7	7.2	6.7	7.2	6.4	6.3	5.5	5.3	4.1	4.3	4.0	3.9		
MIN	2.0	1.8	1.2	1.5	1.4	0.6	1.1	1.3	1.7	2.4	2.6	2.4	3.0	2.9	2.9	2.6	3.1	2.7	2.7	0.8	1.5	2.0	1.8	1.5		
MAX	8.2	8.1	9.4	10.5	10.3	10.4	12.0	13.1	13.1	13.7	19.4	12.7	13.5	15.7	15.7	16.2	13.7	13.7	12.2	12.3	10.0	9.2	7.6	7.4		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 5.0
MINIMUM: 0.6
MAXIMUM: 19.4
OBSERVATIONS: 741
% DATA RECOVERY: 99.6

EBASCO ENVIRONMENTAL AIR QUALITY/METEOROLOGY DATA SUMMARY 12-13-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: POLLUTANT: WIND SPEED FROM: 09/ 1 /92
AGENCY: PRIVATE METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE TO: 09/ 30 /92
PROJECT: BACKGOUND SURVEILLANCE UNITS: MILES PER HOUR

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	2.0	3.1	2.7	3.0	2.4	2.9	3.1	3.4	3.5	4.4	3.6	4.0	4.4	3.1	4.6	11.6	16.1	9.7	4.6	5.3	5.0	6.0	2.6	3.0	4.8	24
2	2.5	3.2	2.8	3.8	3.9	4.0	4.3	5.5	8.0	9.2	9.4	10.7	8.7	9.3	9.3	9.2	10.6	7.2	2.5	5.9	6.5	6.9	3.6	3.0	6.3	24
3	3.9	3.8	3.7	4.0	4.4	4.0	4.4	5.2	6.2	9.0	7.9	7.8	6.8	14.3	4.5	3.9	5.4	4.0	3.4	3.1	5.7	5.2	3.3	3.2	5.3	24
4	3.6	4.0	3.6	3.7	4.3	4.4	4.8	5.4	7.5	9.4	10.1	8.3	5.8	10.2	7.8	8.7	8.6	5.8	7.4	6.9	2.9	2.6	3.4	4.5	6.0	24
5	4.0	5.5	5.0	3.9	3.8	4.3	3.8	5.7	7.8	9.5	9.2	9.2	7.2	6.1	7.5	6.8	6.3	9.6	5.1	4.3	5.4	6.5	6.4	5.4	6.2	24
6	5.3	5.1	4.9	4.4	3.4	3.0	3.4	3.7	5.8	7.8	8.1	8.6	8.0	7.0	5.0	8.6	2.7	4.1	3.9	3.8	4.2	3.9	4.4	4.6	5.2	24
7	4.6	4.4	4.4	4.1	3.8	3.4	3.5	4.5	5.8	6.9	6.5	6.6	4.9	6.8	11.0	10.5	10.3	9.7	5.4	4.6	4.9	4.7	5.1	3.6	5.8	24
8	3.0	3.5	2.4	2.8	2.9	4.3	3.4	4.0	4.9	5.3	6.0	6.2	5.0	8.2	8.7	12.1	10.0	9.7	5.3	4.2	3.8	5.0	4.8	4.1	5.4	24
9	3.3	3.5	2.8	2.6	3.4	2.9	3.3	3.9	5.3	5.1	4.1	4.2	4.4	4.4	3.6	5.4	9.3	6.0	5.1	4.5	4.8	4.5	4.2	4.3	4.4	24
10	4.3	3.6	2.7	3.9	3.0	3.5	4.0	3.8	4.5	6.0	5.6	4.4	8.2	5.8	4.8	2.9	3.5	2.9	3.3	5.6	6.0	3.5	2.8	2.0	4.2	24
11	3.1	2.7	4.3	2.9	2.5	2.5	2.4	2.0	3.4	4.2	6.7	7.1	6.3	5.9	4.2	4.0	9.1	5.5	3.7	3.7	2.3	3.0	3.4	3.6	4.1	24
12	3.8	2.0	2.5	2.0	2.0	3.0	4.8	5.2	8.8	8.7	7.0	4.6	5.8	5.1	7.0	6.7	9.9	12.0	8.1	4.8	5.5	2.9	1.5	2.7	5.3	24
13	3.0	3.9	2.7	3.3	3.1	3.8	3.5	5.3	8.5	9.8	9.7	8.9	6.9	7.7	10.5	10.7	15.5	6.0	4.2	3.2	6.4	6.9	7.4	6.7	6.6	24
14	6.9	5.0	5.0	3.5	5.3	5.6	6.9	8.2	11.6	12.0	12.5	13.8	11.8	12.8	12.0	12.8	9.8	7.7	8.4	5.7	5.3	5.2	4.8	3.8	8.2	24
15	3.2	3.1	3.4	4.1	4.7	3.8	4.3	5.1	8.3	9.4	8.4	7.8	7.2	6.9	6.8	8.1	10.1	4.3	4.1	3.5	2.8	3.7	4.8	4.3	5.5	24
16	4.2	4.1	2.8	3.1	3.4	2.9	3.9	4.5	6.5	7.7	6.8	5.7	6.3	6.8	9.1	9.4	8.9	5.5	3.1	3.8	5.4	4.3	3.5	4.1	5.2	24
17	4.6	4.5	3.3	2.9	3.2	3.0	3.5	5.7	7.7	9.2	9.3	13.8	10.5	10.6	11.2	10.7	10.8	9.3	6.8	3.4	4.2	3.2	4.1	3.4	6.6	24
18	2.9	3.2	3.0	4.0	3.8	4.7	3.9	4.7	5.1	5.7	6.3	7.1	5.7	4.1	5.9	8.2	8.0	9.2	8.2	4.8	7.5	4.1	5.6	1.8	5.3	24
19	0.6	0.7	0.6	0.6	0.7	0.6	0.6	0.6	2.1	2.9	3.0	3.3	2.6	3.4	3.6	3.5	3.7	5.1	6.4	8.0	3.9	2.5	3.2	2.5	2.7	24
20	4.0	3.2	2.5	2.3	3.5	3.3	1.0	2.7	2.3	2.6	3.2	3.4	3.7	3.4	4.0	3.2	2.8	2.0	3.8	7.3	3.9	4.0	3.5	4.6	3.3	24
21	3.5	2.7	3.3	2.7	2.8	2.4	2.1	2.8	2.8	3.1	3.2	3.9	3.5	3.9	3.5	3.2	3.4	4.1	5.1	8.9	8.1	7.5	4.2	4.0	3.9	24
22	3.8	2.5	3.0	2.1	3.0	2.5	2.7	3.4	4.0	4.8	4.1	4.1	4.1	3.7	4.7	5.4	6.8	4.4	4.4	2.3	2.2	5.2	4.1	3.7	3.8	24
23	3.6	2.4	3.9	3.5	3.3	2.9	2.6	1.9	2.8	4.2	2.8	2.5	3.2	3.1	3.8	3.9	5.8	5.9	3.2	3.0	4.0	2.3	2.7	3.8	3.4	24
24	3.2	1.0	3.0	3.4	3.9	2.7	3.9	4.8	7.3	8.4	99.9	9.6	9.7	10.9	12.6	11.3	9.6	6.9	3.2	5.4	3.7	4.6	4.7	3.8	6.0	23
25	3.9	4.3	4.3	4.7	5.2	4.6	4.9	6.2	7.4	9.1	9.1	8.3	8.6	9.2	8.7	9.8	4.5	4.3	6.5	7.0	6.2	6.2	7.0	6.3	6.5	24
26	4.3	4.9	4.8	4.5	3.4	3.1	3.2	4.7	10.1	12.2	12.4	11.5	11.0	10.5	10.7	9.6	9.2	7.1	6.4	6.0	5.1	4.6	5.6	3.9	7.0	24
27	4.8	6.2	7.6	6.4	5.5	2.4	2.6	3.1	4.0	6.5	7.7	7.9	7.8	8.9	8.4	7.5	8.0	6.8	5.2	5.2	6.7	3.3	3.0	3.3	5.8	24
28	3.4	4.5	4.6	5.9	4.9	6.6	6.3	7.3	8.7	6.9	7.6	8.6	8.9	8.8	9.3	5.5	8.9	7.3	8.0	6.0	4.3	3.1	3.3	5.2	6.4	24
29	4.6	5.0	5.1	5.8	4.9	4.9	4.3	5.2	6.0	6.1	6.0	6.8	6.9	6.9	7.7	8.8	6.9	7.7	5.6	7.5	7.0	6.8	5.3	4.6	6.1	24
30	4.2	4.3	4.8	5.5	4.7	3.8	4.3	6.4	7.7	11.8	12.2	11.2	9.8	9.9	10.3	10.6	11.0	11.4	10.1	8.3	8.2	8.0	7.0	6.5	8.0	24
AVG	3.7	3.7	3.7	3.6	3.6	3.5	3.7	4.5	6.1	7.3	7.2	7.3	6.8	7.3	7.4	7.8	8.2	6.7	5.3	5.2	5.1	4.7	4.3	4.0		
MIN	0.6	0.7	0.6	0.6	0.7	0.6	0.6	0.6	2.1	2.6	2.8	2.5	2.6	3.1	3.5	2.9	2.7	2.0	2.5	2.3	2.2	2.3	1.5	1.8		
MAX	6.9	6.2	7.6	6.4	5.5	6.6	6.9	8.2	11.6	12.2	12.5	13.8	11.8	14.3	12.6	12.8	16.1	12.0	10.1	8.9	8.2	8.0	7.4	6.7		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 5.4
MINIMUM: 0.6
MAXIMUM: 16.1
OBSERVATIONS: 719
% DATA RECOVERY: 99.9

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: WIND SPEED
METHOD: INSTRUMENTAL ELECT/MACHINE AVERAGE
UNITS: MILES PER HOUR

FROM: 10/ 1 /92
TO: 10/ 14 /92

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	5.5	4.9	5.5	7.2	8.8	9.2	8.3	9.9	13.6	13.4	14.3	13.6	15.0	13.5	13.3	11.4	9.0	7.5	9.5	7.3	7.9	8.3	9.4	7.1	9.7	24
2	6.1	5.5	5.3	4.5	3.9	6.0	9.2	8.8	8.9	10.6	13.5	12.0	10.9	12.1	10.5	10.9	9.4	11.1	10.6	9.0	8.5	8.9	8.5	10.2	9.0	24
3	11.2	11.4	10.5	10.2	11.4	11.5	11.4	12.9	13.6	12.5	11.3	10.2	9.5	9.5	9.2	10.8	11.0	5.3	7.6	9.6	12.0	12.3	15.7	17.9	11.2	24
4	17.3	17.5	11.9	9.8	13.1	10.8	13.7	9.5	10.4	11.0	13.2	16.0	15.7	14.3	14.6	13.2	13.1	10.5	8.4	6.8	5.8	6.7	6.2	7.0	11.5	24
5	6.0	5.2	2.8	2.9	2.6	2.9	2.4	5.5	7.6	10.9	10.9	12.2	13.2	13.4	14.0	14.7	12.4	9.1	8.6	8.0	6.0	5.8	4.1	3.7	7.7	24
6	3.8	5.9	5.7	6.9	6.5	6.5	7.2	7.6	8.7	9.4	10.3	9.7	10.5	9.7	9.8	8.4	8.9	9.2	8.6	8.5	8.5	8.1	7.3	7.8	8.1	24
7	7.1	6.8	6.4	6.1	6.0	7.6	7.1	7.6	9.0	11.1	9.2	8.1	9.0	9.6	11.9	12.3	10.7	9.7	9.9	8.1	6.1	4.4	5.0	4.3	8.0	24
8	3.9	4.0	3.1	2.9	2.9	2.8	3.2	4.1	5.2	5.2	5.4	5.4	5.5	4.6	3.8	3.6	4.7	7.1	5.3	3.7	4.1	3.7	3.6	4.1	4.2	24
9	4.0	3.8	3.9	3.1	2.2	1.5	2.1	3.6	3.4	3.8	5.8	5.0	5.7	4.9	3.9	3.7	2.3	3.1	4.5	5.5	5.3	4.5	3.8	3.4	3.9	24
10	2.8	2.8	2.9	4.3	3.7	2.1	2.3	2.3	2.9	2.5	3.1	4.5	4.4	4.3	4.0	3.2	2.7	2.9	3.4	4.6	6.0	5.8	5.8	4.1	3.6	24
11	2.4	2.4	2.1	2.7	2.2	0.9	1.2	1.6	1.5	2.5	3.4	5.2	6.5	4.6	3.6	3.6	3.7	3.8	2.5	2.0	1.7	2.5	2.9	3.1	2.9	24
12	3.2	3.4	2.8	3.9	4.7	6.4	6.5	6.1	6.4	8.7	8.8	7.4	6.8	6.7	5.6	5.3	5.7	5.4	5.8	6.5	6.3	5.3	4.6	3.9	5.7	24
13	3.9	3.8	4.1	4.1	4.1	4.7	4.6	5.8	7.1	7.7	6.7	5.5	5.6	5.9	6.1	6.4	5.9	4.1	3.0	4.4	4.4	4.1	3.6	3.2	5.0	24
14	3.9	4.2	4.1	4.2	3.4	3.8	4.5	3.6	6.9	9.1	11.0	12.0	10.7	10.8	10.4	9.5	9.0	7.6	5.1	5.8	4.5	3.9	3.4	3.7	6.5	24
AVG	5.8	5.8	5.1	5.2	5.4	5.5	6.0	6.3	7.5	8.5	9.1	9.1	9.2	8.9	8.6	8.4	7.7	6.9	6.6	6.4	6.2	6.0	6.0	6.0		
MIN	2.4	2.4	2.1	2.7	2.2	0.9	1.2	1.6	1.5	2.5	3.1	4.5	4.4	4.3	3.6	3.2	2.3	2.9	2.5	2.0	1.7	2.5	2.9	3.1		
MAX	17.3	17.5	11.9	10.2	13.1	11.5	13.7	12.9	13.6	13.4	14.3	16.0	15.7	14.3	14.6	14.7	13.1	11.1	10.6	9.6	12.0	12.3	15.7	17.9		

99.9 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 6.9
MINIMUM: 0.9
MAXIMUM: 17.9
OBSERVATIONS: 336
% DATA RECOVERY: 100.0

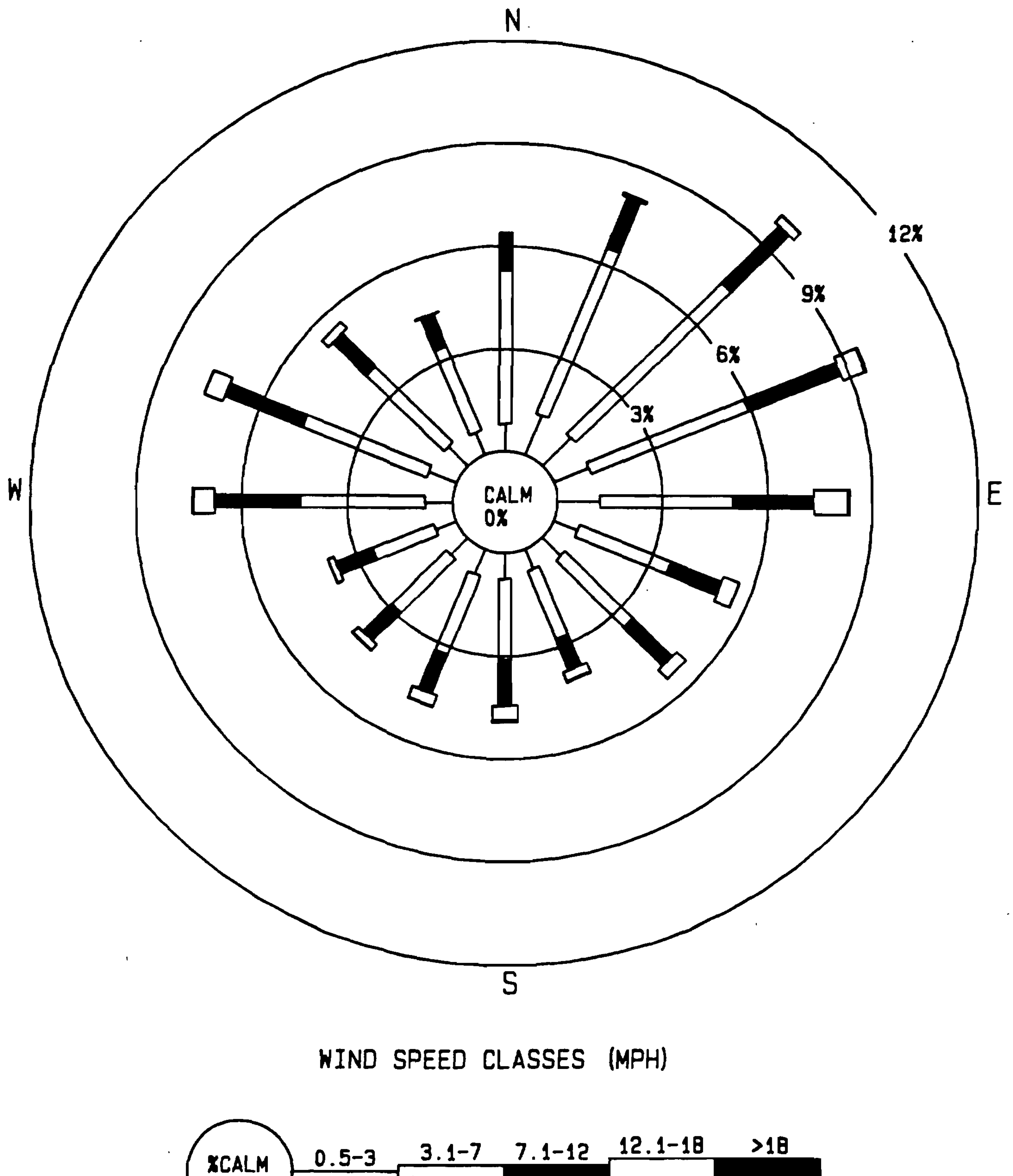
JOINT FREQUENCY DISTRIBUTION
HOMELAND FLORIDA
FLORIDA POWER CORPORATION - POLK COUNTY SITE
OCTOBER 15 1991 - OCTOBER 14 1992

DIRECTION	.5-3MPH	3.1-7MPH	7.1-12MPH	12.1-18MPH	18.1-24MPH	24.1-32MPH	GT 32 MPH	TOTAL	AVG.SPEED
N	0.80	4.50	1.07	0.00	0.00	0.00	0.00	6.37	5.1
NNE	1.24	5.24	1.57	0.08	0.00	0.00	0.00	8.13	5.3
NE	1.15	6.23	2.32	0.28	0.01	0.00	0.00	10.00	5.8
ENE	1.08	4.87	2.82	0.68	0.05	0.00	0.00	9.50	6.6
E	1.21	3.80	2.30	0.98	0.05	0.00	0.00	8.33	6.9
ESE	0.73	2.82	1.54	0.47	0.01	0.00	0.00	5.57	6.6
SE	0.73	2.73	1.58	0.37	0.00	0.00	0.00	5.42	6.4
SSE	0.62	2.14	0.96	0.29	0.01	0.00	0.00	4.02	6.2
S	0.75	2.34	1.33	0.42	0.05	0.00	0.00	4.88	6.6
SSW	0.76	2.46	1.20	0.36	0.02	0.00	0.00	4.80	6.3
SW	0.68	2.18	1.15	0.23	0.01	0.00	0.00	4.25	6.2
WSW	0.62	1.89	1.10	0.20	0.00	0.00	0.00	3.80	6.0
W	0.77	3.54	2.44	0.61	0.02	0.00	0.00	7.38	7.0
WNW	0.85	3.81	2.38	0.57	0.00	0.00	0.00	7.61	6.5
NW	0.79	3.12	1.36	0.26	0.00	0.00	0.00	5.53	5.9
NNW	0.70	2.68	0.99	0.02	0.00	0.00	0.00	4.39	5.4
CALM								0.01	
TOTAL	13.48	54.36	26.10	5.81	0.23	0.00	0.00	100.00	6.2

NUMBER OF OBSERVATIONS: 8582

Units: Percent Joint Frequency Wind Speed vs Wind Direction

FPCALLQT.DAT



Florida Power Corporation

POLK COUNTY SITE - HOMELAND, FL
WINDROSE
OCTOBER 15, 1991 - OCTOBER 14, 1992

10.5.6.3 Summary of On-Site Hourly Air Quality Monitoring Data (2/15/92 - 10/14/92)

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 02/ 15 /92
TO: 02/ 29 /92

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
15	999	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	6	0	1	0	0	0.4	23
16	999	0	0	0	0	0	0	2	0	5	1	4	1	0	0	0	20	93	26	13	12	14	14	11	9.4	23
17	999	3	5	2	0	0	0	0	0	0	999	999	0	0	999	0	0	0	2	1	0	0	1	2	0.8	20
18	999	1	0	0	3	2	0	0	0	999	999	1	0	0	0	0	0	0	0	3	4	0	0	0	0.7	21
19	999	0	0	0	0	0	0	0	0	0	0	0	0	0	11	74	8	10	0	0	0	0	0	0	4.5	23
20	999	0	0	1	1	4	4	3	1	1	2	2	2	2	2	1	1	0	1	1	0	0	1	0	1.3	23
21	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
22	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
23	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0.1	23
24	999	0	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	1	0	0	0	0.0	21
25	999	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	5	4	0	0	1	0.5	23
26	999	0	0	0	0	0	0	0	0	2	5	4	10	21	20	18	4	10	7	6	10	11	5	2	5.9	23
27	999	0	1	2	0	4	1	0	0	3	2	2	2	8	9	6	15	8	0	0	0	2	1	13	3.4	23
28	999	10	7	1	2	5	7	4	1	1	2	1	2	4	6	9	4	3	3	2	1	6	0	2	3.6	23
29	999	1	2	0	0	1	0	0	7	7	0	0	1	1	1	1	1	0	0	3	9	10	3	5	2.3	23
AVG	999	1	1	0	0	1	1	1	1	1	1	1	1	3	4	7	4	8	3	3	3	3	2	2		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	10	7	2	3	5	7	4	7	7	5	4	10	21	20	74	20	93	26	13	12	14	14	13		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 2
MINIMUM: 0
MAXIMUM: 93
OBSERVATIONS: 338
% DATA RECOVERY: 93.9

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 03/ 1 /92
TO: 03/ 31 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	5	1	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	1	2	3	5	0.9	23
2	999	0	0	0	0	0	0	0	0	1	7	1	0	999	999	0	0	0	0	1	0	0	0	0	0.5	21
3	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
4	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
5	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
6	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0.2	23
7	999	0	0	0	0	0	0	0	0	0	0	5	2	6	23	71	75	49	4	10	24	5	10	7	12.7	23
8	999	0	0	1	0	3	0	4	6	4	4	1	0	1	2	2	2	2	2	10	11	2	2	0	2.6	23
9	999	0	0	0	0	0	0	0	0	3	0	0	999	999	0	0	0	0	6	38	29	0	0	0	3.6	21
10	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
11	999	10	7	5	1	1	0	0	0	1	2	4	3	2	2	0	2	1	0	0	1	4	4	3	2.3	23
12	999	2	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	3	4	4	5	2	1.2	23
13	999	1	2	5	8	3	1	2	1	51	72	999	999	999	999	0	0	0	0	0	1	0	0	0	7.7	19
14	999	2	2	6	2	2	1	0	0	0	1	1	1	2	3	2	1	11	16	24	6	6	2	4	4.1	23
15	999	5	4	7	11	6	1	0	0	0	0	0	0	0	0	0	0	3	2	3	11	0	5	1	2.6	23
16	999	0	4	1	0	0	1	0	0	1	1	1	1	2	1	0	0	0	0	0	0	0	0	0	0.6	23
17	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
18	999	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0	0.0	21
19	999	0	0	0	6	0	0	2	1	0	0	0	0	0	11	10	2	5	12	4	0	1	6	12	3.1	23
20	999	0	0	0	0	0	4	10	2	1	0	0	0	0	0	0	1	8	3	1	1	0	0	3	1.5	23
21	999	0	0	0	0	0	0	0	1	3	2	1	1	1	1	1	1	0	0	0	2	5	3	1	1.0	23
22	999	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0.1	23
23	999	0	0	0	0	0	0	0	0	5	8	999	999	1	2	0	0	0	0	0	0	0	0	0	0.8	21
24	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
25	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
26	999	0	0	0	0	0	0	7	6	1	1	0	0	0	0	0	0	0	0	0	3	3	5	8	1.5	23
27	999	14	10	2	1	0	0	0	1	8	6	999	999	2	1	2	4	8	9	16	9	6	6	3	5.1	21
28	999	4	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	23
29	999	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	2	4	7	3	0	0	0.9	23
30	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0.2	23
31	999	0	0	2	0	0	0	3	0	0	0	2	4	7	8	6	8	10	13	17	11	3	4	5	4.5	23
AVG	999	1	1	1	1	0	0	1	1	3	3	1	0	1	2	3	3	3	2	4	4	1	2	2		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	14	10	7	11	6	4	10	6	51	72	5	4	7	23	71	75	49	16	38	29	6	10	12		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 2
MINIMUM: 0
MAXIMUM: 75
OBSERVATIONS: 699
% DATA RECOVERY: 94.0

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 04/ 1 /92
TO: 04/ 30 /92

DAY	HOUR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	2	1	3	1	1	0	0	12	5	4	23	37	13	2	5	11	19	0	0	0	4	3	3	6.5	23
2	999	3	9	5	1	0	2	4	3	0	0	999	999	999	0	0	0	1	0	1	0	1	3	1	1.7	20
3	999	4	0	0	0	0	0	2	3	2	2	2	2	1	1	1	0	1	0	0	0	0	1	7	1.3	23
4	999	1	0	0	0	0	0	0	2	1	1	0	3	2	4	10	11	15	8	16	8	0	0	0	3.6	23
5	999	9	0	5	1	4	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3	23
6	999	0	0	0	0	0	0	0	999	999	999	1	1	1	1	1	1	1	1	0	0	0	0	0	0.4	20
7	999	0	0	0	1	1	1	0	999	999	999	0	0	0	0	0	999	999	0	0	0	0	0	0	0.2	18
8	999	0	0	0	0	0	0	999	999	999	2	1	1	0	0	0	0	0	1	0	0	0	0	3	0.4	20
9	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
10	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0.0	23
11	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
12	999	0	0	0	0	0	0	0	0	0	0	0	1	18	22	0	0	0	0	0	0	0	0	0	1.8	23
13	999	0	0	0	1	0	0	0	3	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.3	23
14	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
15	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
16	999	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0	0.0	21
17	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
18	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
19	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
20	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
21	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
22	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
23	999	0	0	0	0	0	0	0	0	0	999	999	999	999	999	999	999	999	999	999	999	999	999	999	0.0	9
24	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
25	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
26	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
27	999	999	999	999	999	999	999	999	999	999	999	999	999	0	0	0	0	0	0	2	5	0	6	1	1.3	11
28	999	10	6	5	0	0	3	4	2	2	3	2	0	0	0	0	1	1	0	1	1	1	4	3	2.1	23
29	999	2	2	2	5	5	3	9	2	1	1	1	1	1	1	1	0	0	1	1	2	5	2	1	2.1	23
30	999	1	1	0	2	0	0	0	1	1	1	1	2	4	6	4	5	8	5	7	15	21	7	4	4.2	23
AVG	999	1	1	1	0	0	1	1	1	1	1	1	2	2	1	1	1	2	1	1	1	1	1	1		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	10	9	5	5	5	6	9	12	5	4	23	37	18	22	10	11	19	8	16	15	21	7	7		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 1
MINIMUM: 0
MAXIMUM: 37
OBSERVATIONS: 579
% DATA RECOVERY: 80.4

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 05/ 1 /92
TO: 05/ 31 /92

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	2	4	4	4	0	3	4	8	6	6	3	1	1	1	2	2	8	15	17	6	1	0	1	4.3	23
2	999	0	0	0	0	0	0	0	3	1	5	9	7	3	1	1	1	0	0	18	13	5	3	0	3.0	23
3	999	0	0	0	0	0	1	1	3	4	8	4	4	4	9	5	22	28	13	16	21	11	6	4	7.1	23
4	999	7	6	10	12	9	9	9	10	2	5	3	999	999	7	0	2	0	0	5	0	0	0	4	4.8	21
5	999	1	3	2	0	0	0	10	26	11	13	8	11	14	19	13	3	1	2	1	3	17	2	0	7.0	23
6	999	4	3	2	2	4	7	13	12	12	8	4	7	13	13	26	11	21	22	29	13	10	8	3	10.7	23
7	999	0	0	0	0	0	0	0	3	5	999	999	999	999	4	0	0	0	0	1	0	0	11	1	1.3	19
8	999	0	0	0	0	0	0	4	8	6	3	2	3	9	7	8	8	13	9	1	9	7	2	0	4.3	23
9	999	2	1	2	0	1	0	8	5	3	4	4	3	2	3	4	5	5	5	21	5	2	0	0	3.7	23
10	999	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	23
11	999	0	0	0	0	0	0	0	0	3	0	999	999	999	0	0	0	0	0	0	0	0	0	0	0.2	20
12	999	0	0	0	1	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	23
13	999	0	0	0	0	0	1	1	6	9	6	2	37	12	0	2	10	0	0	0	1	0	0	0	3.8	23
14	999	0	0	2	0	4	5	4	16	13	5	7	12	15	21	14	9	17	18	15	6	7	11	5	9.0	23
15	999	1	5	4	4	3	2	3	6	6	0	0	0	0	0	0	4	1	2	1	0	0	0	0	1.8	23
16	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
17	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
18	999	0	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0.0	21
19	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
20	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
21	999	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0	0	0.0	21
22	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
23	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
24	999	0	0	0	0	0	0	0	14	15	5	0	0	0	0	1	1	7	10	12	23	17	9	2	5.0	23
25	999	0	0	0	0	0	0	7	16	16	10	15	18	0	0	1	14	22	15	2	0	0	0	5	6.1	23
26	999	0	0	0	0	0	0	0	4	3	13	0	1	2	1	0	0	0	1	0	0	0	0	0	1.1	23
27	999	0	2	3	3	2	0	3	10	10	2	4	10	36	20	20	5	0	0	6	0	0	0	0	5.9	23
28	999	0	0	0	0	0	2	10	15	4	999	999	5	1	0	0	0	0	13	2	0	10	12	7	3.9	21
29	999	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	47	76	30	24	8	0	0	8.5	23
30	999	0	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0.4	23
31	999	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0.2	23
AVG	999	1	1	1	1	1	1	2	6	4	3	2	4	4	3	3	3	6	7	6	4	3	2	1		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	7	6	10	12	9	9	13	26	16	13	15	37	36	21	26	22	47	76	30	24	17	12	7		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 3
MINIMUM: 0
MAXIMUM: 76
OBSERVATIONS: 698
% DATA RECOVERY: 93.8

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 06/ 1 /92
TO: 06/ 30 /92

DAY	HOUR 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	1	3	6	6	2	0	0	0	0	3	5	5	0	0	1	5	49	31	9	5	7	7	3	6.4	23
2	999	4	3	2	1	0	0	0	0	4	5	4	3	3	4	0	0	0	0	0	0	0	0	0	1.4	23
3	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
4	999	0	0	0	0	0	0	0	6	0	999	999	999	999	39	13	0	0	0	0	0	0	0	0	3.1	19
5	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
6	999	3	0	0	0	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.3	23
7	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
8	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
9	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	0	0	0	0.3	23
10	999	0	0	0	0	0	0	0	6	4	26	52	37	13	13	18	5	1	0	0	0	0	0	0	7.6	23
11	999	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	5	0	0	0	0	0	0	0	0.5	23
12	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
13	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
14	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
15	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
16	999	999	999	999	999	999	999	999	999	999	999	999	999	0	0	0	0	0	999	999	999	999	999	999	0.0	5
17	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
18	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
19	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	1	1	8	6	0	0	0	2.3	7
20	0	3	0	0	0	0	0	6	12	14	7	4	4	2	5	15	17	2	14	7	2	0	0	0	4.8	24
21	0	0	0	0	0	2	0	2	0	0	5	3	10	4	0	0	0	2	0	0	0	0	2	0	1.3	24
22	0	0	0	0	0	0	0	1	0	0	0	0	0	0	16	17	7	12	11	28	24	2	0	0	4.9	24
23	0	0	0	0	0	0	0	0	2	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0.1	22
24	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	6	0	0	0	0	0	0.9	24
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	24
29	0	0	0	0	0	0	999	999	0	0	999	999	999	999	999	1	2	4	10	3	2	2	0	0	1.4	17
30	999	0	0	0	0	1	1	6	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	23
AVG	0	1	0	0	0	1	0	1	1	1	2	3	3	1	4	3	2	4	3	3	2	0	0	0		
MIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	0	4	3	6	6	4	1	6	12	14	26	52	37	13	39	18	17	49	31	28	24	7	7	3		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 2
MINIMUM: 0
MAXIMUM: 52
OBSERVATIONS: 515
% DATA RECOVERY: 71.5

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: SULFUR DIOXIDE | FROM: 07/ 1 /92

AGENCY: PRIVATE | METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE | TO: 07/ 31 /92

PROJECT: BACKGOUND SURVEILLANCE | UNITS: PARTS PER BILLION (VOL/VOL)

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	2	12	14	3	32	37	4.5	23
2	999	13	5	4	5	5	3	2	1	1	1	1	999	999	1	1	1	1	1	5	3	2	1	0	2.7	21
3	999	1	0	0	0	0	1	0	0	8	3	1	3	2	0	0	0	1	0	0	4	5	5	4	1.7	23
4	999	1	1	0	1	3	1	4	0	0	0	1	0	0	2	1	2	1	0	0	1	1	0	0	0.9	23
5	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	4	0.4	23
6	999	1	0	0	0	0	0	0	10	11	999	999	55	44	22	43	29	12	14	15	6	8	1	0	12.9	21
7	999	5	0	0	0	0	0	2	9	4	7	13	12	25	3	3	3	7	5	2	0	0	0	0	4.3	23
8	999	0	0	0	0	0	0	8	9	1	3	0	1	0	0	0	0	4	6	5	4	3	3	1	2.1	23
9	999	1	0	0	1	0	0	1	10	4	10	5	3	2	1	0	0	0	0	0	0	0	0	0	1.7	23
10	999	1	0	0	0	0	0	1	3	11	12	7	3	2	2	1	0	999	0	0	1	3	0	0	2.1	22
11	999	0	0	0	0	0	0	0	8	15	14	11	7	3	1	0	0	0	0	0	0	0	0	0	2.6	23
12	999	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0.2	23
13	999	0	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0.0	21
14	999	0	0	0	0	0	0	0	0	7	4	0	0	1	1	0	5	17	5	0	0	0	0	0	1.7	23
15	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	999	3	3	1	0	0	0	0.3	22
16	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
17	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
18	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	999	999	0	0.0	21
19	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
20	999	0	0	0	0	0	0	0	0	999	999	999	0	0	0	999	0	0	0	0	0	0	0	0	0.0	19
21	999	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	1	5	8	3	1	1	0.9	21
22	999	5	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	23
23	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	11	6	1	0.8	23
24	999	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	2	0	0	1	3	2	3	3	0.8	23
25	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	6	3	0.8	23
26	999	3	2	1	1	2	1	1	0	3	2	1	1	4	5	5	6	6	7	8	5	4	1	2	3.1	23
27	999	4	4	0	0	0	1	3	17	28	27	31	49	44	23	5	9	14	33	29	13	9	3	11	15.5	23
28	999	4	4	3	2	3	5	5	8	7	10	19	28	23	7	14	51	51	33	33	4	0	3	8	14.1	23
29	999	9	13	4	6	3	1	7	26	10	2	7	8	15	27	43	46	47	33	9	12	2	3	1	14.5	23
30	999	0	0	0	0	0	0	0	0	6	9	5	10	2	2	10	4	3	5	3	0	0	0	0	2.6	23
31	999	0	0	0	0	0	0	3	15	999	28	22	28	26	6	0	0	1	2	3	4	2	2	1	6.5	22
AVG	999	2	1	0	1	1	0	1	4	4	5	4	7	7	3	4	5	6	5	4	3	2	2	2		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	13	13	4	6	5	5	8	26	28	28	31	55	44	27	43	51	51	33	33	14	11	32	37		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 3

MINIMUM: 0

MAXIMUM: 55

OBSERVATIONS: 696

% DATA RECOVERY: 93.5

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 12-13-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 08/ 1 /92
TO: 08/ 31 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	0	0	0	0	0	0	0	12	17	7	6	5	7	7	3	8	6	3	0	0	0	0	0	3.5	23
2	999	0	0	0	0	0	0	1	5	6	4	3	2	3	1	5	1	0	1	2	0	0	0	0	1.5	23
3	999	0	0	0	0	0	0	0	0	7	5	35	9	4	8	4	15	16	0	0	0	3	0	0	4.6	23
4	999	0	0	0	0	0	0	3	6	9	8	11	22	6	6	6	2	7	2	0	0	0	0	0	3.8	23
5	999	0	0	0	0	0	0	2	1	10	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0.8	23
6	999	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0	0	0.0	21
7	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0.2	23
8	999	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	3	3	2	0.4	23
9	999	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	0	0	0.3	23
10	999	0	0	0	0	0	0	0	0	0	0	2	1	0	6	16	32	26	11	0	0	1	0	0	4.1	23
11	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
12	999	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0.1	23
13	999	0	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	1	0	0	0	0.0	21
14	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0.2	23
15	999	0	0	0	0	0	0	0	0	0	0	0	0	1	4	8	13	13	0	0	0	0	0	0	1.7	23
16	999	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0.1	23
17	999	0	0	0	0	0	0	0	0	999	999	999	0	0	0	0	0	0	13	11	9	2	0	0	1.8	20
18	999	0	0	0	0	0	0	0	0	1	6	6	4	4	2	1	1	3	15	9	6	0	0	0	2.5	23
19	999	0	0	0	0	0	1	2	2	0	0	1	2	1	1	0	0	0	0	0	0	0	1	1	0.5	23
20	999	0	0	0	0	0	0	1	2	11	999	999	4	3	0	0	1	3	6	0	0	0	0	0	1.5	21
21	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
22	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
23	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
24	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
25	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
26	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
27	999	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	4	3	0	0	0	0	0.4	23
28	999	0	0	0	0	0	0	7	2	0	0	999	999	0	0	0	0	9	14	5	0	0	0	0	1.8	21
29	999	0	0	0	0	0	0	0	0	0	0	0	0	1	4	10	29	36	34	20	1	0	0	0	5.9	23
30	999	0	0	0	0	0	0	1	3	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0.3	23
31	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
AVG	999	0	0	0	0	0	0	1	1	2	1	3	2	1	1	2	3	4	3	2	1	0	0	0		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	1	0	0	0	0	1	7	12	17	8	35	22	7	8	16	32	36	34	20	9	3	3	2		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 1
MINIMUM: 0
MAXIMUM: 36
OBSERVATIONS: 702
% DATA RECOVERY: 94.4

EBASCO ENVIRONMENTAL AIR QUALITY/METEOROLOGY DATA SUMMARY 12-13-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: POLLUTANT: SULFUR DIOXIDE FROM: 09/ 1 /92
AGENCY: PRIVATE METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE TO: 09/ 30 /92
PROJECT: BACKGOUND SURVEILLANCE UNITS: PARTS PER BILLION (VOL/VOL)

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
2	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
3	999	0	0	0	0	0	0	0	0	0	999	999	0	0	0	0	0	0	0	0	0	0	0	0	0.0	21
4	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
5	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
6	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
7	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
8	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
9	999	0	0	0	0	0	0	0	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	22
10	999	0	0	0	0	0	0	0	0	3	0	999	999	2	4	10	11	6	3	0	0	0	0	0	1.9	21
11	999	0	0	0	0	0	0	0	0	15	30	17	5	13	14	5	2	0	0	0	0	0	0	0	4.4	23
12	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
13	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
14	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
15	999	0	0	0	0	0	0	0	0	999	999	999	999	999	0	0	0	0	0	0	0	0	0	0	0.0	18
16	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
17	999	0	0	0	0	0	0	0	0	0	0	16	999	999	0	0	0	0	0	0	0	0	0	0	0.8	21
18	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	3	4	0.7	23
19	999	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	3	0	0	0	0	0	0.6	23
20	999	0	0	0	0	0	0	0	0	0	1	0	0	3	2	1	1	0	0	0	0	0	0	0	0.3	23
21	999	0	0	0	0	0	0	0	5	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0.4	23
22	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	6	4	2	4	5	2	0	1.2	23
23	999	0	0	0	0	0	0	0	2	8	3	2	2	0	0	0	0	0	0	0	4	6	3	0	1.3	23
24	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
25	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
26	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
27	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.0	23
28	999	0	0	0	3	2	2	3	1	1	1	999	999	1	1	0	0	0	0	0	0	0	1	1	0.8	21
29	999	3	4	3	2	2	3	4	6	3	3	1	0	0	2	1	0	0	0	0	0	0	0	0	1.6	23
30	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.0	23
AVG	999	0	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	0	0	0	1	0	0		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	3	4	3	3	2	3	4	6	15	30	17	5	13	14	10	11	8	4	2	4	10	3	4		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 0
MINIMUM: 0
MAXIMUM: 30
OBSERVATIONS: 676
% DATA RECOVERY: 93.9

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: SULFUR DIOXIDE
METHOD: INSTRUMENTAL UV STIMU. FLOURESCENCE
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 10/ 1 /92
TO: 10/ 14 /92

	HOUR																								
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
2	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
3	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
4	999	0	0	0	0	0	0	0	0	0	1	4	5	6	9	7	2	1	0	0	0	0	1	5	1.8	23
5	999	3	1	0	1	0	0	0	7	2	2	2	3	3	999	3	4	2	3	1	2	1	0	0	1.8	22
6	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
7	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
8	999	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5	1	1	0	0	0.3	23
9	999	0	0	0	0	0	0	0	0	12	17	12	7	3	1	0	0	0	7	8	0	0	0	0	2.9	23
10	999	0	0	1	2	2	2	0	0	1	1	6	2	1	1	3	2	1	2	0	0	8	4	1	1.7	23
11	999	0	0	0	0	0	0	0	0	0	0	2	15	4	3	1	5	23	11	5	4	2	1	2	3.4	23
12	999	0	1	0	0	0	0	999	999	999	2	2	2	2	999	3	4	3	6	6	3	3	3	1	2.2	19
13	999	0	0	0	1	1	1	0	1	999	999	2	3	2	1	1	1	1	1	1	4	5	1	0	1.3	21
14	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	23
AVG	999	0	0	0	0	0	0	0	1	1	2	2	3	2	1	1	1	2	2	2	1	1	1	1		
MIN	999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MAX	999	3	1	1	2	2	2	0	7	12	17	12	15	6	9	7	5	23	11	8	4	8	4	5		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 1
MINIMUM: 0
MAXIMUM: 23
OBSERVATIONS: 315
% DATA RECOVERY: 93.8

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: — POLLUTANT: OZONE — FROM: 02/ 15 /92

AGENCY: PRIVATE — METHOD: INSTRUMENTAL UV DASIBI CORP. — TO: 02/ 29 /92

PROJECT: BACKGOUND SURVEILLANCE — UNITS: PARTS PER BILLION (VOL/VOL)

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
15	25	22	20	20	13	9	8	3	16	32	37	39	40	44	48	48	42	39	37	33	26	25	27	26	28.3	24
16	21	18	22	14	17	19	25	24	25	28	32	39	41	40	35	38	31	25	24	18	5	5	2	3	23.0	24
17	3	1	2	1	11	8	9	13	18	21	29	35	38	999	999	999	40	42	35	28	36	32	23	22	21.3	21
18	24	23	25	22	19	17	11	4	13	19	22	999	999	38	44	41	39	39	37	29	22	18	17	14	24.4	22
19	15	16	13	16	17	18	18	18	18	22	25	25	28	32	30	18	30	21	28	25	11	7	8	3	19.3	24
20	4	6	1	9	16	25	23	19	27	34	33	39	49	56	60	61	60	58	56	49	47	45	36	37	35.4	24
21	37	35	31	31	30	31	27	24	29	34	43	49	50	55	52	47	47	45	42	39	38	36	36	36	38.5	24
22	37	32	31	29	25	23	18	15	24	27	27	28	28	29	29	28	28	24	23	23	21	18	17	19	25.1	24
23	12	9	7	10	10	8	7	11	15	18	24	28	30	36	38	35	34	31	26	24	20	17	13	5	19.5	24
24	4	7	6	7	3	6	4	3	12	17	25	29	30	34	999	999	18	17	25	26	22	21	25	27	16.7	22
25	28	27	21	20	18	19	11	12	16	22	23	24	22	26	25	28	29	27	21	22	25	27	26	21	22.5	24
26	20	20	21	22	22	20	21	20	22	29	34	41	38	35	41	45	50	43	39	39	38	40	36	32	32.0	24
27	33	35	35	37	37	36	38	38	37	39	42	45	50	47	46	51	36	35	37	30	28	27	27	21	37.0	24
28	20	22	30	34	35	32	30	31	39	43	47	48	51	52	53	51	55	53	49	46	42	38	41	42	41.0	24
29	41	41	40	40	37	33	26	27	36	43	49	54	60	67	68	67	67	63	54	50	43	32	31	28	45.7	24
AVG	22	21	20	21	21	20	18	17	23	29	33	37	40	42	44	43	40	37	36	32	28	26	24	22		
MIN	3	1	1	1	3	6	4	3	12	17	22	24	22	26	25	18	18	17	21	18	5	5	2	3		
MAX	41	41	40	40	37	36	38	38	39	43	49	54	60	67	68	67	67	63	56	50	47	45	41	42		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 29
MINIMUM: 1
MAXIMUM: 68
OBSERVATIONS: 353
% DATA RECOVERY: 98.1

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 03/ 1 /92
TO: 03/ 31 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	28	32	30	28	22	14	7	12	29	47	58	66	67	68	68	67	66	65	60	57	30	53	40	36	43.8	24
2	29	35	33	42	43	47	50	25	37	47	57	999	999	999	70	71	72	70	52	25	49	48	44	35	46.7	21
3	32	31	25	16	20	9	4	5	23	49	58	68	67	66	63	63	61	54	52	51	54	49	44	44	42.0	24
4	40	37	34	27	25	18	10	10	16	30	38	41	43	41	38	33	34	35	30	29	28	19	26	28	29.6	24
5	27	26	26	28	25	25	21	23	31	36	39	42	44	47	48	48	47	43	40	36	33	30	26	22	33.9	24
6	21	20	18	16	14	14	9	9	21	28	33	34	36	40	49	53	47	35	28	24	20	18	14	1	25.1	24
7	5	7	5	4	16	13	16	17	15	14	20	22	30	28	23	17	15	19	26	15	6	11	11	7	15.1	24
8	2	14	14	14	15	19	19	20	26	29	36	45	54	58	61	63	64	63	44	20	33	32	25	16	32.8	24
9	21	19	13	17	13	8	7	6	27	38	43	49	49	50	47	50	53	51	51	49	48	54	44	43	35.4	24
10	41	35	29	29	28	27	23	23	29	29	30	33	35	33	31	30	31	31	31	29	30	34	38	39	31.2	24
11	34	25	28	28	29	29	25	27	34	30	28	32	39	42	44	52	50	44	38	34	37	34	30	26	34.1	24
12	23	21	26	25	24	19	16	22	23	24	29	30	31	30	25	24	32	31	29	26	25	28	35	34	26.3	24
13	32	30	28	31	31	32	31	27	36	42	48	49	999	999	58	63	60	54	48	41	37	39	43	44	41.1	22
14	45	42	43	46	43	40	34	32	35	39	42	45	50	55	59	64	62	61	53	40	37	39	40	36	45.1	24
15	36	42	35	32	31	28	26	33	44	49	59	63	66	70	72	74	75	72	66	57	47	45	37	37	49.8	24
16	36	37	35	39	38	34	38	41	41	42	44	45	50	50	55	59	62	65	51	44	45	42	37	37	44.5	24
17	39	36	30	26	30	33	17	17	39	50	58	61	62	63	65	67	67	62	53	48	41	40	38	29	44.6	24
18	29	22	27	25	28	20	10	14	32	39	43	43	46	46	44	44	50	49	42	33	30	26	18	16	32.3	24
19	17	20	21	20	19	17	18	21	26	30	34	36	37	36	31	36	37	33	32	24	23	20	17	20	26.0	24
20	27	27	28	28	27	30	34	38	48	52	53	999	999	52	52	54	52	42	42	40	41	39	38	34	39.9	22
21	35	38	38	36	33	29	31	28	31	39	48	53	56	60	64	67	69	65	64	55	46	43	29	35	45.5	24
22	37	33	31	21	23	29	25	17	29	37	42	46	47	46	44	40	37	40	36	31	29	31	37	35	34.3	24
23	33	32	35	37	36	33	30	27	30	33	38	44	39	999	39	43	43	44	43	37	32	36	34	30	36.0	23
24	27	18	24	33	30	28	23	25	33	37	42	51	57	56	55	54	51	50	48	45	43	41	40	38	39.5	24
25	40	39	38	33	28	23	22	25	35	44	45	47	46	46	47	47	46	43	38	35	31	30	27	23	36.6	24
26	20	24	23	23	21	16	3	7	23	37	48	54	58	59	60	60	60	58	54	47	42	42	37	30	37.8	24
27	30	23	22	20	26	21	18	12	29	46	59	65	68	999	999	76	88	83	64	48	37	38	39	41	43.3	22
28	40	37	38	36	37	33	33	31	31	41	46	53	60	67	74	78	77	67	58	53	35	25	36	36	46.8	24
29	38	38	34	38	36	33	28	38	46	54	70	72	72	71	71	65	59	71	62	56	43	44	34	38	50.5	24
30	33	36	31	26	30	37	22	19	38	47	50	50	54	56	56	56	52	44	33	33	38	37	34	34	39.4	24
31	35	35	32	31	29	25	24	32	44	49	58	62	61	58	61	64	58	48	37	27	23	26	21	21	40.0	24
AVG	30	29	28	28	27	25	22	22	32	39	45	48	51	52	52	54	54	51	45	38	35	35	33	30		
MIN	2	7	5	4	13	8	3	5	15	14	20	22	30	28	23	17	15	19	26	15	6	11	11	1		
MAX	45	42	43	46	43	47	50	41	48	54	70	72	72	71	74	78	88	83	66	57	54	54	44	44		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 38
MINIMUM: 1
MAXIMUM: 88
OBSERVATIONS: 734
% DATA RECOVERY: 98.7

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 04/ 1 /92
TO: 04/ 30 /92

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	23	21	22	22	26	25	4	12	38	45	48	47	43	56	82	83	70	63	61	50	45	41	40	36	41.8	24
2	36	34	31	34	37	35	32	36	48	54	59	64	69	999	999	999	69	65	61	52	47	42	43	46	47.3	21
3	44	41	37	34	35	31	24	32	37	39	41	43	42	42	41	47	53	49	43	32	33	28	23	24	37.3	24
4	33	36	33	40	44	45	38	41	50	55	59	60	64	65	69	60	63	54	48	34	46	51	50	48	49.4	24
5	45	42	38	32	35	37	38	42	57	65	66	68	70	72	75	77	77	64	60	57	56	54	53	51	55.5	24
6	47	43	41	40	35	29	30	37	48	54	56	59	999	999	999	62	59	57	50	46	43	35	37	43	45.3	21
7	46	46	45	38	25	11	9	23	36	42	999	999	999	37	38	35	38	41	44	41	35	30	28	28	34.1	21
8	30	31	27	27	27	26	23	23	26	34	40	47	53	58	66	69	69	64	50	49	42	34	32	24	40.5	24
9	35	35	34	35	33	28	29	30	32	39	46	49	51	52	52	57	51	49	45	42	37	32	31	28	39.7	24
10	24	20	19	14	10	10	4	12	24	33	39	41	42	46	47	49	45	41	42	38	30	23	21	16	28.8	24
11	15	10	11	11	11	8	15	20	26	31	34	35	37	38	38	38	38	38	30	24	25	25	22	22	25.1	24
12	17	27	33	39	40	35	30	34	37	35	37	39	35	34	35	40	35	31	27	19	10	19	9	11	29.5	24
13	14	12	7	3	2	2	7	16	25	31	38	999	999	55	53	47	44	43	40	39	40	41	43	43	29.3	22
14	42	41	39	38	37	35	33	34	38	41	45	49	51	51	51	50	48	44	42	38	36	34	29	30	40.7	24
15	27	24	18	19	19	14	12	19	32	42	47	50	51	50	51	49	48	48	45	43	40	37	32	34	35.5	24
16	30	28	25	22	21	20	21	28	47	52	53	55	57	57	57	53	54	50	47	45	42	40	39	34	40.7	24
17	31	28	28	27	20	21	10	26	42	48	50	52	54	56	57	59	54	52	48	43	39	33	32	29	39.1	24
18	30	29	23	23	20	13	9	24	38	44	46	48	49	51	52	52	52	50	42	42	39	36	35	33	36.7	24
19	31	28	27	26	25	23	22	26	30	33	36	38	39	39	38	35	33	33	31	28	31	33	27	20	30.5	24
20	21	21	25	26	23	15	11	21	24	25	28	999	999	37	41	44	41	36	30	32	23	17	20	10	26.0	22
21	9	10	9	9	8	6	7	10	13	15	22	28	24	20	22	25	24	24	24	25	26	24	20	18	17.6	24
22	13	9	1	1	3	2	3	10	19	24	27	30	31	33	35	37	38	35	33	32	26	26	23	18	21.2	24
23	16	15	17	11	6	2	5	13	21	30	37	39	38	39	38	37	39	35	34	34	30	31	22	20	25.4	24
24	15	17	13	6	7	2	1	10	29	36	42	50	54	44	47	44	48	48	40	34	19	26	33	30	29.0	24
25	27	29	24	16	15	11	10	14	16	19	25	30	35	33	30	34	41	23	17	28	22	21	18	18	23.2	24
26	23	23	32	34	35	32	34	36	37	40	44	48	50	50	51	49	48	47	43	41	38	38	35	31	39.1	24
27	30	30	28	29	32	30	27	29	35	38	38	41	999	999	54	53	53	52	50	48	44	41	39	37	39.0	22
28	32	30	29	34	37	39	37	36	42	46	47	49	53	54	54	56	60	60	56	51	46	43	43	37	44.6	24
29	38	39	26	24	24	25	27	31	999	999	999	999	999	999	999	74	75	73	61	37	44	47	44	45	43.2	17
30	34	43	24	21	4	14	19	27	48	58	67	71	75	81	84	86	90	90	73	70	60	35	43	48	52.7	24
AVG	29	28	26	25	23	21	19	25	34	40	43	47	49	48	50	52	52	49	44	40	36	34	32	30		
MIN	9	9	1	1	2	2	1	10	13	15	22	28	24	20	22	25	24	23	17	19	10	17	9	10		
MAX	47	46	45	40	44	45	38	42	57	65	67	71	75	81	84	86	90	90	73	70	60	54	53	51		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 36
MINIMUM: 1
MAXIMUM: 90
OBSERVATIONS: 698
% DATA RECOVERY: 96.9

EBASCO ENVIRONMENTAL | AIR QUALITY/METEOROLOGY DATA SUMMARY | 12-13-1992
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: | POLLUTANT: OZONE | FROM: 05/ 1 /92
AGENCY: PRIVATE | METHOD: INSTRUMENTAL UV DASIBI CORP. | TO: 05/ 31 /92
PROJECT: BACKGOUND SURVEILLANCE | UNITS: PARTS PER BILLION (VOL/VOL)

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	46	47	46	41	31	36	38	42	58	67	71	76	81	83	84	83	81	76	59	44	56	51	51	52	58.3	24
2	52	47	25	25	24	27	12	39	54	67	72	76	80	83	93	95	85	78	58	43	47	50	33	46	54.6	24
3	43	37	39	41	36	26	19	35	49	60	64	73	75	80	82	80	79	70	61	41	21	24	25	24	49.3	24
4	24	23	24	22	19	20	20	25	34	46	59	68	71	65	71	63	60	56	52	48	45	999	999	999	43.6	21
5	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
6	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
7	999	999	999	999	999	999	999	999	999	999	999	999	999	999	57	57	56	54	54	51	49	46	38	38	50.0	10
8	37	33	29	27	25	17	14	30	39	54	62	65	68	64	65	61	63	59	60	61	60	53	46	40	47.2	24
9	33	33	36	36	17	8	6	28	60	65	68	69	68	68	69	74	78	79	76	50	52	48	43	39	50.1	24
10	40	42	38	41	41	34	32	37	57	68	71	71	71	72	72	71	71	72	66	55	52	52	55	49	55.4	24
11	43	48	33	27	32	25	8	33	58	65	76	94	76	75	77	72	71	74	69	62	58	53	50	49	55.3	24
12	46	44	41	26	8	1	3	33	58	67	76	82	87	89	90	91	90	90	81	64	66	58	57	50	58.3	24
13	43	42	33	43	40	29	12	44	53	59	70	78	62	66	55	50	53	49	40	40	43	48	48	51	48.0	24
14	49	45	41	35	44	43	34	34	40	50	66	999	999	82	86	91	88	65	55	46	53	45	38	37	53.0	22
15	38	42	38	19	11	9	6	26	52	64	62	61	59	57	53	54	66	59	55	42	38	37	43	37	42.8	24
16	28	27	24	17	20	20	18	21	23	28	34	37	39	39	33	32	30	32	26	23	20	18	19	17	26.0	24
17	15	14	12	11	13	14	15	21	25	28	29	30	31	29	26	27	28	26	26	24	20	17	18	16	21.5	24
18	14	13	9	10	9	6	7	16	24	28	31	34	35	999	999	34	34	32	31	28	22	18	14	11	20.9	22
19	11	12	11	10	8	2	5	15	27	33	36	37	37	37	38	38	39	38	37	30	27	25	21	18	24.7	24
20	15	13	13	12	11	7	12	24	37	46	53	56	58	59	58	57	57	54	52	48	43	38	43	38	37.7	24
21	37	37	37	36	35	29	29	32	37	999	999	55	56	57	57	48	48	46	45	40	35	27	24	24	39.6	22
22	23	30	30	29	33	32	24	33	43	48	51	53	54	55	53	50	48	42	38	35	32	27	25	19	37.8	24
23	17	15	13	17	20	23	26	30	34	40	44	46	48	47	53	60	68	67	56	43	40	36	34	31	37.8	24
24	27	29	29	30	22	11	5	20	33	42	67	70	70	70	73	77	75	74	60	48	32	31	28	33	44.0	24
25	25	26	28	8	10	11	16	33	54	62	69	71	73	71	72	72	70	62	62	64	61	52	48	44	48.5	24
26	38	41	18	9	11	22	21	30	46	60	60	65	63	68	68	65	62	64	58	50	43	40	35	31	44.5	24
27	30	28	26	27	26	20	9	13	25	45	58	65	70	63	78	79	83	63	61	49	47	36	35	38	44.8	24
28	27	18	11	19	8	10	16	25	37	49	54	59	999	999	52	55	52	48	37	36	35	26	21	19	32.5	22
29	22	12	10	9	13	6	4	15	28	36	44	46	47	48	52	56	54	36	20	24	21	19	32	33	28.6	24
30	24	18	15	13	11	12	16	21	27	35	43	47	50	53	51	50	51	52	51	57	53	42	31	31	35.6	24
31	31	24	21	9	9	9	18	25	31	42	50	54	53	58	61	67	71	66	62	51	24	19	18	15	37.0	24
AVG	31	30	26	23	21	18	16	28	41	50	57	61	61	63	64	62	62	58	52	45	41	37	35	33		
MIN	11	12	9	8	8	1	3	13	23	28	29	30	31	29	26	27	28	26	20	23	20	17	14	11		
MAX	52	48	46	43	44	43	38	44	60	68	76	94	87	89	93	95	90	90	81	64	66	58	57	52		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 42
MINIMUM: 1
MAXIMUM: 95
OBSERVATIONS: 671
% DATA RECOVERY: 90.2

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 06/ 1 /92
TO: 06/ 30 /92

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	13	9	7	5	3	3	5	21	35	44	49	999	999	999	48	51	70	49	43	65	61	45	33	29	32.8	21
2	27	25	16	23	17	13	9	20	27	50	66	72	74	78	79	56	53	48	44	38	28	33	38	35	40.4	24
3	29	22	25	23	20	16	15	13	12	13	17	22	22	21	24	25	20	23	20	19	20	18	19	19	19.9	24
4	18	16	14	12	11	10	10	10	13	14	17	22	22	21	18	22	21	19	16	14	12	9	7	8	14.8	24
5	8	7	8	9	9	9	8	10	12	15	18	32	28	26	23	22	22	22	19	12	11	9	6	6	14.6	24
6	8	10	10	11	10	8	4	7	12	17	18	16	17	22	22	19	19	21	20	16	14	12	11	10	13.9	24
7	7	8	7	10	8	5	7	15	19	24	25	25	26	27	24	25	26	24	25	21	21	21	17	16	18.0	24
8	12	13	9	7	8	1	8	10	15	19	22	999	999	28	28	29	29	30	29	27	20	16	18	7	17.5	22
9	8	8	12	5	3	1	4	13	16	21	25	26	28	29	30	32	34	36	36	29	28	25	22	21	20.5	24
10	18	15	13	13	13	13	14	17	24	25	23	21	31	49	67	62	58	48	27	17	13	8	4	4	24.9	24
11	4	2	4	1	1	1	4	9	14	17	28	41	55	57	63	61	56	52	40	24	15	9	13	6	24.0	24
12	5	3	1	2	2	1	3	6	11	14	999	999	999	999	51	42	41	37	20	10	31	34	31	27	18.6	20
13	22	18	17	18	17	16	17	19	17	16	17	18	20	32	24	20	18	36	31	22	21	18	15	13	20.1	24
14	14	13	16	14	12	8	9	11	15	22	24	30	33	30	30	36	39	35	21	17	9	6	2	3	18.7	24
15	6	8	10	6	5	8	11	13	18	19	28	33	36	34	34	999	999	35	29	29	36	32	28	23	21.9	22
16	30	25	25	20	15	15	10	20	25	30	40	999	999	55	55	55	60	50	999	999	999	999	999	999	33.1	16
17	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
18	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
19	999	999	999	999	999	999	999	999	999	999	999	999	999	44	44	46	47	49	46	42	37	40	41	35	42.8	11
20	37	34	30	19	23	19	20	27	39	46	60	66	74	75	83	69	65	59	48	50	51	49	44	32	46.6	24
21	28	28	27	24	29	30	33	37	49	57	63	67	75	71	60	60	64	68	63	57	54	50	43	40	49.0	24
22	40	30	26	25	23	27	23	33	49	53	54	55	65	63	59	62	76	70	58	41	33	31	33	32	44.2	24
23	26	22	20	17	13	10	8	18	22	24	25	29	28	31	26	25	28	27	23	17	18	18	22	21	21.6	24
24	17	17	18	17	16	18	12	11	16	20	19	18	18	20	20	23	25	26	25	23	21	19	11	11	18.4	24
25	10	11	11	10	10	8	9	12	16	17	999	999	12	21	20	26	26	27	27	26	25	26	26	25	18.2	22
26	23	21	20	23	24	23	21	18	21	21	22	22	23	24	22	22	24	24	20	19	16	13	11	12	20.4	24
27	11	13	14	13	10	9	10	11	14	18	19	19	19	19	22	22	19	8	13	11	13	15	18	17	14.9	24
28	14	14	13	13	14	13	11	13	20	22	20	19	22	23	21	22	22	21	22	20	17	15	13	11	17.3	24
29	10	13	13	13	14	13	999	999	15	17	999	22	22	22	24	24	21	29	29	20	11	11	14	14	17.7	21
30	14	12	12	12	12	12	10	11	15	22	22	20	22	22	24	24	22	20	18	17	14	13	11	11	16.3	24
AVG	17	15	15	14	13	11	11	16	21	25	30	32	34	36	37	36	37	35	30	26	24	22	20	18		
MIN	4	2	1	1	1	1	3	6	11	13	17	16	12	19	18	19	18	8	13	10	9	6	2	3		
MAX	40	34	30	25	29	30	33	37	49	57	66	72	75	78	83	69	76	70	63	65	61	50	44	40		

999 *Indicates missing data or calibration activities.*

MONTHLY SUMMARY

AVERAGE: 24
MINIMUM: 1
MAXIMUM: 83
OBSERVATIONS: 635
% DATA RECOVERY: 88.2

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 07/ 1 /92
TO: 07/ 31 /92

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	10	10	11	7	8	7	8	14	21	22	23	24	25	27	28	30	29	31	35	22	10	10	4	3	17.5	24
2	3	3	3	3	3	3	4	10	20	37	54	56	999	999	55	57	58	52	46	70	54	34	25	18	30.4	22
3	15	12	10	11	10	11	12	19	24	25	35	51	65	65	46	34	31	30	27	23	19	12	6	6	25.0	24
4	7	8	8	10	12	12	11	18	29	35	42	45	48	47	49	54	61	56	54	44	38	33	31	32	32.7	24
5	29	16	24	27	26	23	20	25	43	54	57	60	64	67	67	68	69	69	65	58	48	52	49	50	47.1	24
6	48	45	32	30	31	22	26	33	46	67	76	999	80	87	95	86	90	90	76	58	50	39	39	57	56.7	23
7	56	51	45	38	28	24	21	29	39	46	52	53	72	72	70	62	50	48	45	34	28	29	23	26	43.4	24
8	20	10	11	12	14	7	18	29	40	54	59	62	63	64	67	67	67	70	69	63	45	38	36	32	42.4	24
9	33	18	20	15	25	22	22	25	24	27	38	52	59	62	64	63	62	67	58	42	39	28	30	26	38.4	24
10	25	34	30	22	18	8	6	16	25	43	999	999	69	66	61	53	55	999	46	39	36	35	33	14	35.0	21
11	12	17	18	18	23	11	8	21	34	33	40	61	68	73	71	70	72	64	46	33	25	20	18	22	36.6	24
12	9	10	15	13	12	8	9	12	13	23	29	30	32	34	34	35	39	38	35	27	19	23	22	21	22.6	24
13	17	13	7	6	11	7	7	17	23	25	27	28	30	33	32	31	31	30	27	21	14	12	11	9	19.5	24
14	6	6	7	9	7	9	8	20	29	35	39	38	40	44	48	49	46	36	41	43	37	30	29	25	28.4	24
15	22	17	13	11	13	7	8	18	24	30	33	32	33	33	34	38	35	999	32	25	20	21	17	16	23.1	23
16	16	13	8	6	9	8	14	18	23	29	31	999	35	33	37	40	40	40	38	43	38	37	28	23	26.4	23
17	17	14	13	14	10	6	6	12	19	24	28	31	33	34	34	37	35	32	35	33	26	23	19	15	22.9	24
18	14	13	8	10	9	7	7	14	21	26	27	31	31	32	33	33	36	37	36	30	23	999	999	15	22.4	22
19	13	10	10	10	11	10	14	24	25	27	28	29	29	28	32	31	25	23	23	22	10	9	11	14	19.5	24
20	8	10	8	6	6	4	6	13	18	24	28	32	33	32	999	999	30	28	24	18	13	15	13	12	17.3	22
21	12	11	11	10	6	5	7	14	20	999	999	31	32	34	31	31	28	30	26	27	26	12	12	15	19.6	22
22	8	11	13	11	7	6	9	18	25	29	32	33	35	37	36	35	32	34	30	25	20	19	18	16	22.5	24
23	15	14	12	10	6	7	9	14	21	27	999	999	999	999	999	28	25	27	27	24	24	18	16	7	17.4	19
24	7	8	10	12	11	8	9	17	22	28	33	33	33	32	32	33	33	30	29	27	11	5	3	5	19.6	24
25	11	12	14	14	13	11	10	17	17	20	25	27	27	28	28	30	30	31	23	13	24	29	24	18	20.7	24
26	16	17	9	3	7	7	10	19	28	37	44	45	49	54	56	59	57	55	51	42	33	24	13	14	31.2	24
27	9	9	4	4	6	5	9	15	19	22	32	37	34	36	54	61	59	45	31	18	17	11	8	7	23.0	24
28	7	5	3	4	3	3	3	6	15	20	27	30	32	37	51	60	37	28	24	13	18	16	12	8	19.3	24
29	6	7	4	2	2	2	4	9	13	24	33	44	56	67	64	65	60	45	40	40	23	21	17	14	27.6	24
30	10	7	9	3	8	2	3	8	17	25	30	35	44	34	42	33	24	24	21	17	5	3	5	8	17.4	24
31	11	7	10	6	6	5	3	13	19	22	15	999	33	32	40	46	40	36	29	27	21	13	17	17	20.3	23
AVG	16	14	13	12	12	9	10	17	24	31	36	40	44	46	48	47	45	42	38	33	26	22	20	18		
MIN	3	3	3	2	2	2	3	6	13	20	15	24	25	27	28	28	24	23	21	13	5	3	3	3		
MAX	56	51	45	38	31	24	26	33	46	67	76	62	80	87	95	86	90	90	76	70	54	52	49	57		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE:	27
MINIMUM:	2
MAXIMUM:	95
OBSERVATIONS:	724
% DATA RECOVERY:	97.3

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA: — POLLUTANT: OZONE — FROM: 08/ 1 /92

AGENCY: PRIVATE — METHOD: INSTRUMENTAL UV DASIBI CORP. — TO: 08/ 31 /92

PROJECT: BACKGOUND SURVEILLANCE — UNITS: PARTS PER BILLION (VOL/VOL)

	HOUR																									
DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	18	11	8	6	6	5	3	10	17	17	27	34	40	45	53	53	45	36	31	38	29	25	23	17	24.9	24
2	21	19	12	14	17	12	13	19	33	37	42	46	47	48	49	51	48	48	42	40	39	27	27	22	32.2	24
3	29	24	21	18	17	10	7	22	32	40	40	40	45	38	35	51	57	54	58	48	34	31	26	23	33.3	24
4	21	23	18	14	13	10	10	14	19	30	42	45	46	47	40	32	32	36	33	24	21	19	17	16	25.9	24
5	17	13	12	5	4	6	3	13	24	32	35	38	38	33	38	33	29	23	23	17	11	15	15	9	20.3	24
6	8	9	9	8	8	2	7	18	24	29	30	999	999	29	33	33	28	30	27	18	16	15	11	13	18.4	22
7	11	11	11	15	16	9	7	17	20	23	28	29	26	24	23	19	20	22	18	14	14	16	10	4	17.0	24
8	8	12	13	15	14	6	8	14	20	28	29	28	30	29	33	29	27	23	27	25	17	17	15	11	19.9	24
9	8	6	6	6	8	6	5	9	15	19	23	28	32	32	29	39	38	33	28	29	30	19	14	18	20.0	24
10	17	11	6	10	6	4	6	17	32	39	43	47	49	49	53	61	60	66	56	38	38	33	15	17	32.2	24
11	13	13	11	12	8	5	9	18	29	33	38	39	37	35	30	28	25	19	15	11	8	9	8	9	19.3	24
12	9	10	11	8	8	5	10	14	19	23	26	29	29	32	27	30	27	26	24	23	21	20	18	17	19.4	24
13	14	15	17	16	11	7	6	12	17	21	24	24	23	999	999	28	31	36	31	29	26	19	14	9	19.5	22
14	13	16	16	16	12	6	10	14	17	19	22	22	29	31	29	22	20	23	23	19	15	11	13	16	18.1	24
15	15	11	12	6	12	15	16	18	21	24	24	24	22	26	28	30	30	25	23	16	14	17	19	16	19.3	24
16	15	10	9	8	10	13	16	19	24	26	29	31	34	30	36	32	33	30	29	20	18	14	12	11	21.2	24
17	12	11	8	8	8	4	9	13	22	30	32	32	29	31	33	35	31	38	31	27	22	22	23	23	22.3	24
18	21	18	11	17	6	4	3	16	24	36	47	46	52	52	50	51	54	52	66	72	53	40	36	34	35.9	24
19	27	25	24	25	22	18	14	16	26	37	47	56	54	49	50	47	45	40	39	39	25	22	20	24	33.0	24
20	14	11	13	13	10	12	5	21	32	32	35	999	999	999	45	40	34	28	30	33	28	25	27	22	24.3	21
21	17	15	9	7	5	3	3	15	28	36	42	37	40	40	32	25	29	29	24	17	13	7	7	4	20.2	24
22	7	13	16	18	17	14	13	14	17	19	20	20	20	20	21	25	26	23	20	13	7	10	9	7	16.2	24
23	5	4	5	5	3	3	3	7	14	18	20	22	25	22	21	23	19	17	13	7	7	9	12	13	12.4	24
24	12	11	12	13	13	15	14	15	15	15	18	20	20	20	21	19	18	19	16	15	13	14	12	11	15.5	24
25	13	13	13	12	10	8	6	11	15	19	21	21	22	24	24	29	999	999	999	999	999	999	999	999	16.3	16
26	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
27	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999.9	0
28	999	999	999	999	999	999	999	999	999	999	999	999	999	999	18	21	21	16	7	8	9	6	4	6	11.6	10
29	5	3	4	2	4	6	6	8	13	16	17	21	36	34	34	27	19	15	6	5	14	17	8	7	13.6	24
30	12	13	12	13	12	10	5	14	19	24	31	31	33	34	35	38	39	35	33	24	20	15	16	12	22.1	24
31	11	9	10	7	1	1	1	15	29	33	34	36	38	39	39	42	40	32	34	27	19	18	16	13	22.7	24
AVG	14	13	12	11	10	8	8	15	22	27	31	33	34	34	34	34	33	31	29	25	21	18	16	14		
MIN	5	3	4	2	1	1	1	7	13	15	17	20	20	20	18	19	18	15	6	5	7	6	4	4		
MAX	29	25	24	25	22	18	16	22	33	40	47	56	54	52	53	61	60	66	66	72	53	40	36	34		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 22
MINIMUM: 1
MAXIMUM: 72
OBSERVATIONS: 667
% DATA RECOVERY: 89.7

EBASCO ENVIRONMENTAL — AIR QUALITY/METEOROLOGY DATA SUMMARY — 12-13-1992

FLORIDA POWER CORPORATION

POLK COUNTY SITE (HOMELAND)

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 09/ 1 /92
TO: 09/ 30 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	10	11	5	5	5	2	2	8	15	17	21	23	27	28	28	26	28	25	17	20	18	14	10	7	15.5	24
2	7	3	3	3	1	2	3	7	12	17	21	25	24	24	27	30	27	31	20	14	16	16	14	9	14.8	24
3	8	6	6	6	7	3	4	11	19	24	27	999	999	34	25	22	20	17	12	9	15	10	6	4	13.4	22
4	6	7	7	7	7	6	9	12	16	19	20	20	20	22	26	24	20	20	26	27	23	17	12	8	15.9	24
5	7	8	8	7	6	7	7	9	12	17	21	22	22	25	29	30	26	26	19	15	15	12	11	10	15.5	24
6	8	8	8	8	7	4	4	9	15	18	19	20	20	22	23	22	19	17	11	10	7	8	8	8	12.6	24
7	8	8	7	7	6	4	3	9	16	21	22	23	24	27	22	25	24	24	20	14	11	11	11	10	14.9	24
8	8	7	6	5	5	4	3	4	12	999	999	30	37	37	35	37	31	24	17	10	7	9	8	8	15.6	22
9	6	6	4	3	2	2	2	6	14	21	29	32	36	41	44	44	33	28	22	20	17	18	15	16	19.2	24
10	13	12	8	8	5	2	4	9	19	26	999	999	999	29	28	27	29	29	21	22	23	19	13	14	17.1	21
11	11	8	11	9	7	8	13	12	18	28	30	32	45	46	50	63	62	47	43	25	22	17	18	15	26.7	24
12	12	5	8	6	4	6	8	13	26	39	42	46	47	47	47	47	46	37	30	23	23	16	5	8	24.6	24
13	12	11	10	9	7	8	9	15	22	28	31	31	31	31	32	32	34	30	25	19	21	30	31	32	22.5	24
14	31	29	29	23	23	21	21	22	30	34	38	46	999	999	49	50	46	41	36	33	28	25	21	20	31.6	22
15	16	13	8	6	7	6	11	17	25	30	29	27	28	29	29	29	32	25	19	17	12	11	12	13	18.8	24
16	12	10	10	8	5	2	3	8	14	20	23	24	25	26	28	28	28	27	21	17	16	15	13	13	16.5	24
17	11	13	11	11	9	5	4	11	18	25	31	60	37	39	36	31	31	29	30	22	15	14	18	13	21.8	24
18	9	10	12	7	6	7	7	12	21	28	33	33	33	30	32	38	36	29	30	27	35	37	32	25	23.7	24
19	12	12	8	10	5	8	3	14	27	34	39	39	39	40	42	43	50	48	34	39	35	32	22	17	27.2	24
20	17	17	15	13	16	14	11	15	21	28	36	37	38	40	42	43	43	40	31	35	36	26	19	15	27.0	24
21	13	10	9	7	6	3	3	13	27	35	39	999	38	42	43	41	40	38	31	38	32	29	23	17	25.1	23
22	16	15	16	10	4	3	3	13	24	34	43	46	47	46	47	41	43	44	43	37	32	40	23	24	28.9	24
23	23	15	12	11	11	17	13	8	22	35	44	50	55	60	59	57	49	40	32	27	23	19	14	15	29.6	24
24	19	18	14	9	8	2	3	5	12	19	999	999	999	26	31	31	24	20	9	12	9	8	9	8	14.1	21
25	7	6	6	6	6	5	6	10	14	19	23	25	26	28	30	27	19	14	18	19	19	15	15	15	15.8	24
26	12	11	10	11	10	7	10	14	24	29	32	34	35	38	31	30	30	27	22	20	18	16	16	14	20.9	24
27	13	11	13	13	12	9	5	7	15	19	22	24	25	26	28	29	29	29	27	20	19	16	11	12	18.1	24
28	9	8	10	9	3	5	5	7	12	16	20	25	33	34	35	34	37	29	27	21	18	15	13	15	18.3	24
29	16	17	15	14	15	13	12	13	18	25	33	39	43	44	41	38	36	30	24	24	23	23	22	23	25.0	24
30	23	23	23	23	24	22	18	24	31	41	48	51	54	54	55	55	42	34	33	29	28	30	30	29	34.3	24
AVG	13	11	10	9	8	7	7	11	19	26	30	33	34	35	36	36	34	30	25	22	21	19	16	15		
MIN	6	3	3	3	1	2	2	4	12	16	19	20	20	22	22	22	19	14	9	9	7	8	5	4		
MAX	31	29	29	23	24	22	21	24	31	41	48	60	55	60	59	63	62	48	43	39	36	40	32	32		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE:	21
MINIMUM:	1
MAXIMUM:	63
OBSERVATIONS:	707
% DATA RECOVERY:	98.2

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY/METEOROLOGY DATA SUMMARY

12-13-1992

STATE: FLORIDA:
AGENCY: PRIVATE
PROJECT: BACKGOUND SURVEILLANCE

POLLUTANT: OZONE
METHOD: INSTRUMENTAL UV DASIBI CORP.
UNITS: PARTS PER BILLION (VOL/VOL)

FROM: 10/ 1 /92
TO: 10/ 14 /92

HOUR

DAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	AVG	OBS
1	27	27	29	32	31	29	27	31	38	41	44	999	999	999	999	39	36	33	34	30	29	27	27	26	31.9	20
2	28	28	24	21	19	17	25	28	28	29	32	34	33	34	33	31	30	29	31	29	27	27	27	28	28.0	24
3	29	29	28	27	27	26	26	26	25	23	22	20	20	23	22	17	16	13	12	12	13	13	14	14	20.7	24
4	14	14	13	12	14	17	25	25	25	26	30	33	35	34	30	29	31	32	30	27	24	24	25	27	24.8	24
5	31	30	27	25	24	22	22	25	31	39	48	56	56	999	58	57	54	52	47	40	37	32	30	30	38.0	23
6	29	23	21	21	16	17	17	17	20	25	32	36	39	41	38	31	25	24	22	22	22	21	21	20	25.0	24
7	20	20	22	24	22	22	21	21	23	29	31	31	36	34	35	37	33	32	31	29	26	21	20	18	26.6	24
8	17	14	11	9	7	5	3	5	17	26	33	36	35	39	37	39	37	38	37	34	27	29	23	18	24.0	24
9	14	12	15	15	6	2	3	8	20	25	30	39	49	56	60	64	60	53	55	37	23	21	17	13	29.0	24
10	11	11	11	13	14	12	8	9	15	22	33	41	48	55	62	63	61	48	33	31	41	27	26	24	30.0	24
11	22	18	15	14	15	11	8	16	20	23	27	37	35	32	28	27	27	17	16	11	14	13	11	9	19.4	24
12	6	9	14	14	13	16	24	28	32	41	999	999	999	61	999	67	66	61	49	45	42	34	30	32	34.2	20
13	28	25	18	21	26	24	18	16	30	39	999	999	68	999	999	80	83	63	45	45	36	33	31	30	38.0	20
14	21	28	30	27	27	21	20	23	34	999	999	999	999	999	999	999	999	999	999	999	999	999	999	999	25.7	9
AVG	21	21	20	20	19	17	18	20	26	30	33	36	41	41	40	45	43	38	34	30	28	25	23	22		
MIN	6	9	11	9	6	2	3	5	15	22	22	20	20	23	22	17	16	13	12	11	13	13	11	9		
MAX	31	30	30	32	31	29	27	31	38	41	48	56	68	61	62	80	83	63	55	45	42	34	31	32		

999 Indicates missing data or calibration activities.

MONTHLY SUMMARY

AVERAGE: 28
MINIMUM: 2
MAXIMUM: 83
OBSERVATIONS: 308
% DATA RECOVERY: 91.7

10.5.6.4 Summary of On-Site PM_{10} Monitoring Data and Wind Directions During PM_{10} Sampling (2/15/92 - 10/14/92)

EBASCO ENVIRONMENTAL
FLORIDA POWER CORPORATION
POLK COUNTY SITE (HOMELAND)

AIR QUALITY SUMMARY

FROM: 02/15/92
TO: 10/14/92

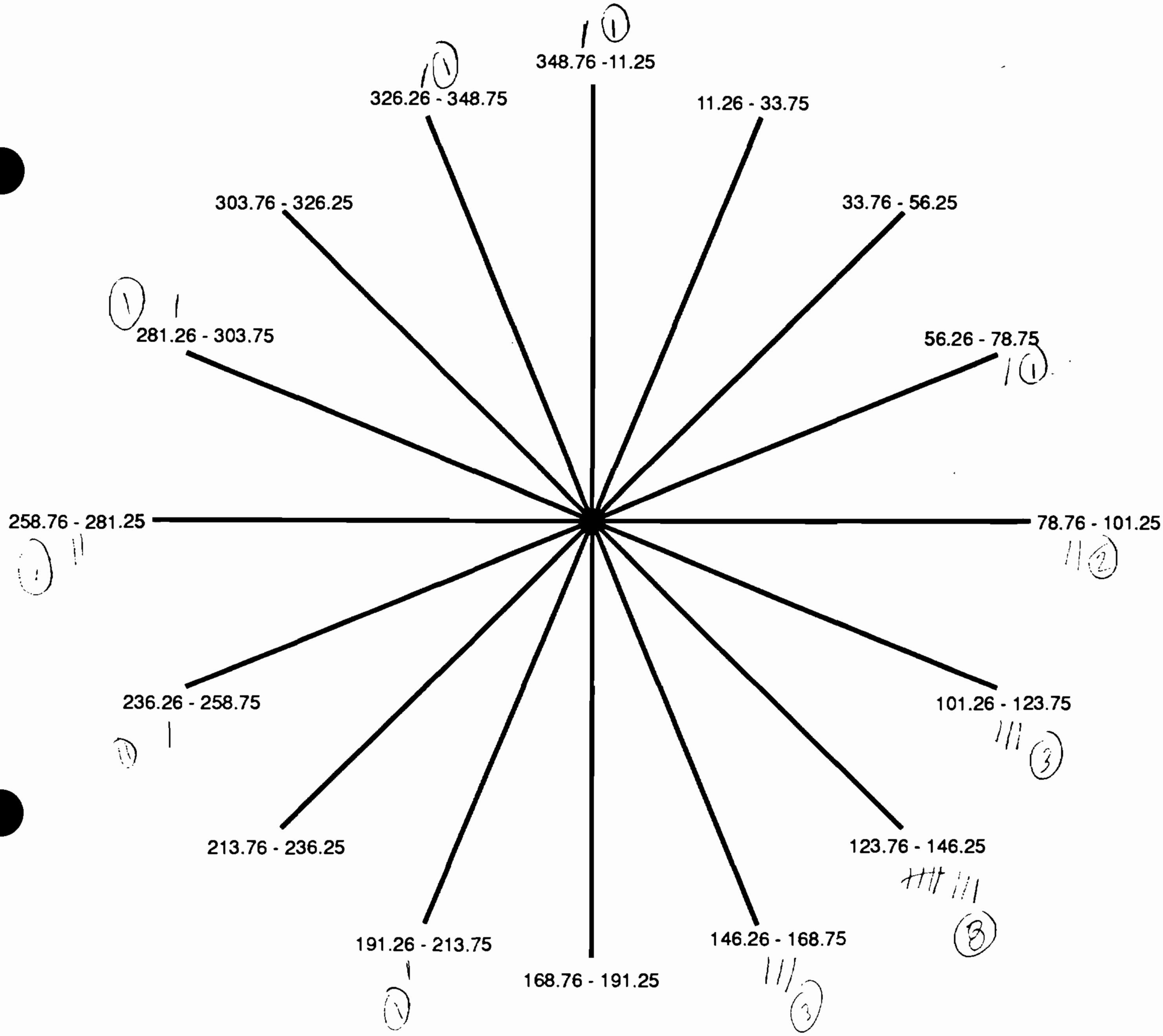
POLLUTANT: PARTICULATE, PM_{10}
METHOD: VACUUM SAMPLER
UNITS: MICROGRAMS PER CUBIC METER

STATE: FLORIDA
AGENCY: PRIVATE
PROJECT: BACKGROUND SURVEILLANCE

Date	Concentration
Feb 24, 1992	10.4
Mar 01, 1992	18.6
Mar 07, 1992	13.1
Mar 13, 1992	15.2
Mar 19, 1992	23.5
Mar 25, 1992	17.8
Mar 31, 1992	20.3
Apr 06, 1992	24.4
Apr 12, 1992	9.9
Apr 18, 1992	14.2
Apr 24, 1992	27.3
Apr 30, 1992	43.9
May 06, 1992	34.9
May 08, 1992	27.4
May 12, 1992	35.0
May 18, 1992	10.2
May 24, 1992	20.4
May 27, 1992	30.8
May 30, 1992	15.4
Jun 05, 1992	33.8
Jun 11, 1992	22.6
Jun 19, 1992	12.5
Jul 05, 1992	30.9
Jul 11, 1992	40.6
Jul 17, 1992	12.4
Jul 23, 1992	16.9
Jul 27, 1992	70.4
Aug 04, 1992	25.0
Aug 10, 1992	17.7
Aug 16, 1992	11.4
Aug 22, 1992	9.9
Aug 28, 1992	13.7
Sep 09, 1992	11.9
Sep 11, 1992	21.2
Sep 15, 1992	15.3
Sep 15, 1992	9.1
Sep 27, 1992	10.0
Oct 03, 1992	15.4
Oct 09, 1992	9.2
Avg	21.1
Min	9.1
Max	70.4

PM10 BACKGROUND VALUES (WINDS 45 – 135 DEGREES)

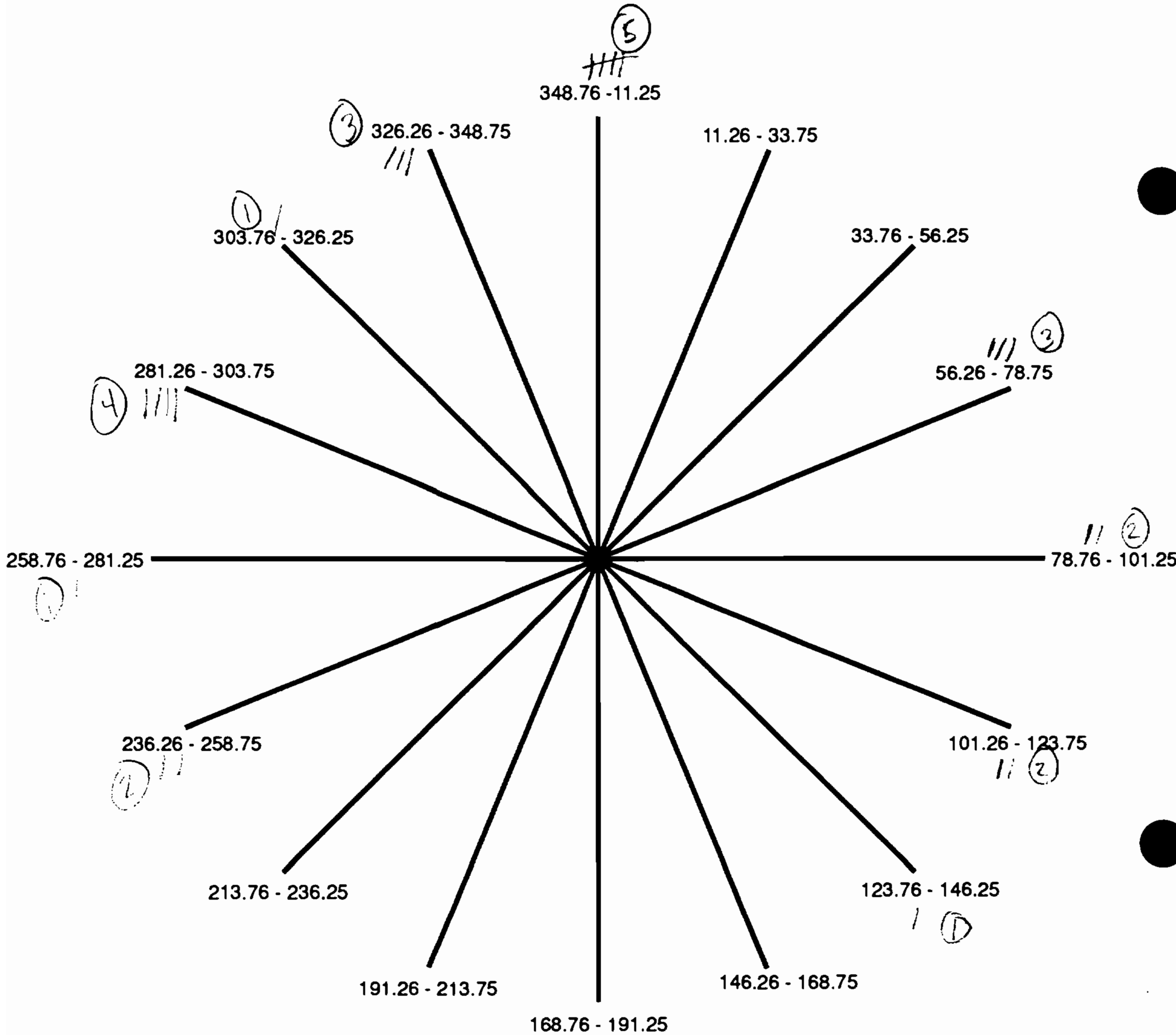
DATE	CONC. (ug/m3)
OCT 27, 91	12.8
NOV 20, 91	10.5
DEC 08, 91	9.8
DEC 20, 91	18.1
APR 06, 92	24.4
APR 18, 92	14.2
MAY 18, 92	10.2
JUL 17, 92	12.4
AUG 22, 92	9.9
SEP 15, 92	15.3
SEP 27, 92	10.0



DATE: 2-24-92

CONCENTRATION: 10.4 ug/M^3

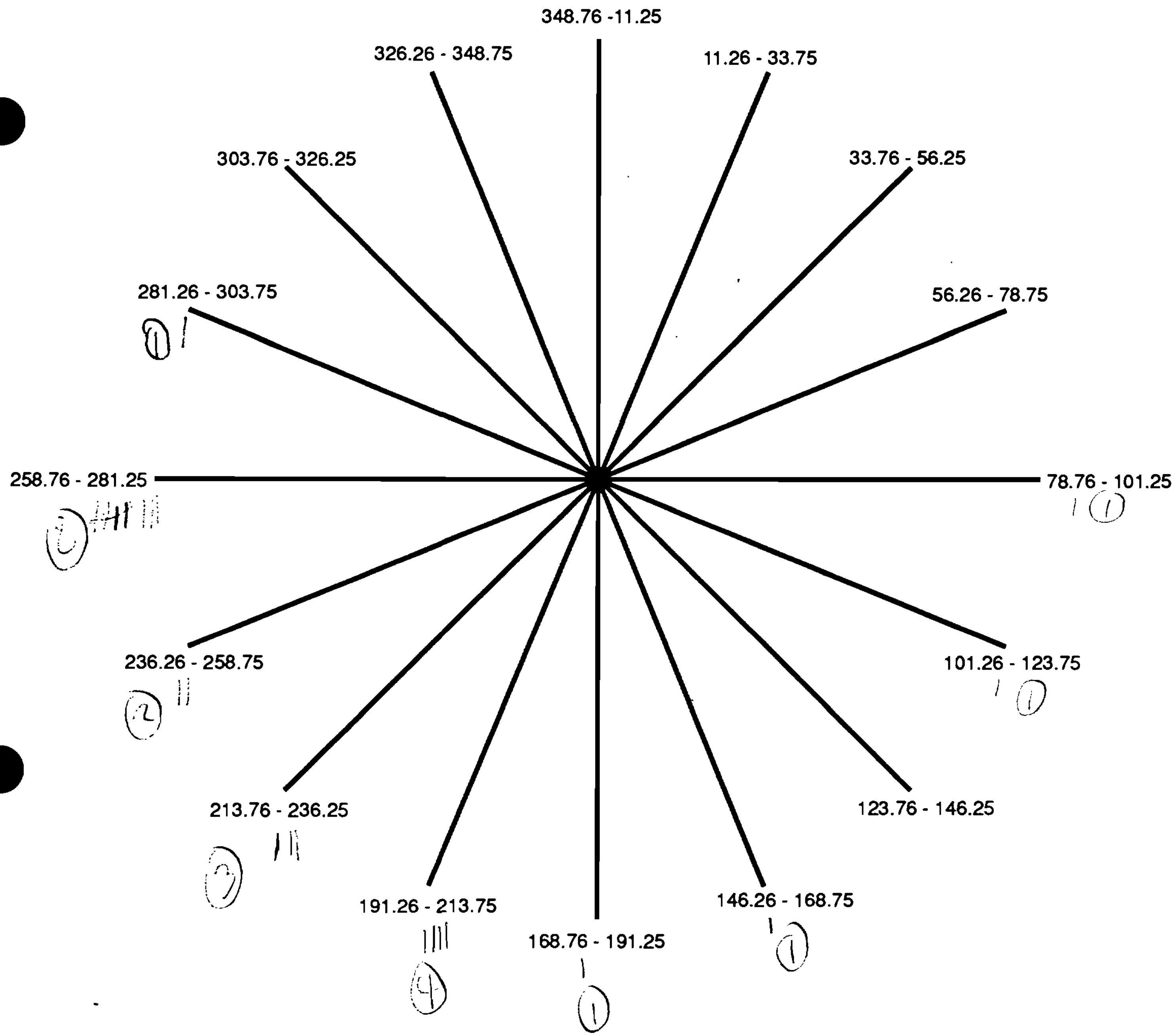
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 2-1-92

CONCENTRATION: 18.6 ug/M^3

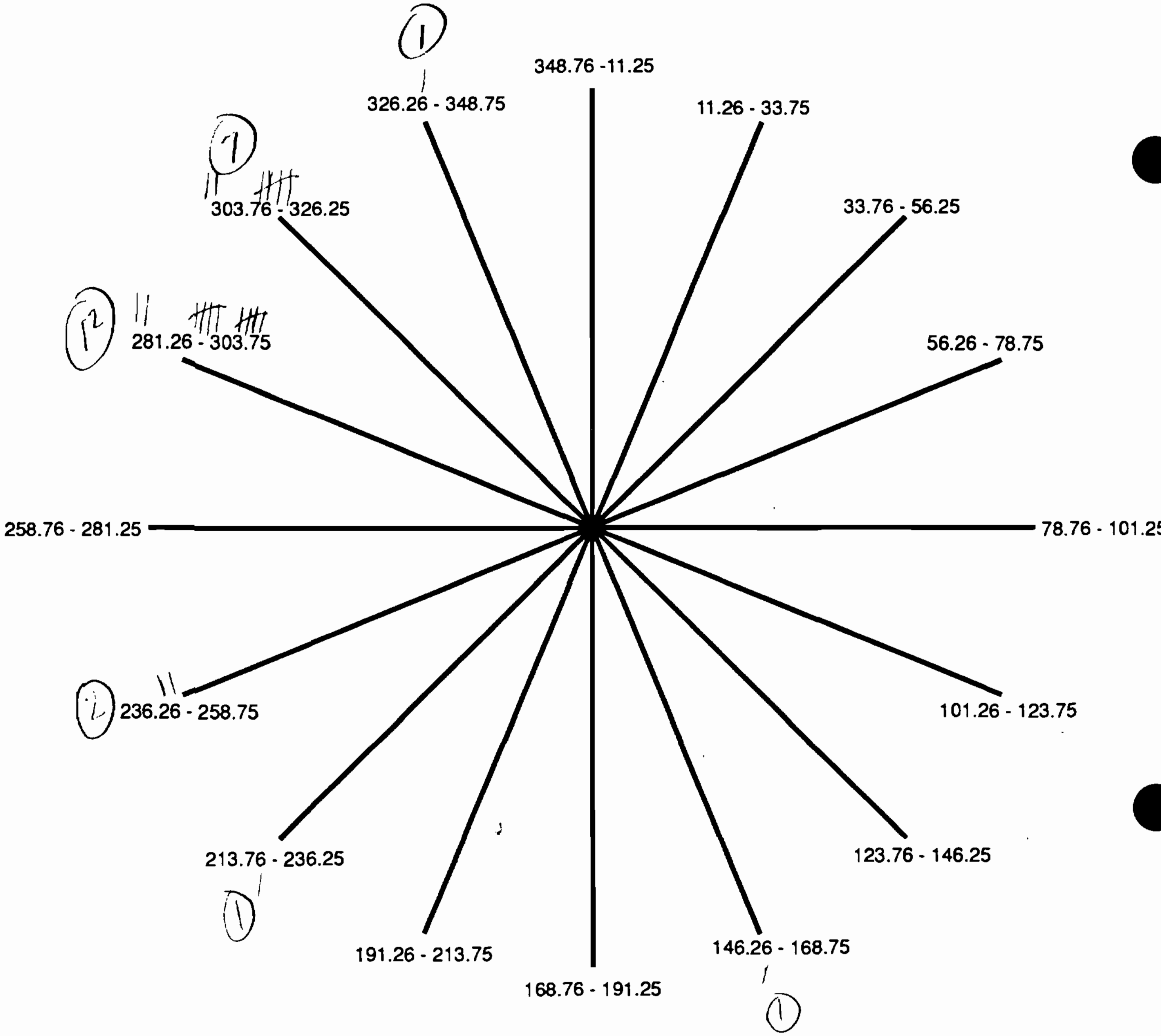
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM$_{10}$ SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 3-7-92

CONCENTRATION: 130 ug/M^3

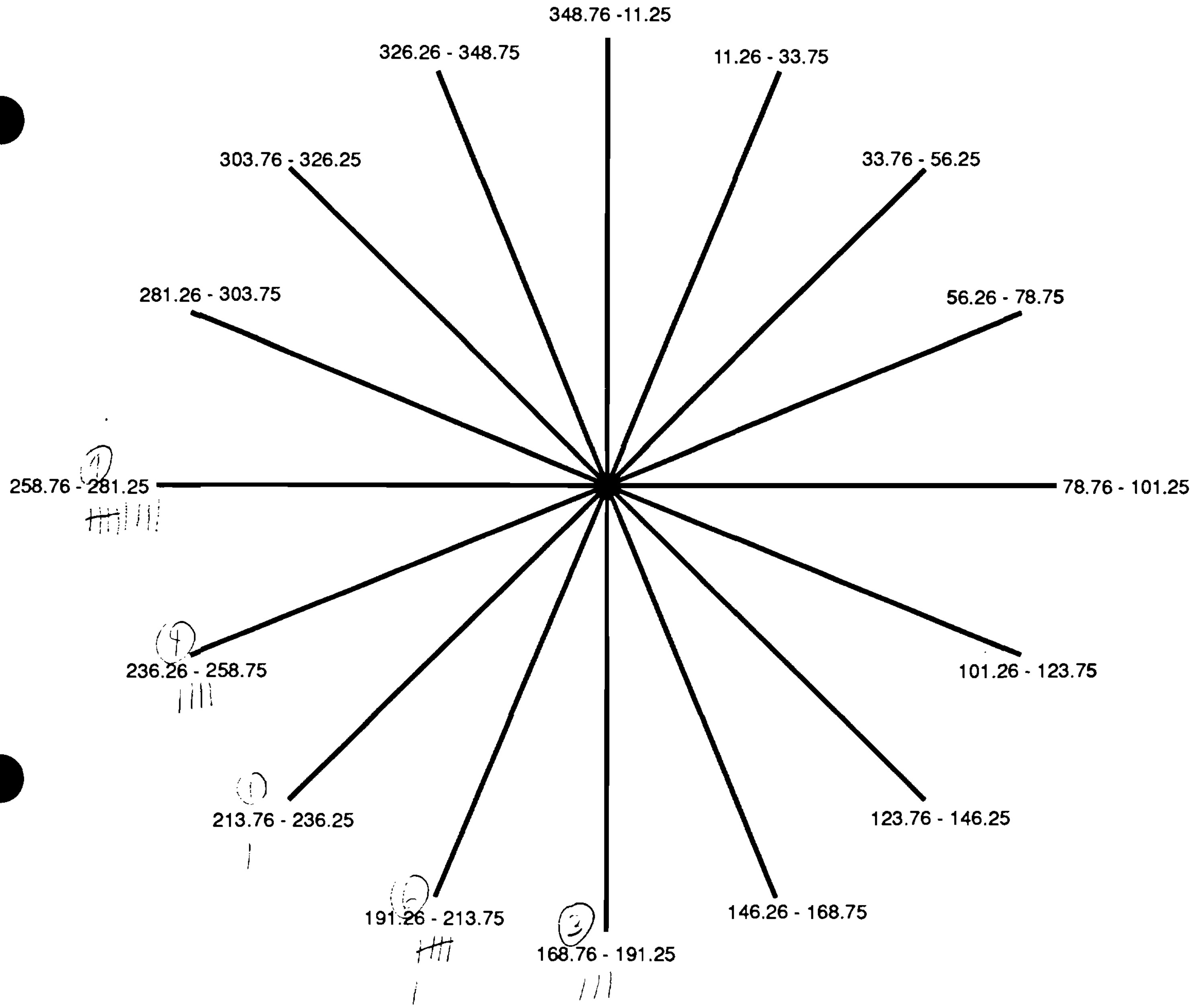
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 3-13-92

CONCENTRATION: 15.2 ug/M^3

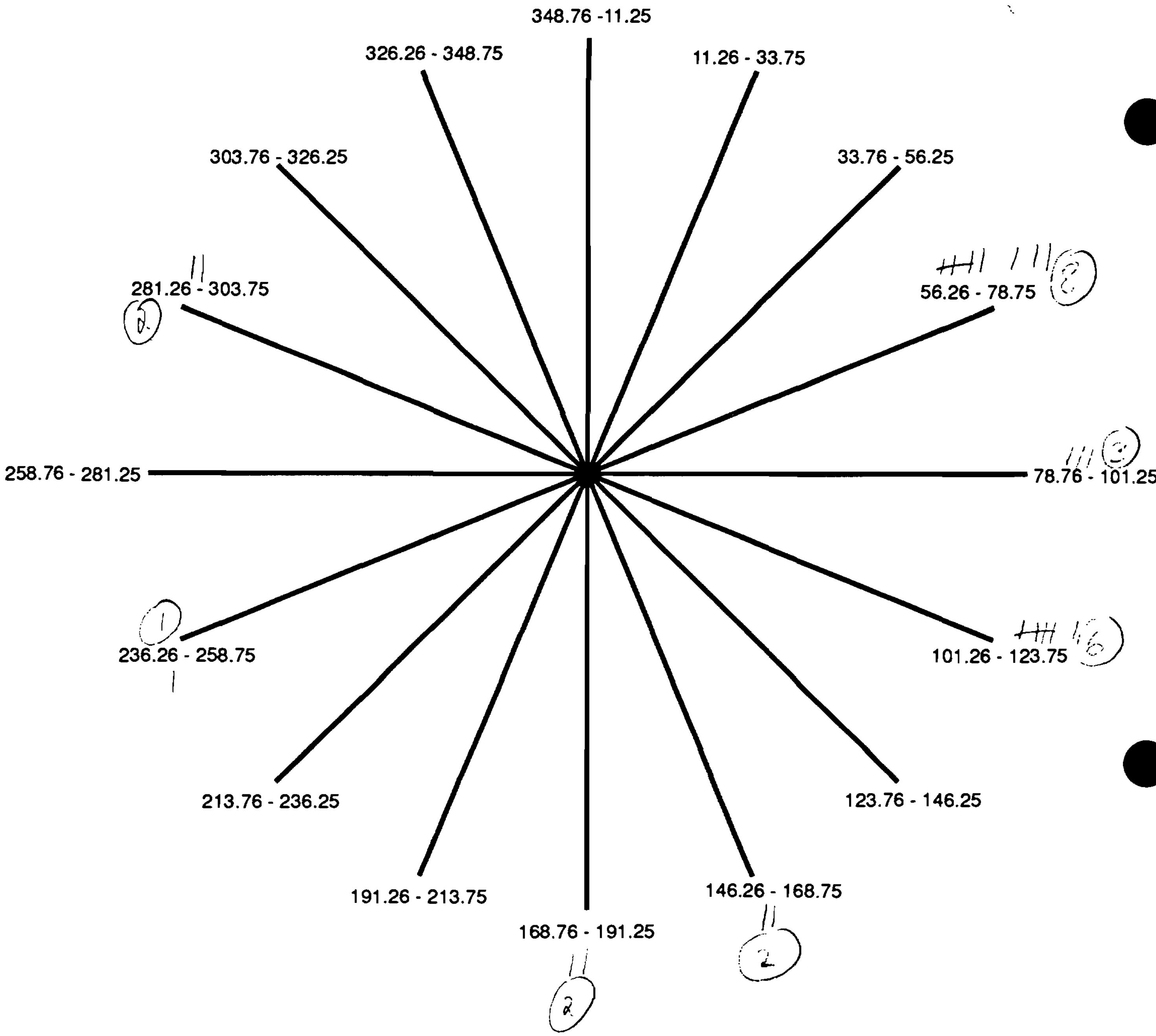
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 3-17-92

CONCENTRATION: 23.5 ug/M^3

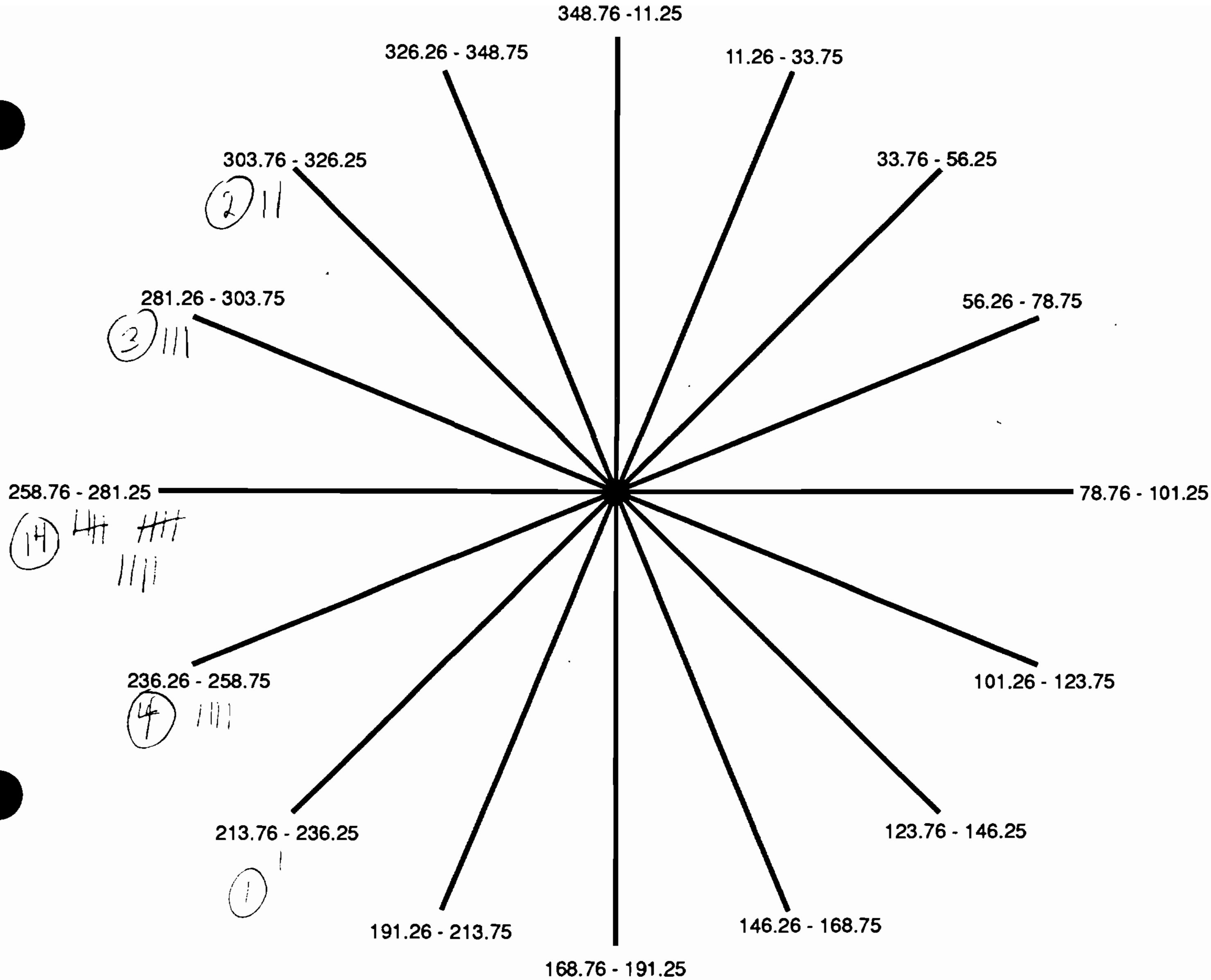
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 3-25-92

CONCENTRATION: 1708 ug/M^3

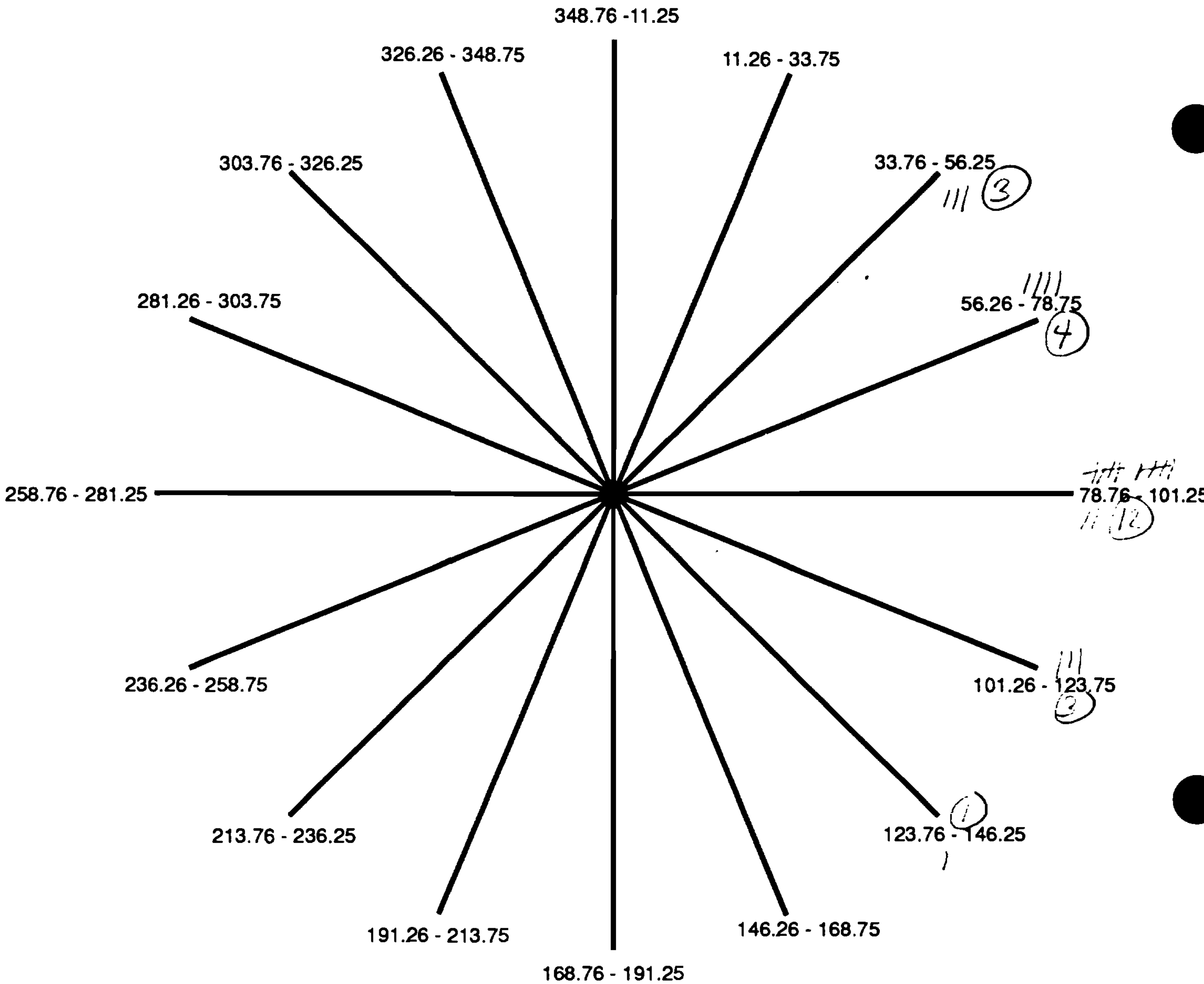
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 3-31-92

CONCENTRATION: 20.3 ug/M^3

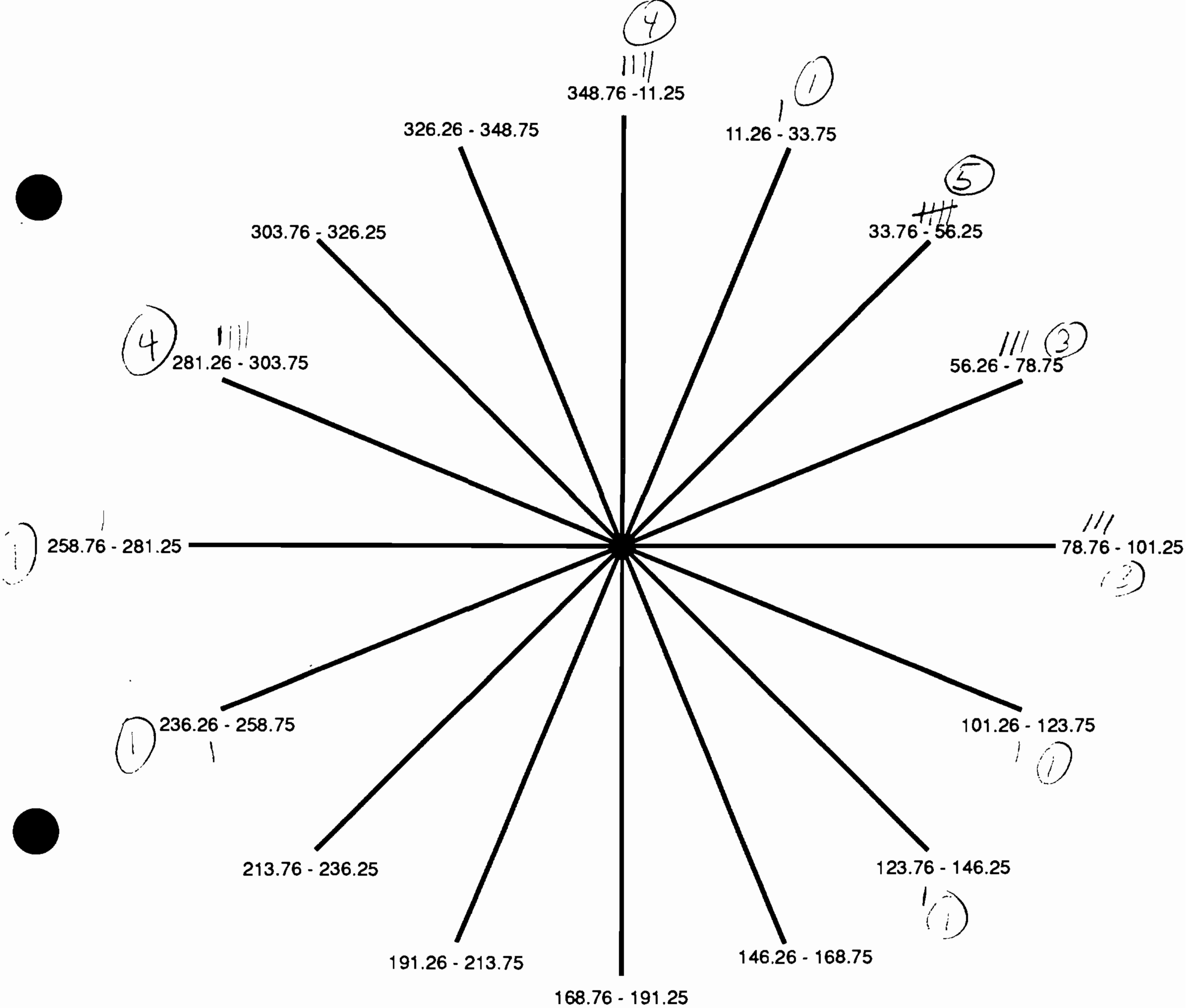
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 4-6-92

CONCENTRATION: 24.4 ug/M^3

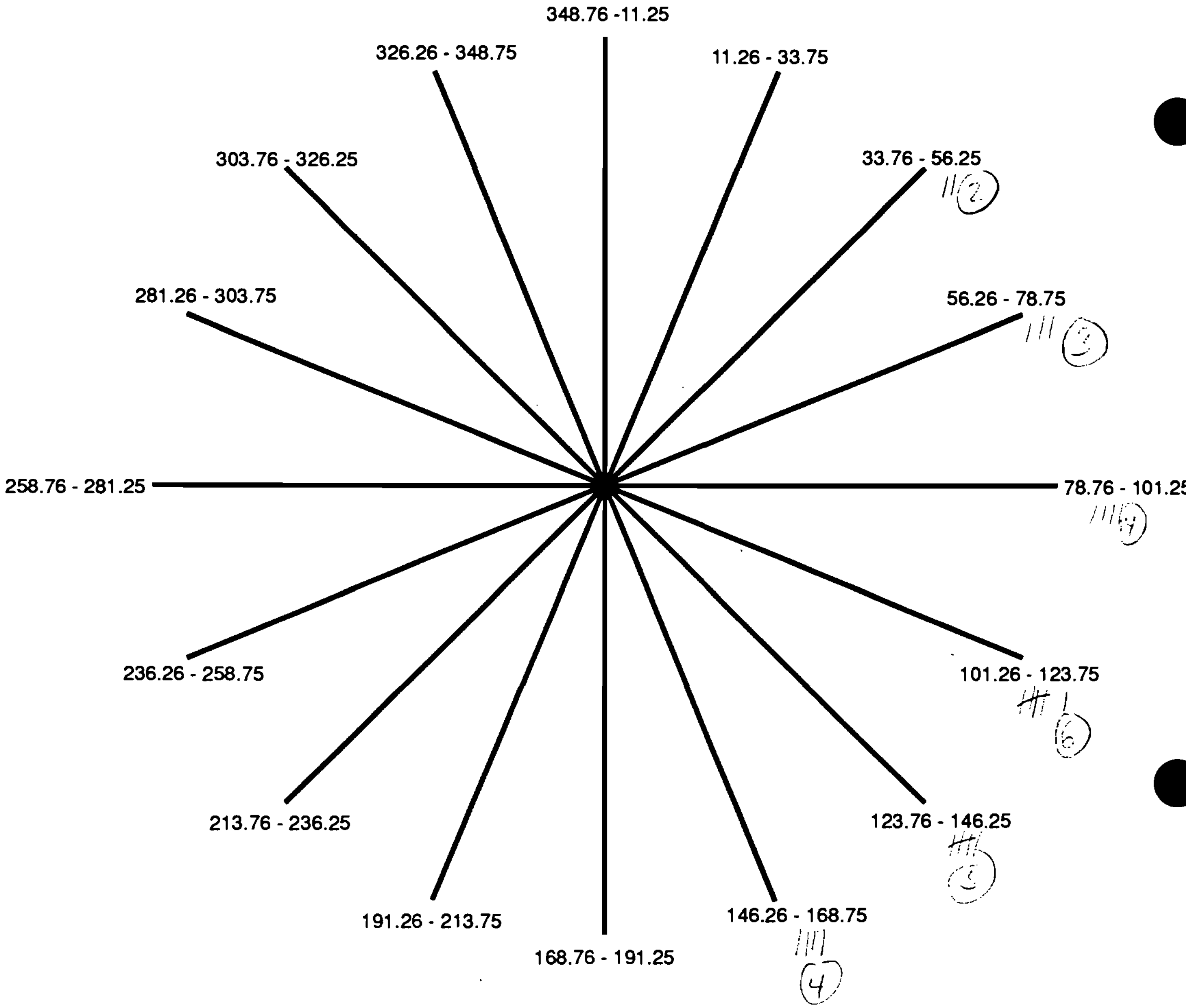
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 4-12-92

CONCENTRATION: 9.9 ug/M^3

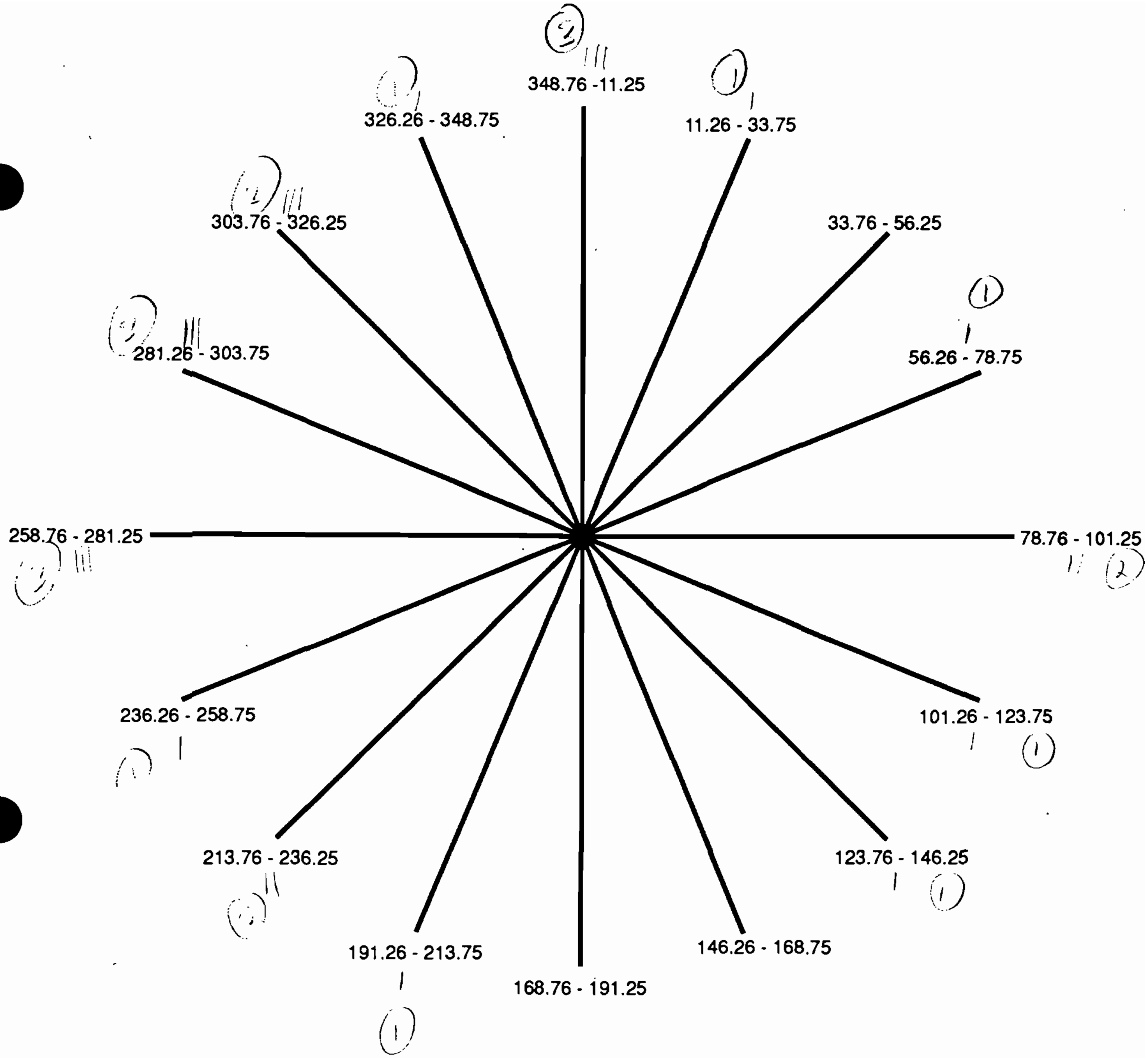
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 4-18-92

CONCENTRATION: 14.2 ug/M^3

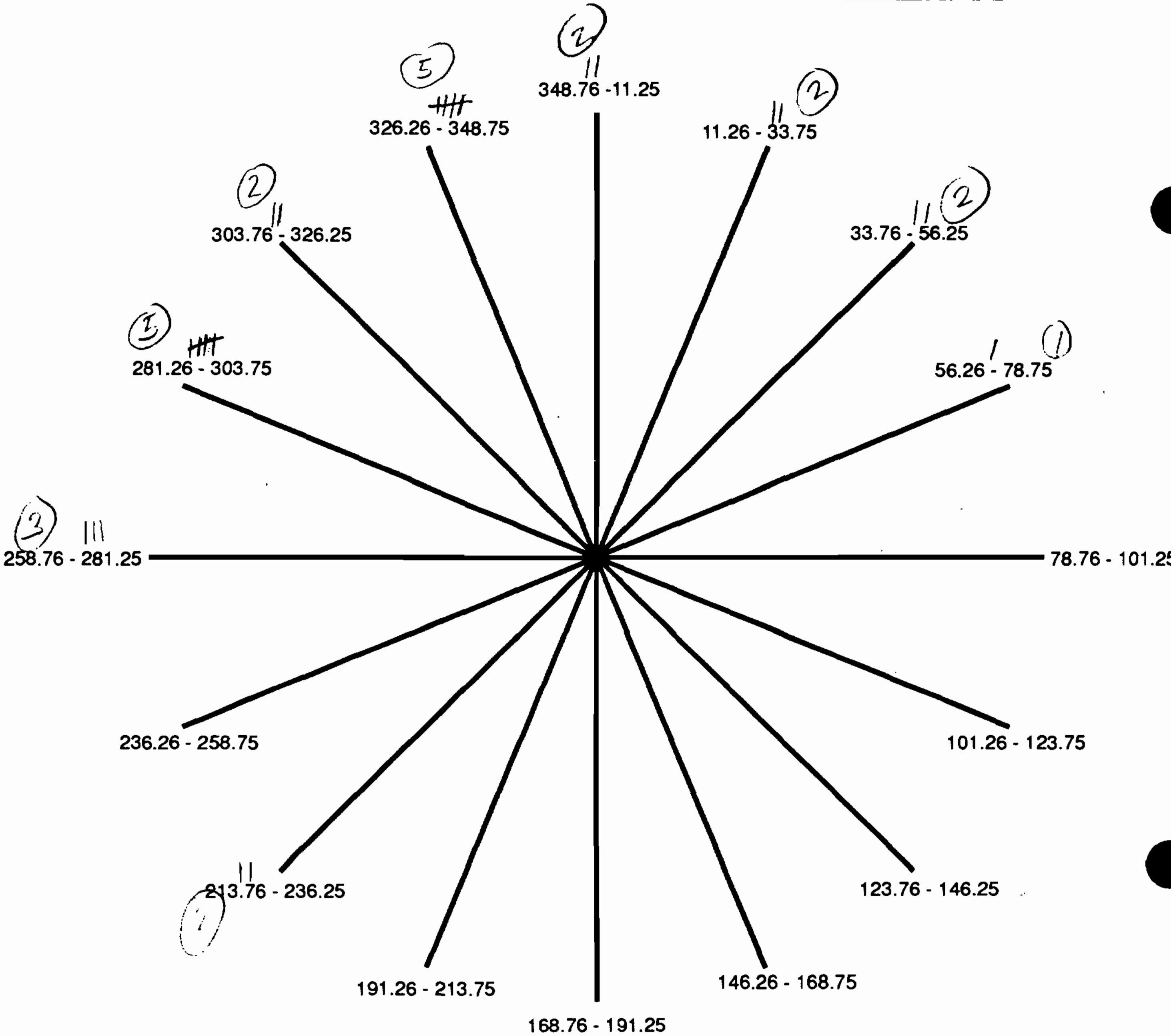
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 4-24-92

CONCENTRATION: 27.3 ug/M^3

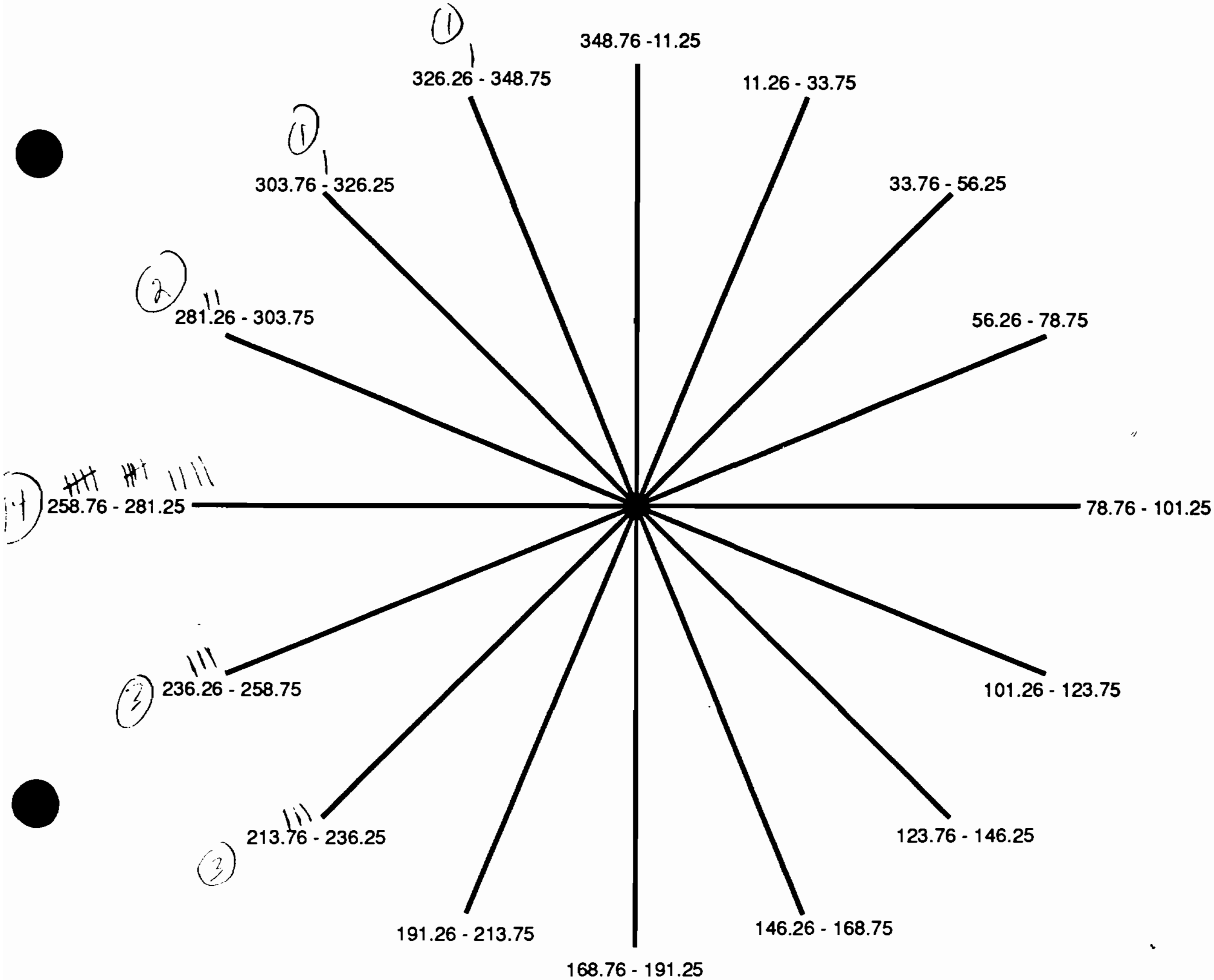
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 4-30-92

CONCENTRATION: 43.9 ug/M^3

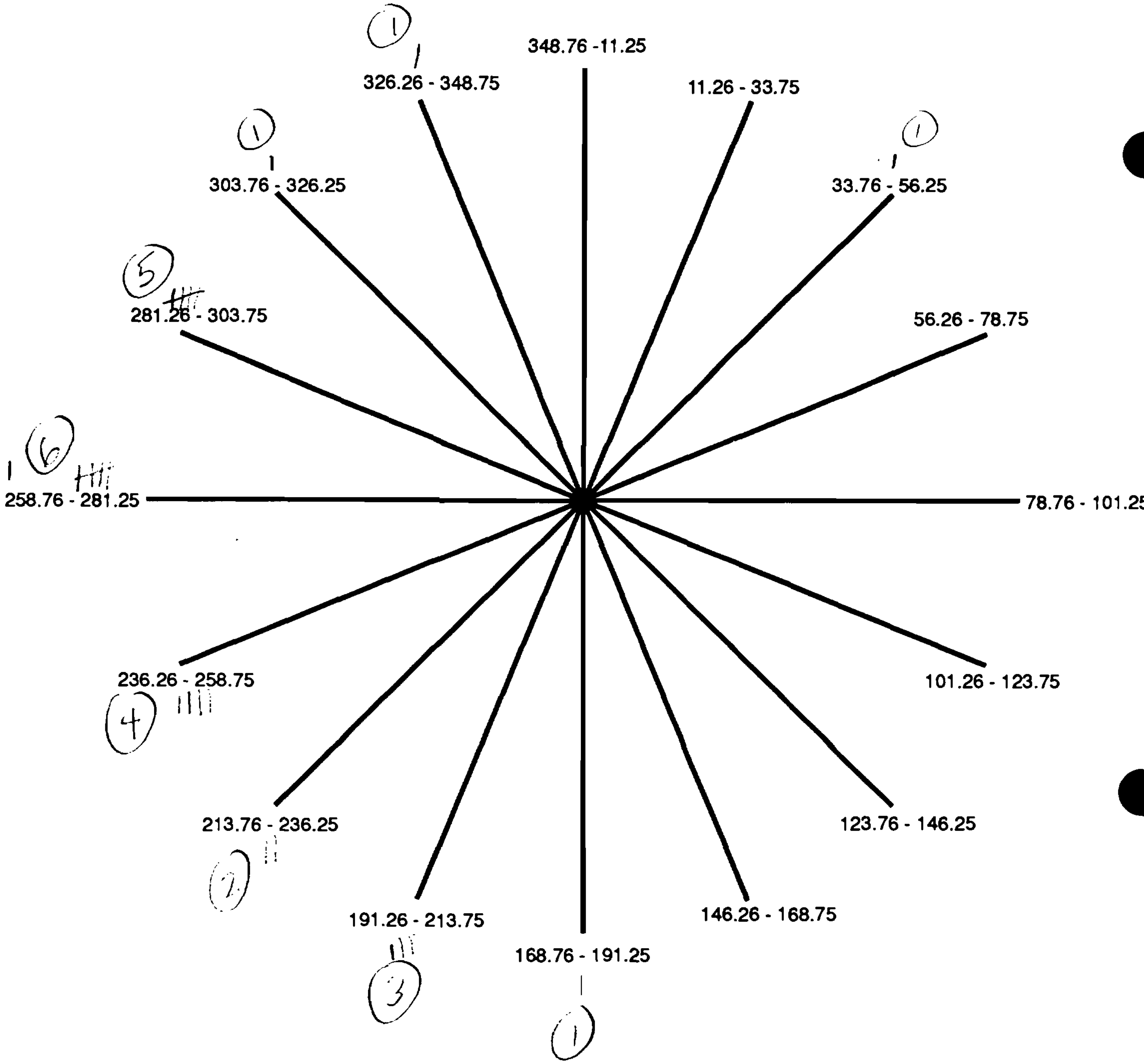
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 5-6-92

CONCENTRATION: 34.9 ug/M3

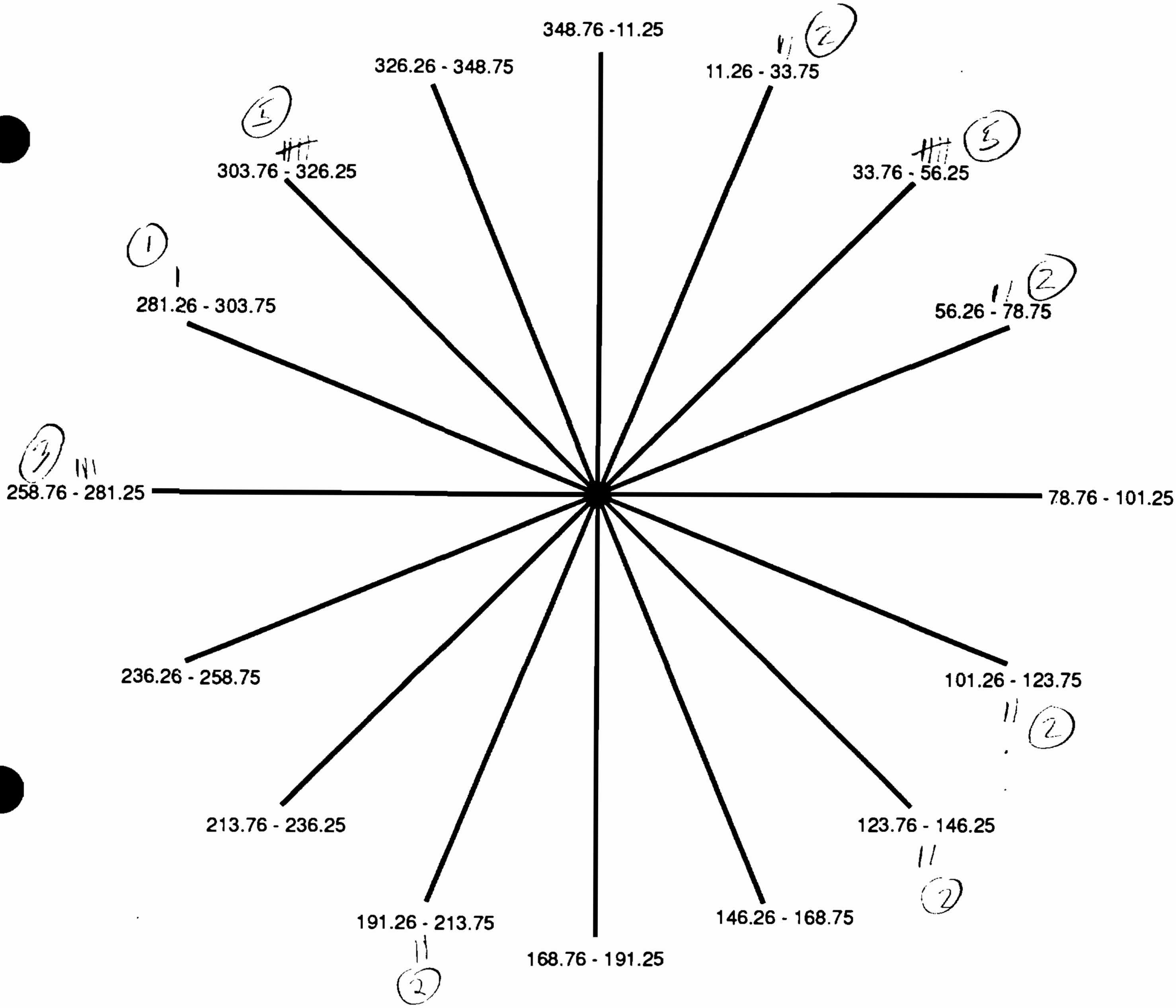
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 5-8-92

CONCENTRATION: 27.4 ug/M^3

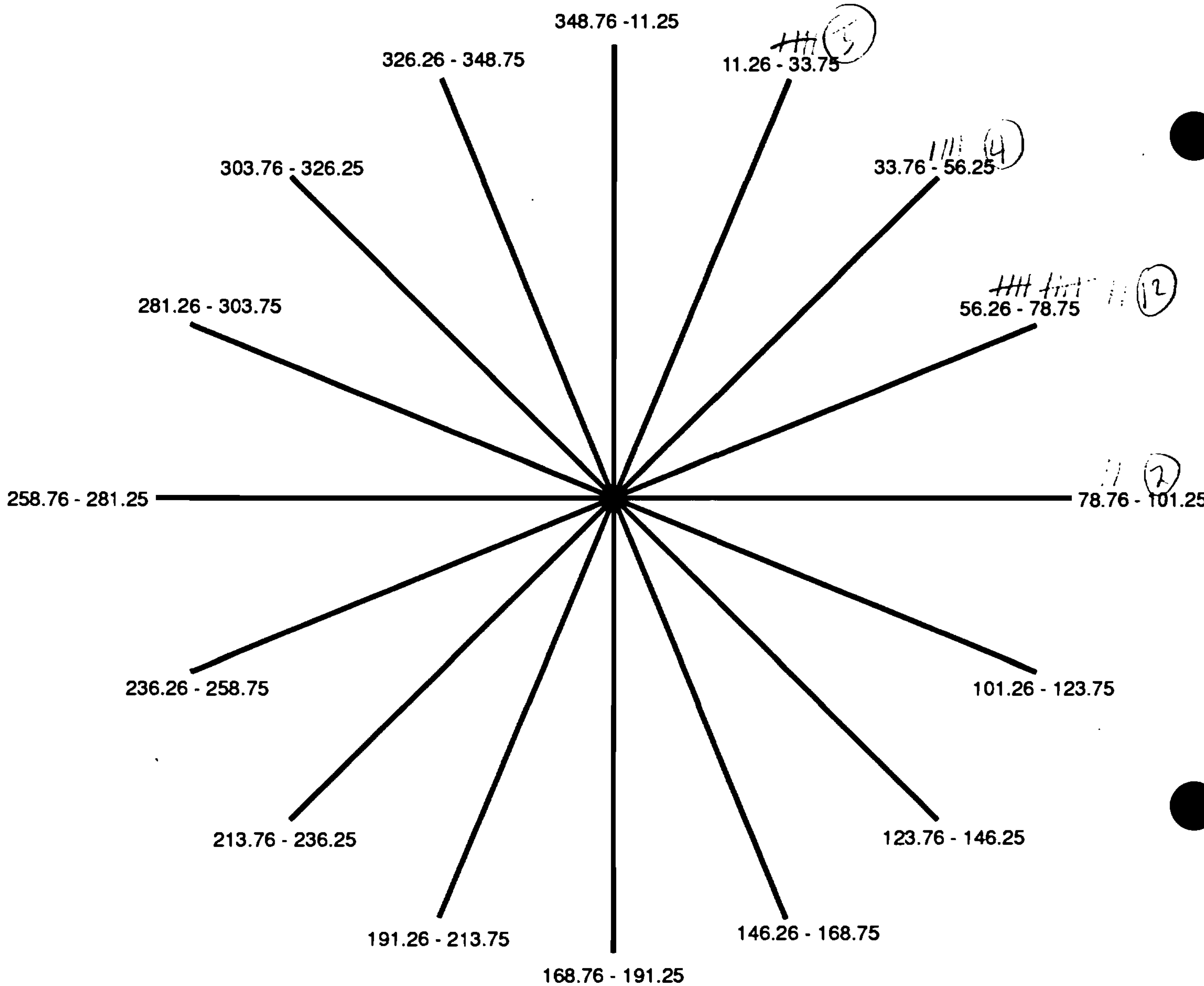
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 5-12-92

CONCENTRATION: 35.0 ug/M^3

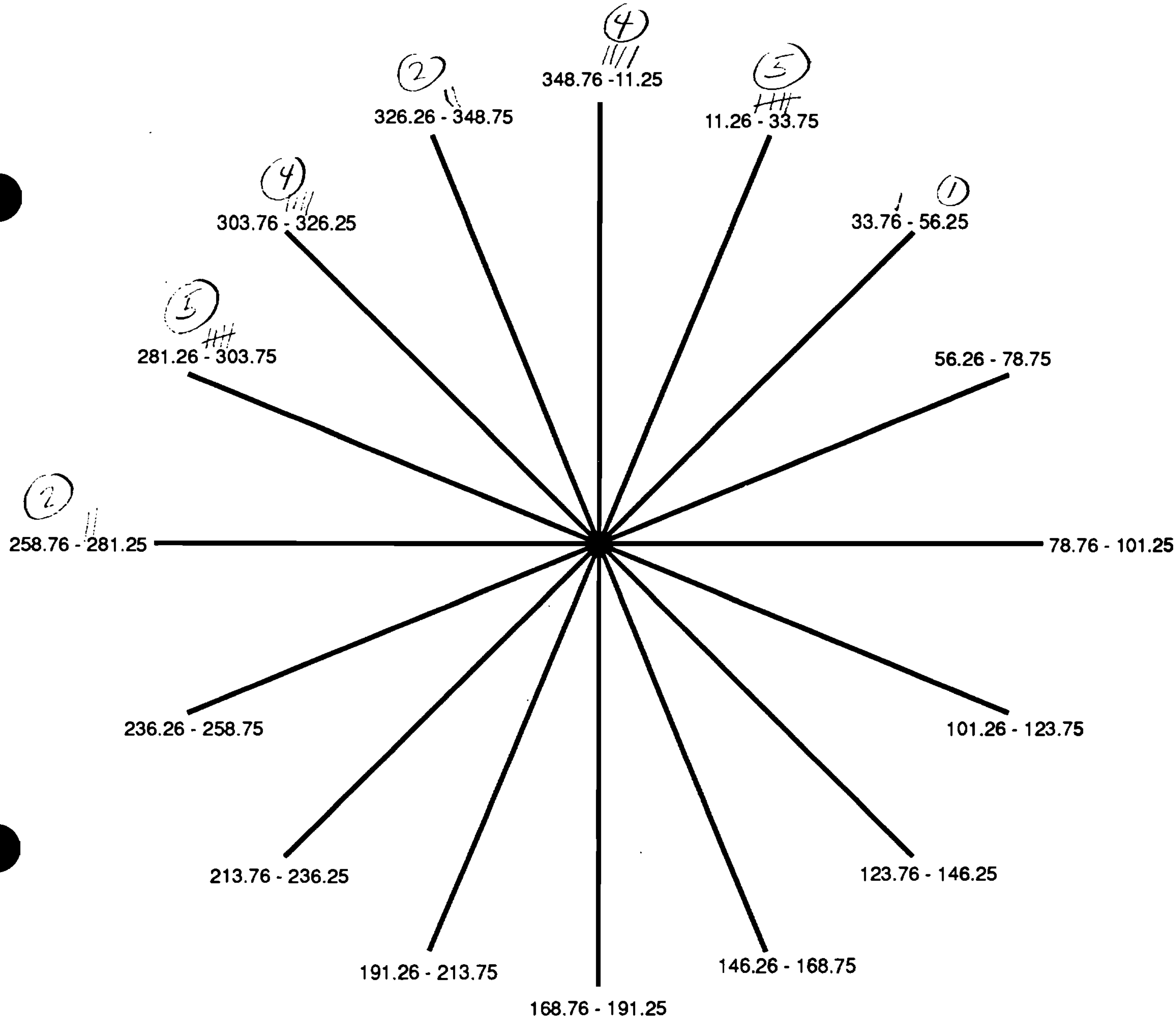
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 5-18-92

CONCENTRATION: 10.2 ug/M^3

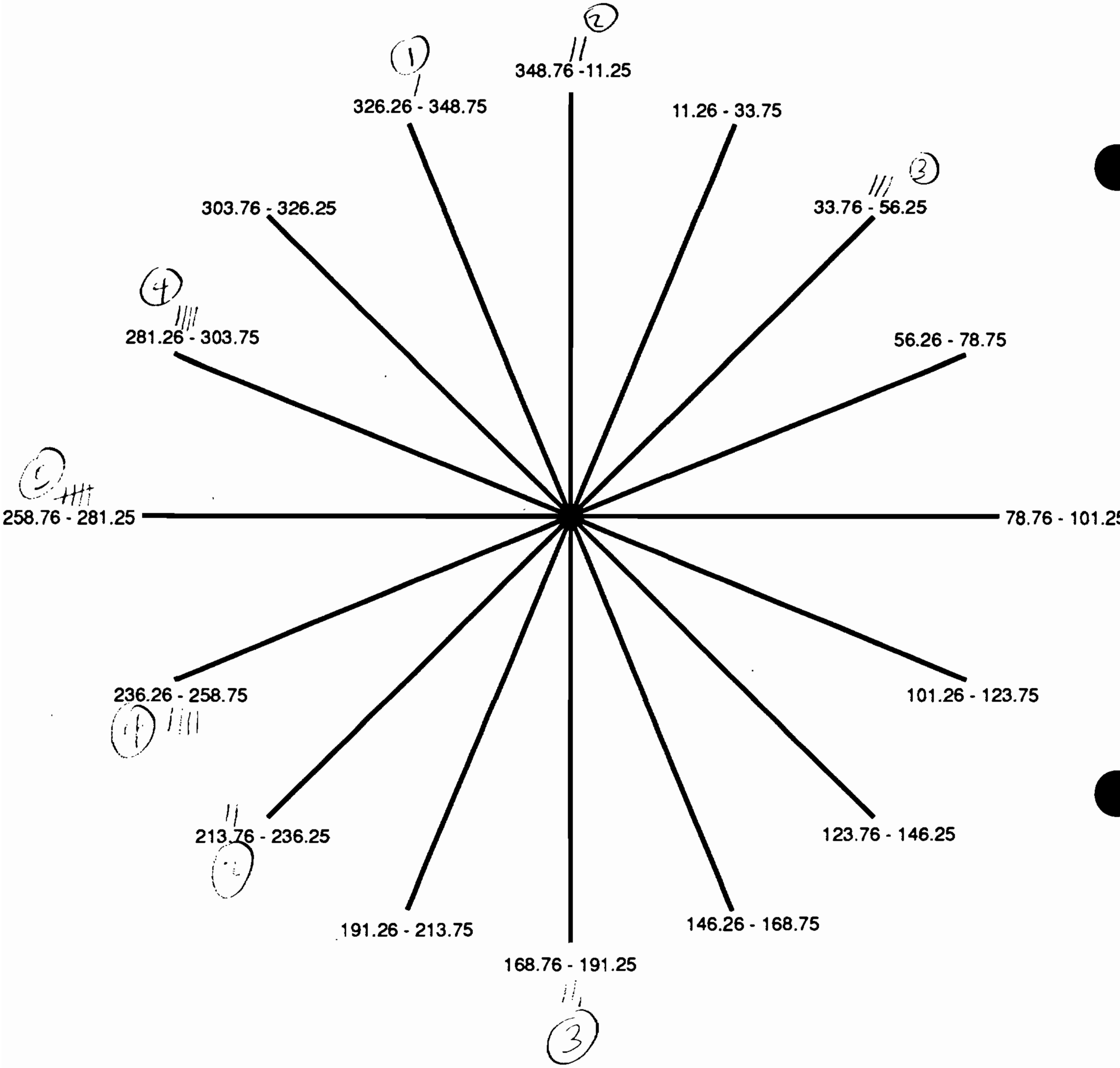
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 5-24-92

CONCENTRATION: 20.4 ug/M^3

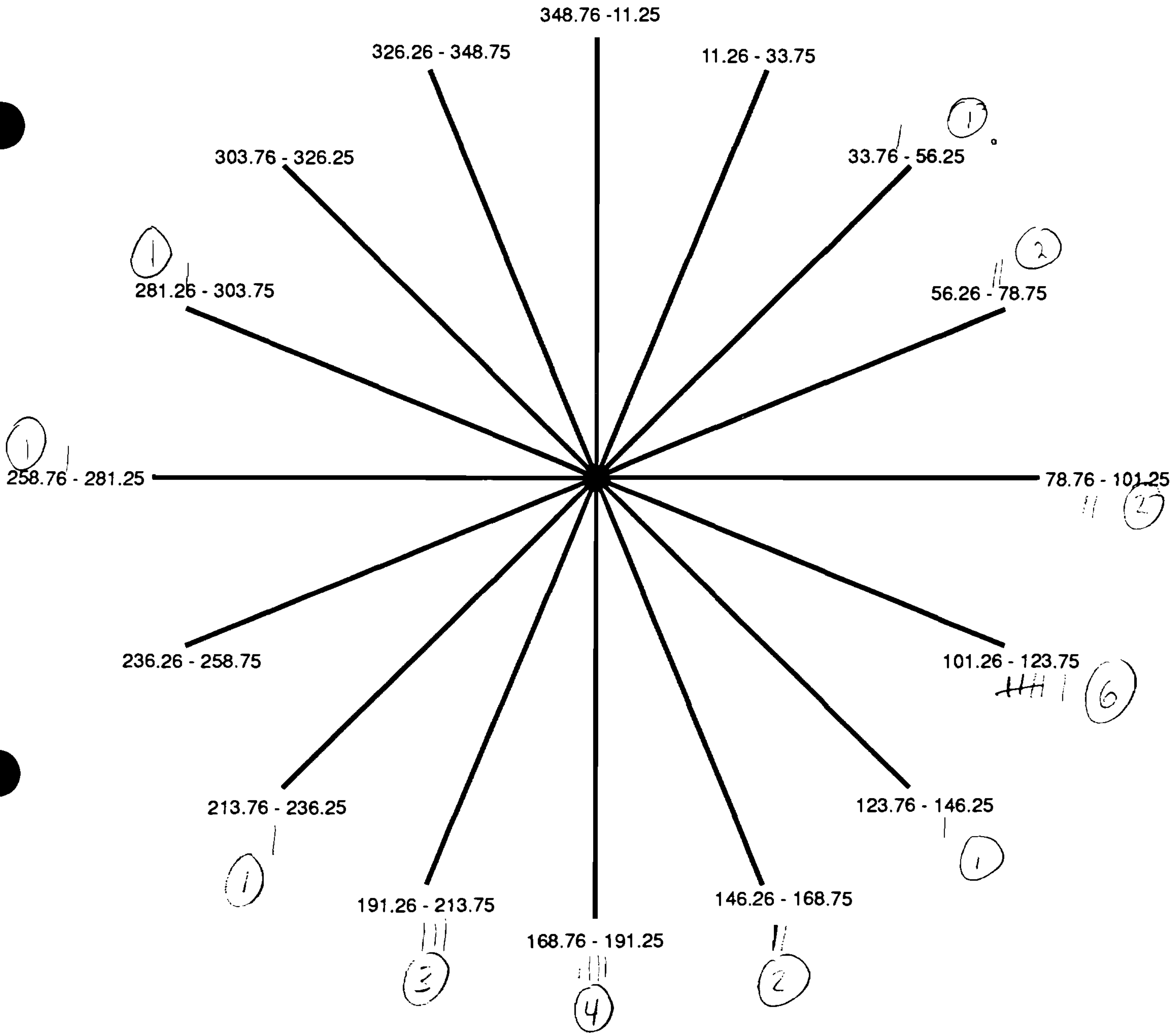
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 5-27-92

CONCENTRATION: 30.8 ug/M^3

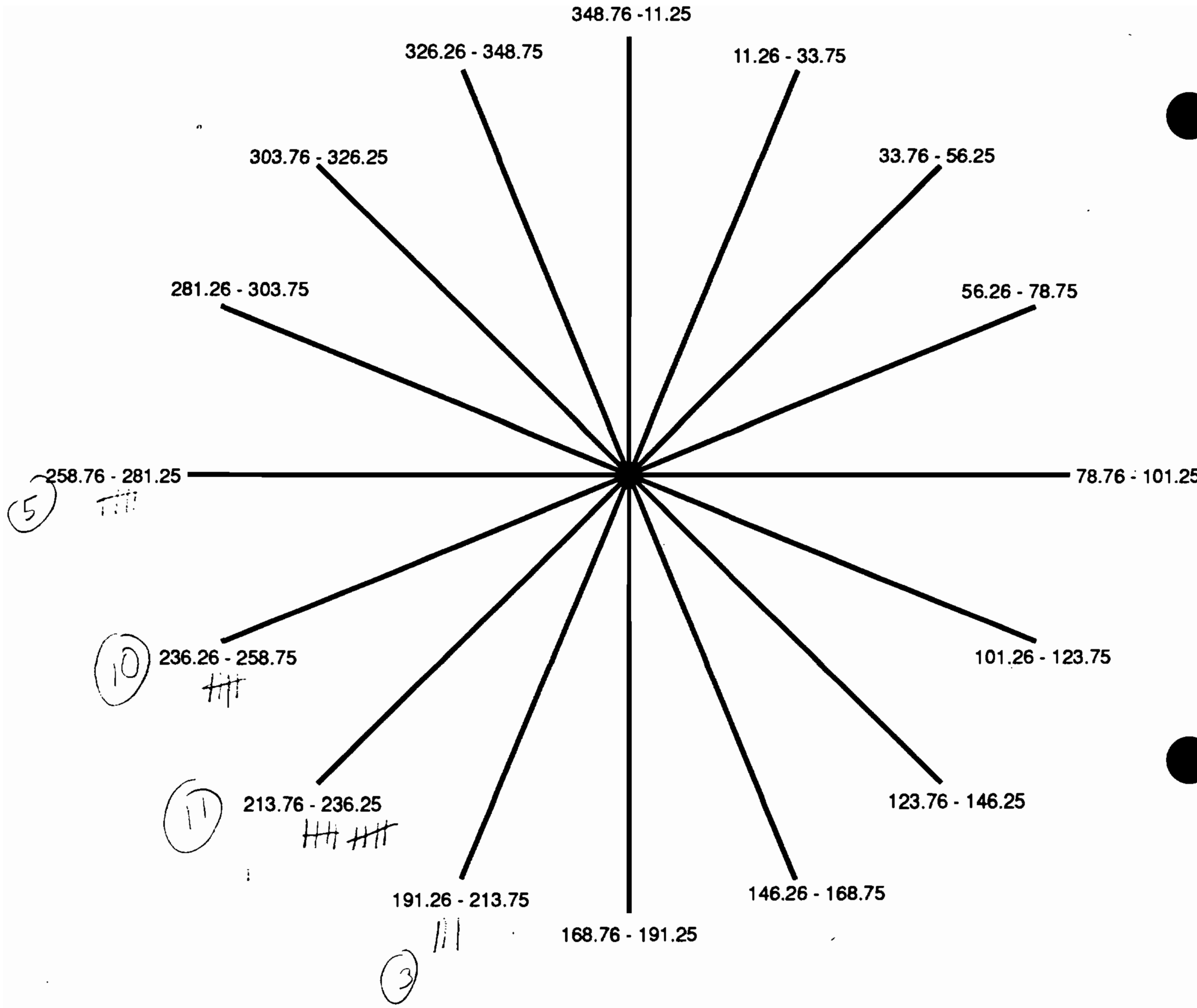
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 5-30-92

CONCENTRATION: 1504 ug/M^3

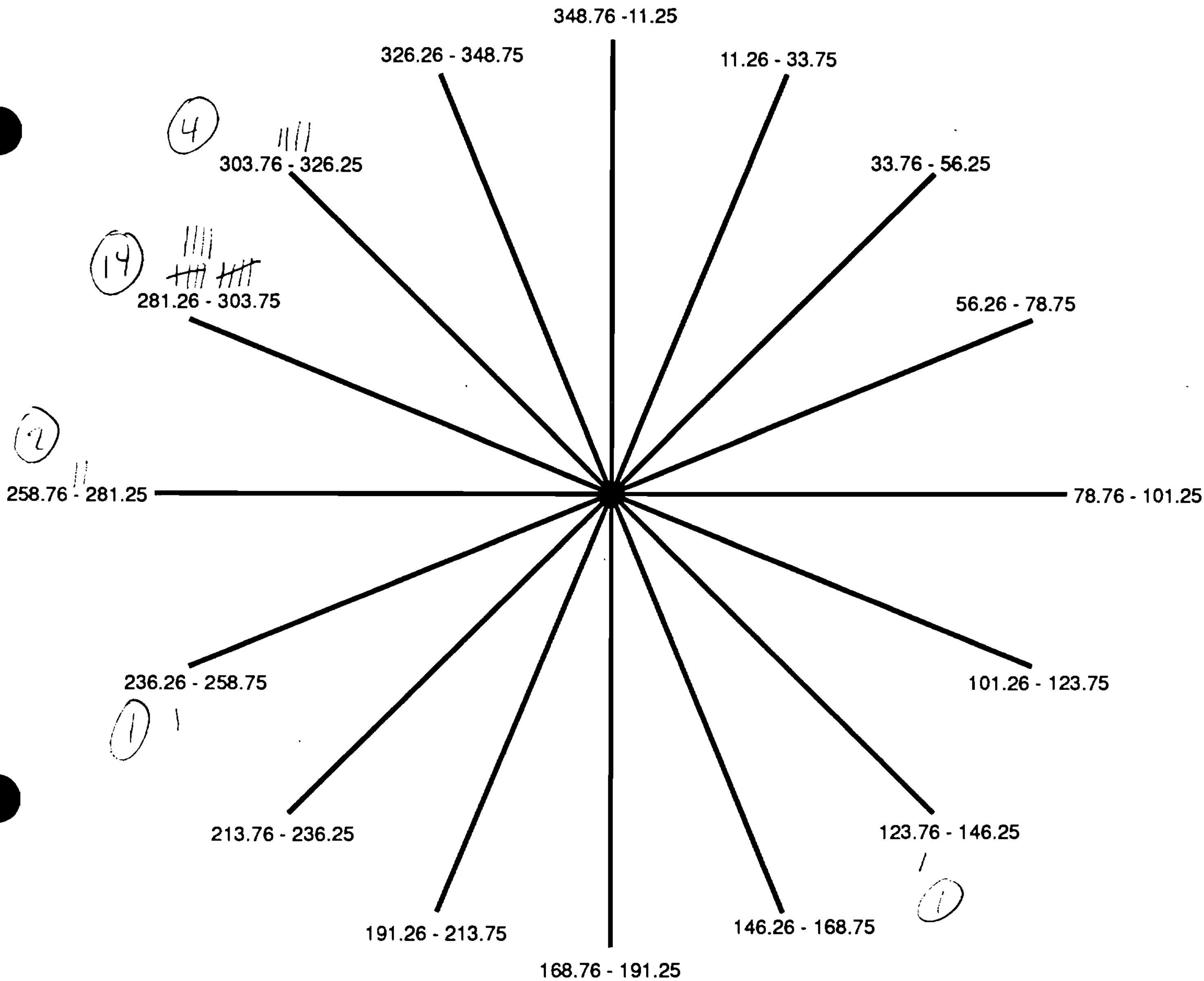
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 6-5-92

CONCENTRATION: 33.8 ug/M^3

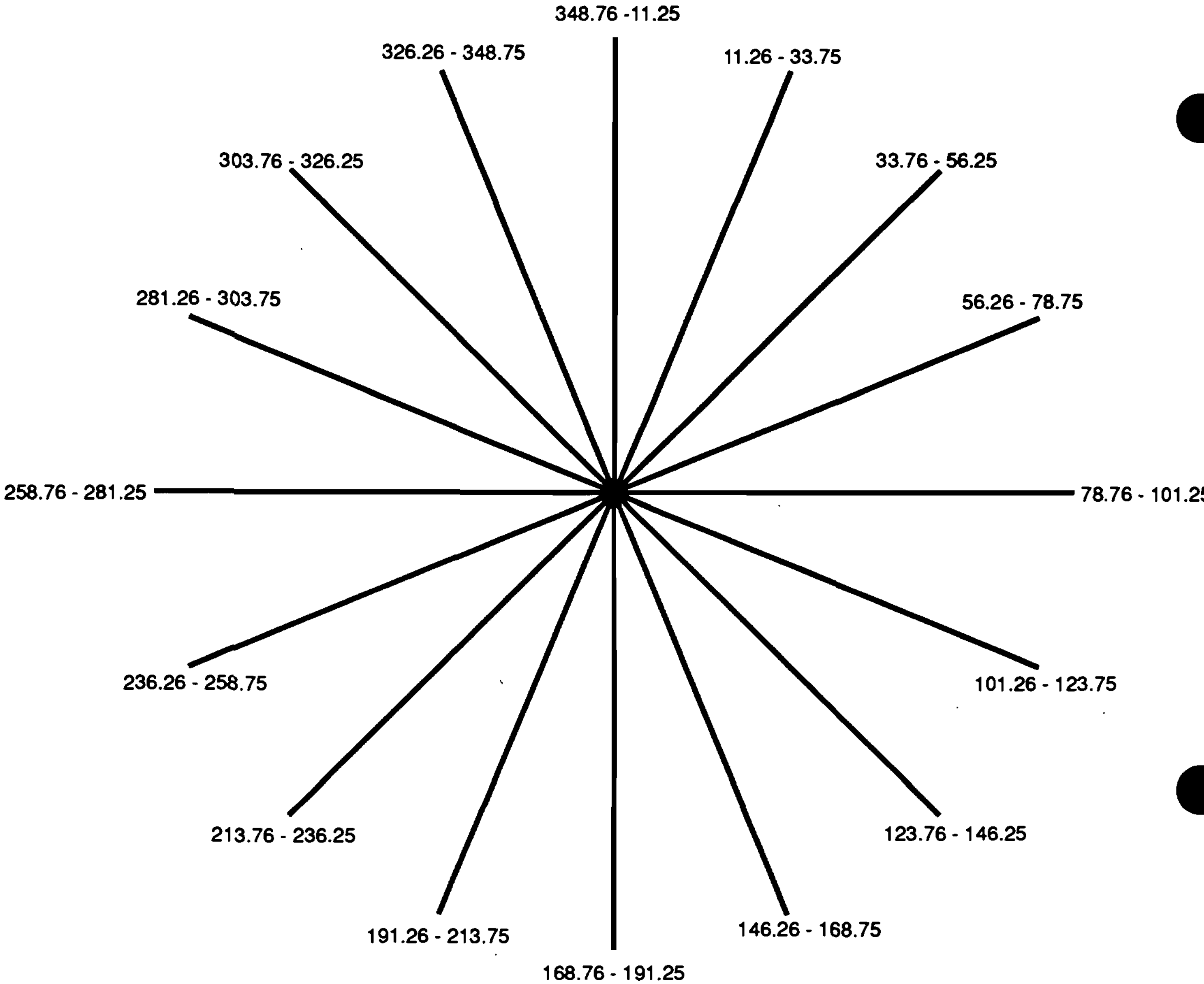
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 6-11-92

CONCENTRATION: 2206 ug/M^3

SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE

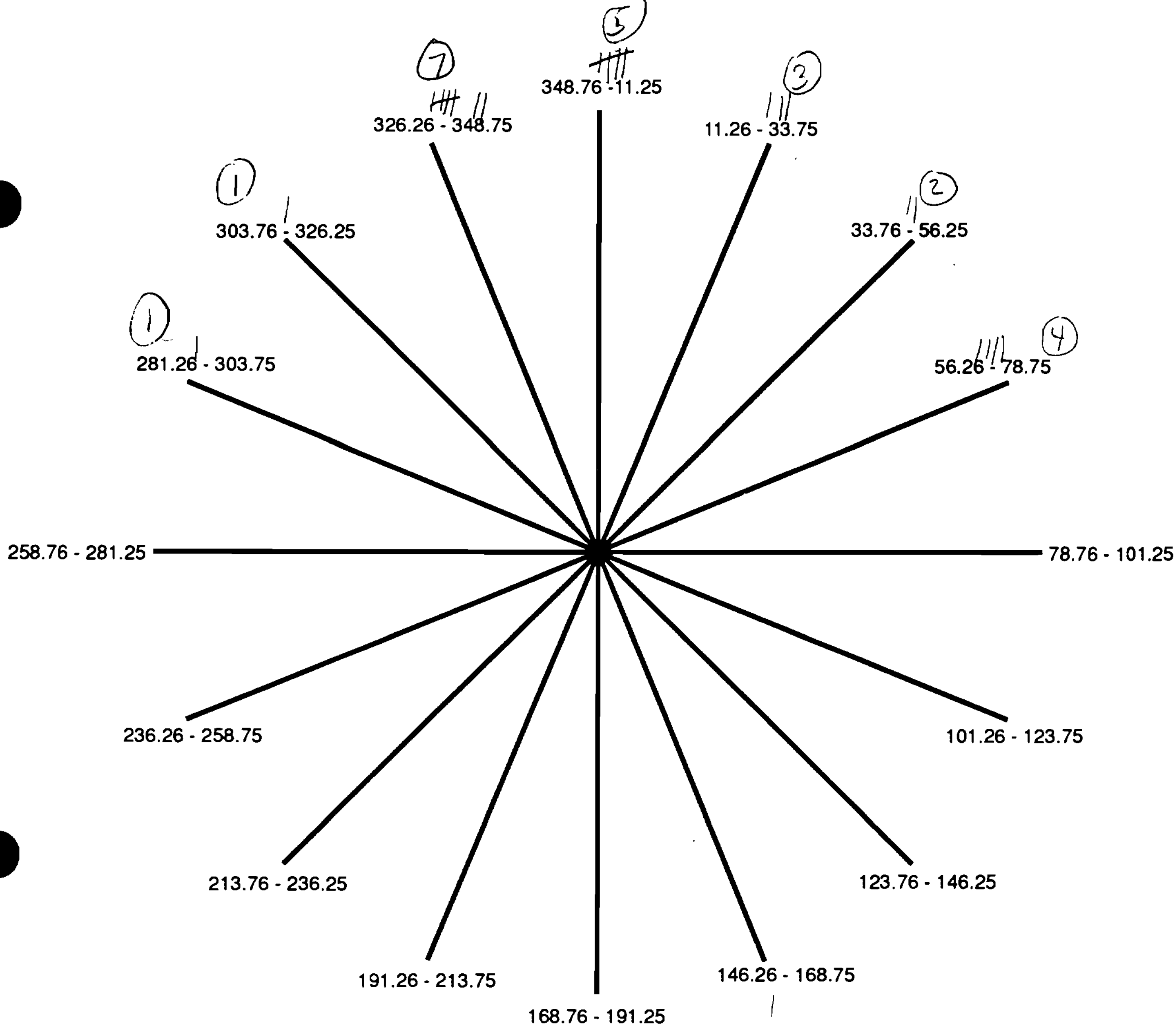


NO WIND DATA AVAILABLE

DATE: 6-19-92

CONCENTRATION: 12.5 ug/M^3

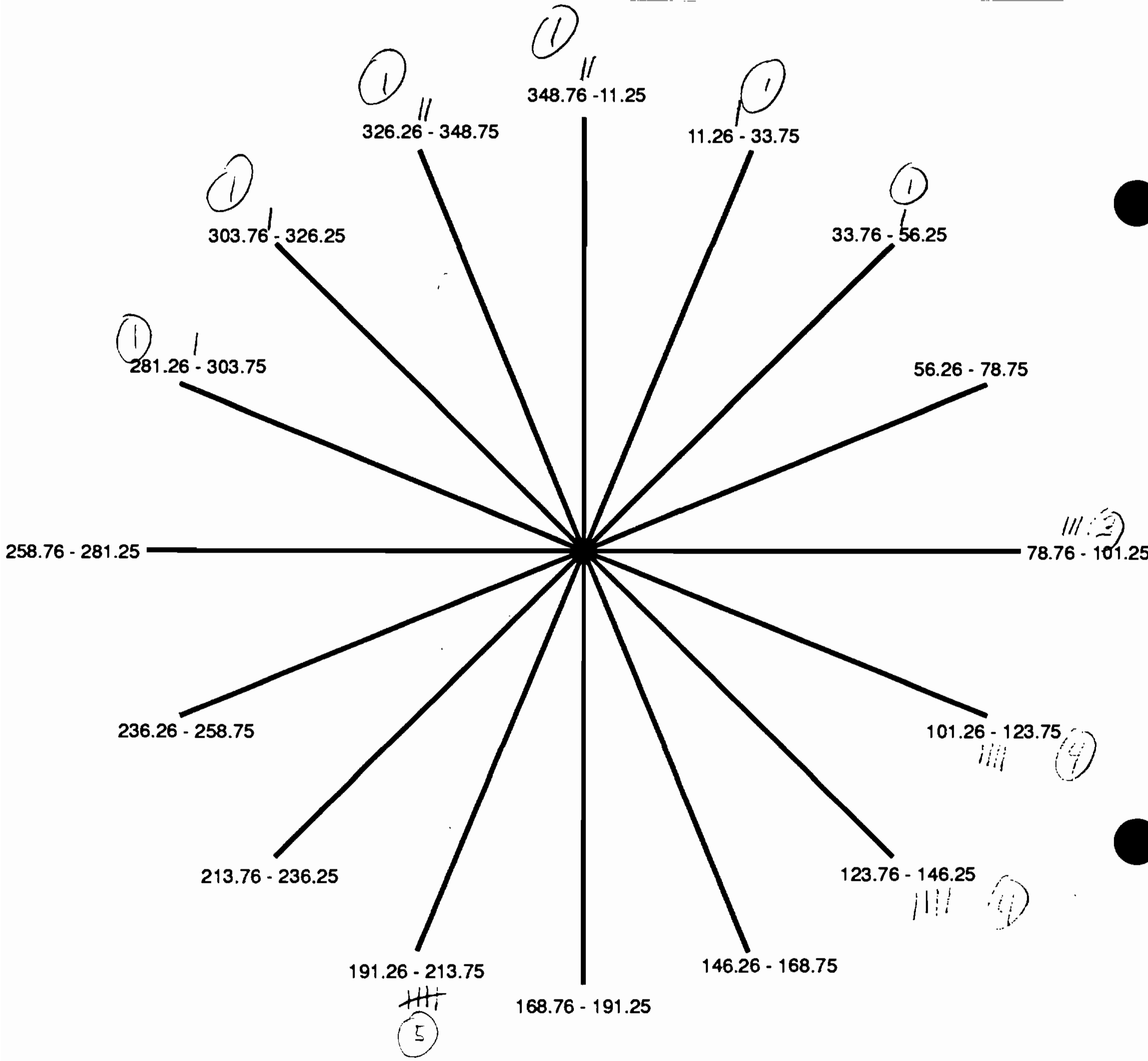
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 7-5-92

CONCENTRATION: 30.9 ug/M^3

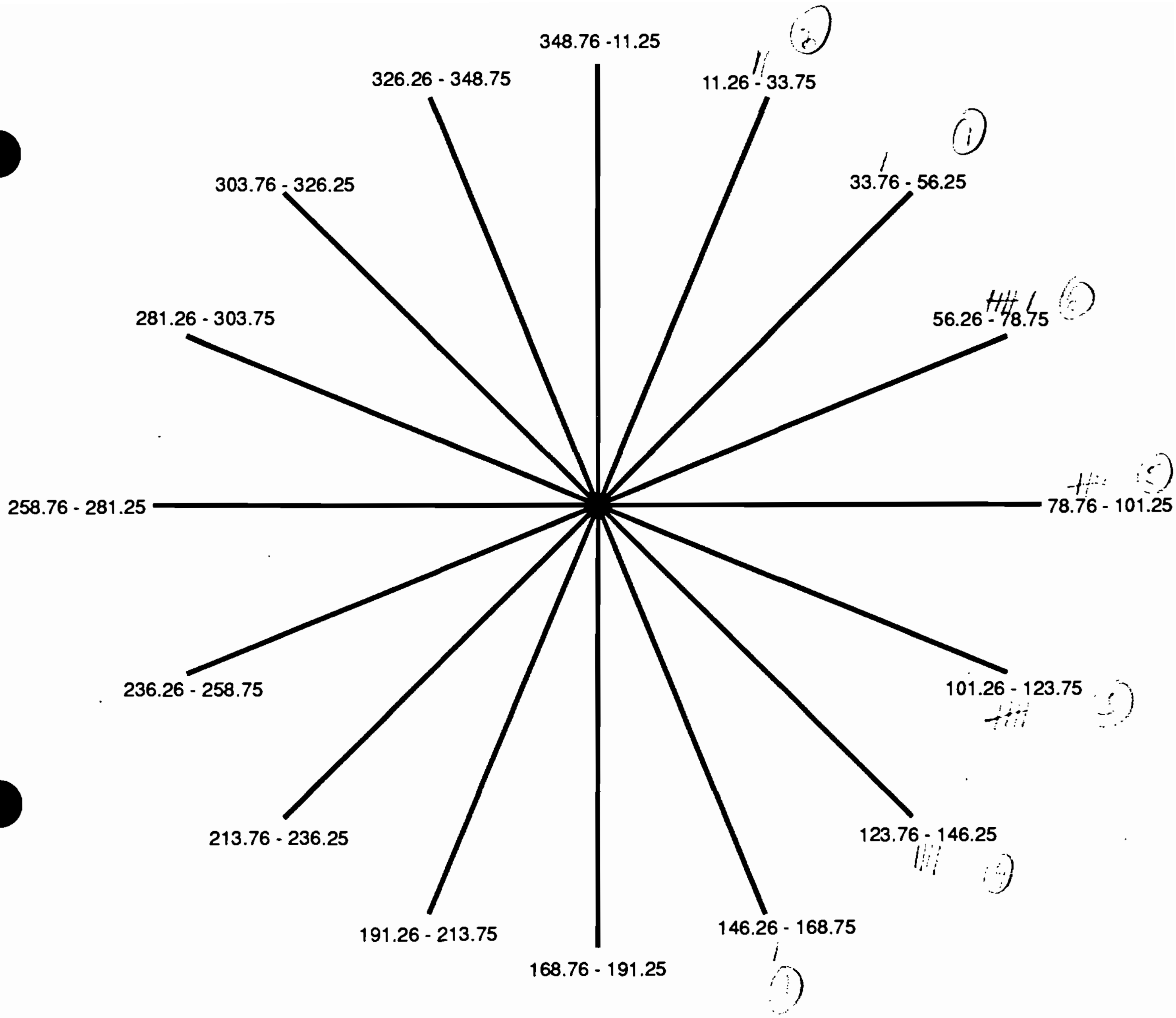
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM$_{10}$ SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 7-11-92

CONCENTRATION: 40.6 ug/M^3

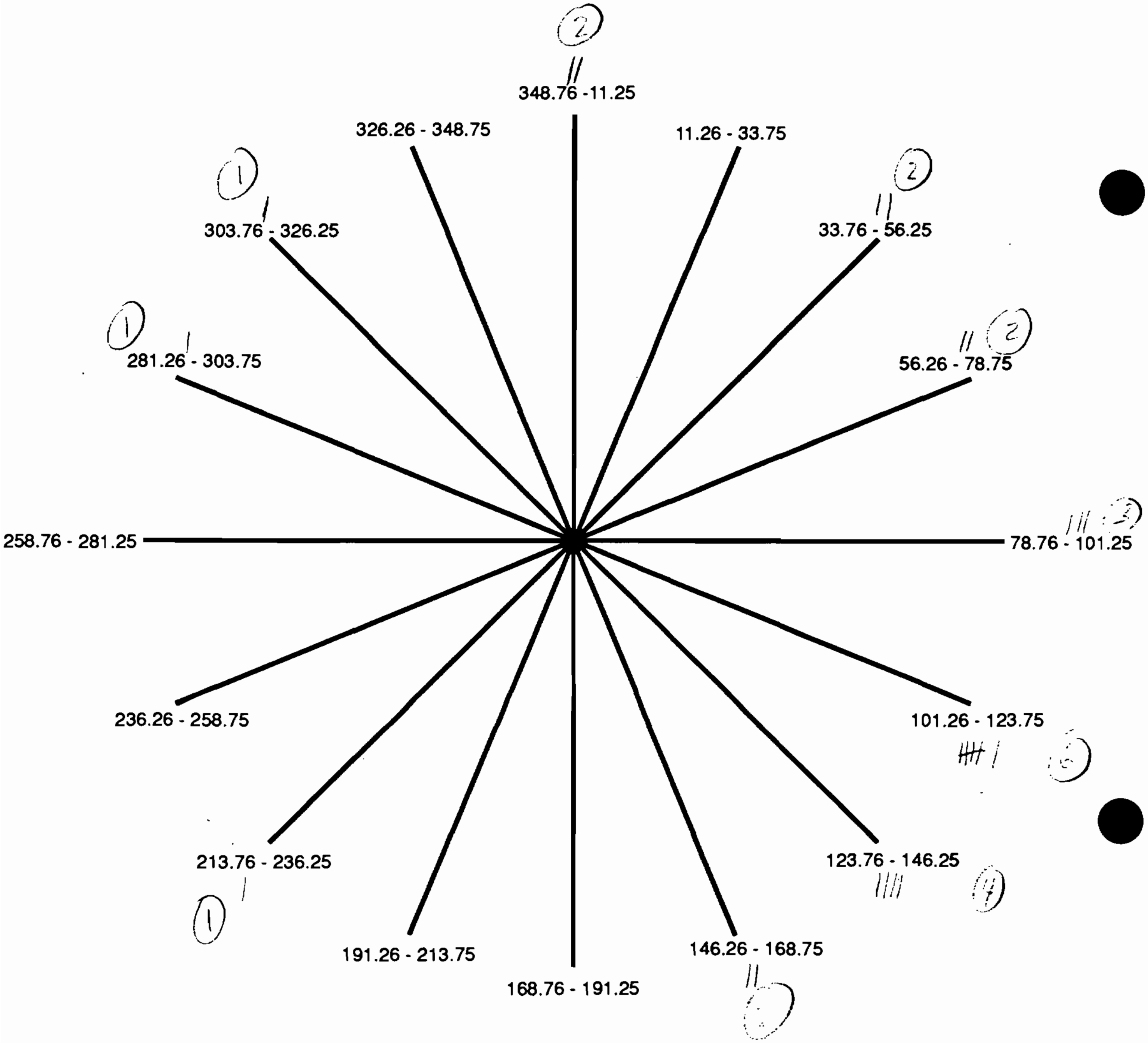
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 7-17-92

CONCENTRATION: 1204 ug/M^3

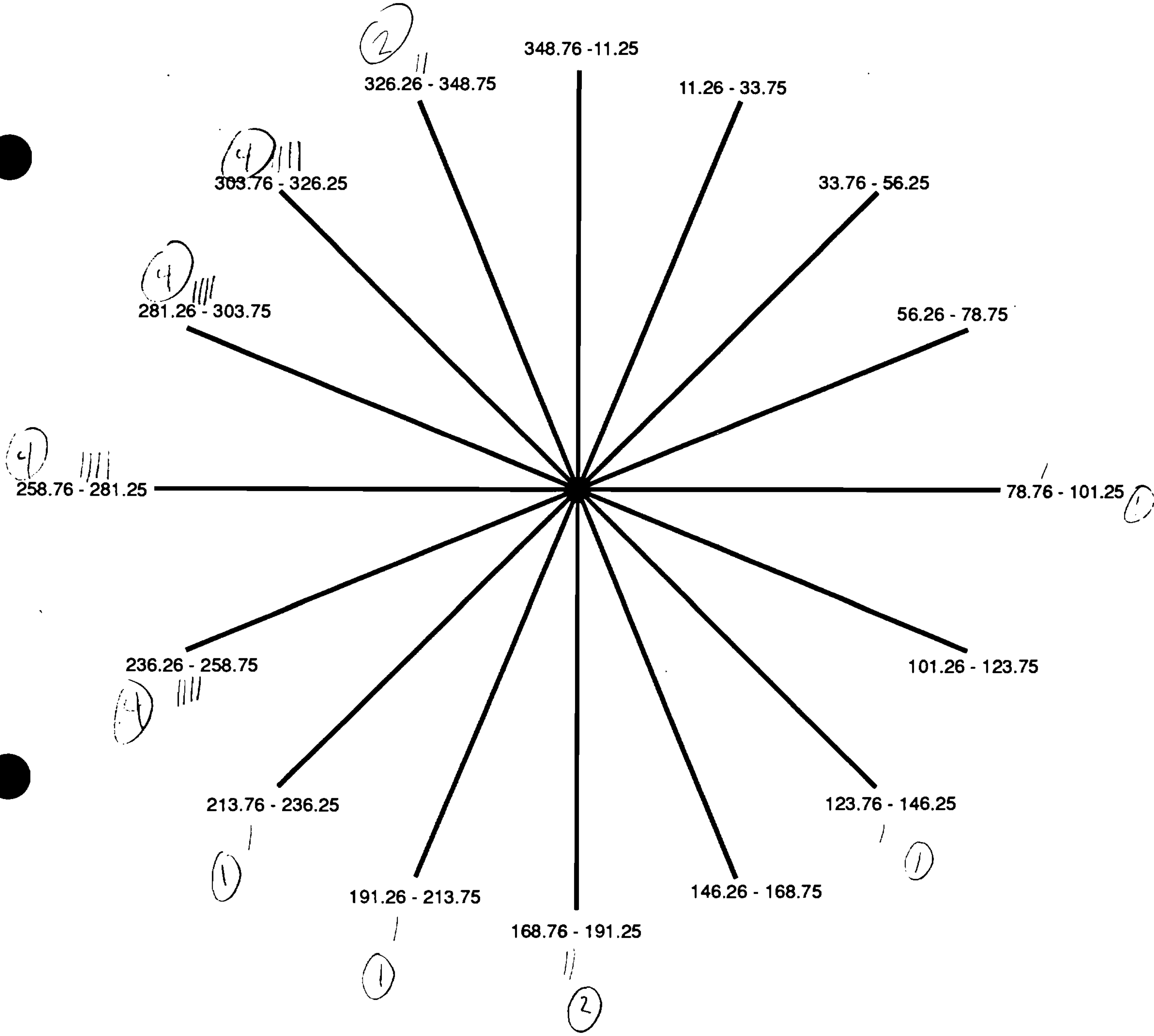
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 7-23-92

CONCENTRATION: 16.9 ug/M^3

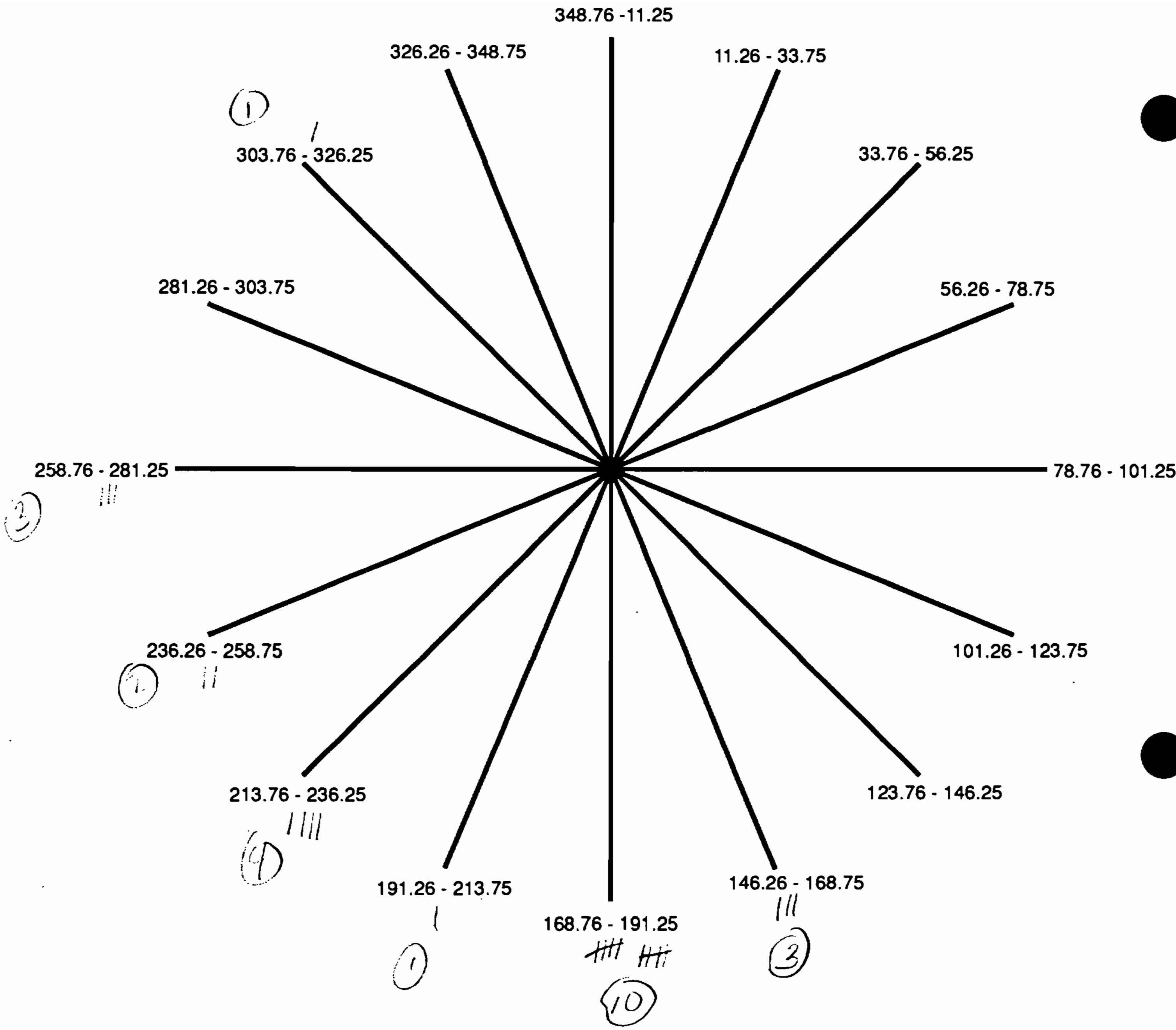
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 7-27-96

CONCENTRATION: 70.4 ug/M^3

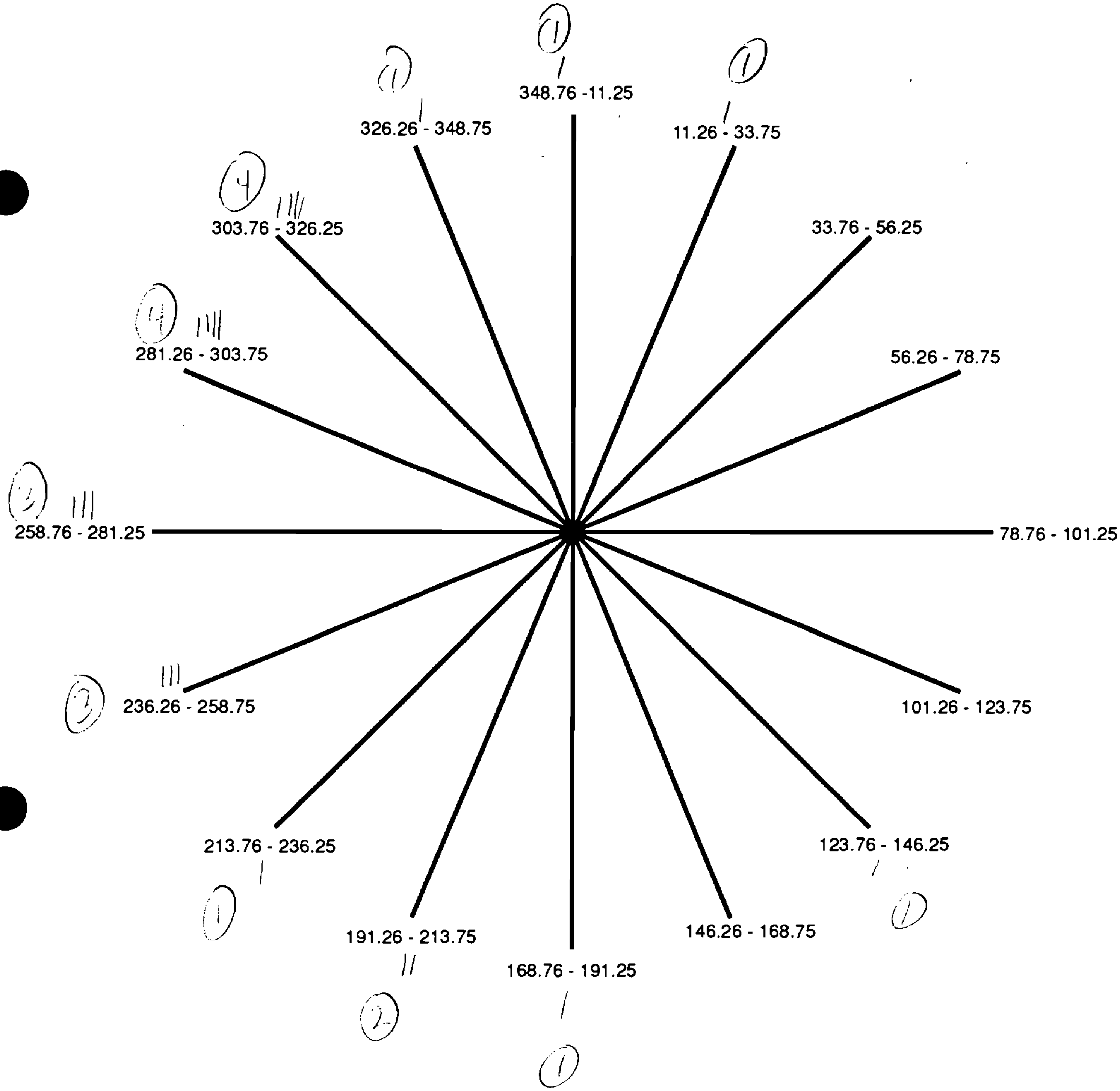
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 8-4-92

CONCENTRATION: 25.0 ug/M^3

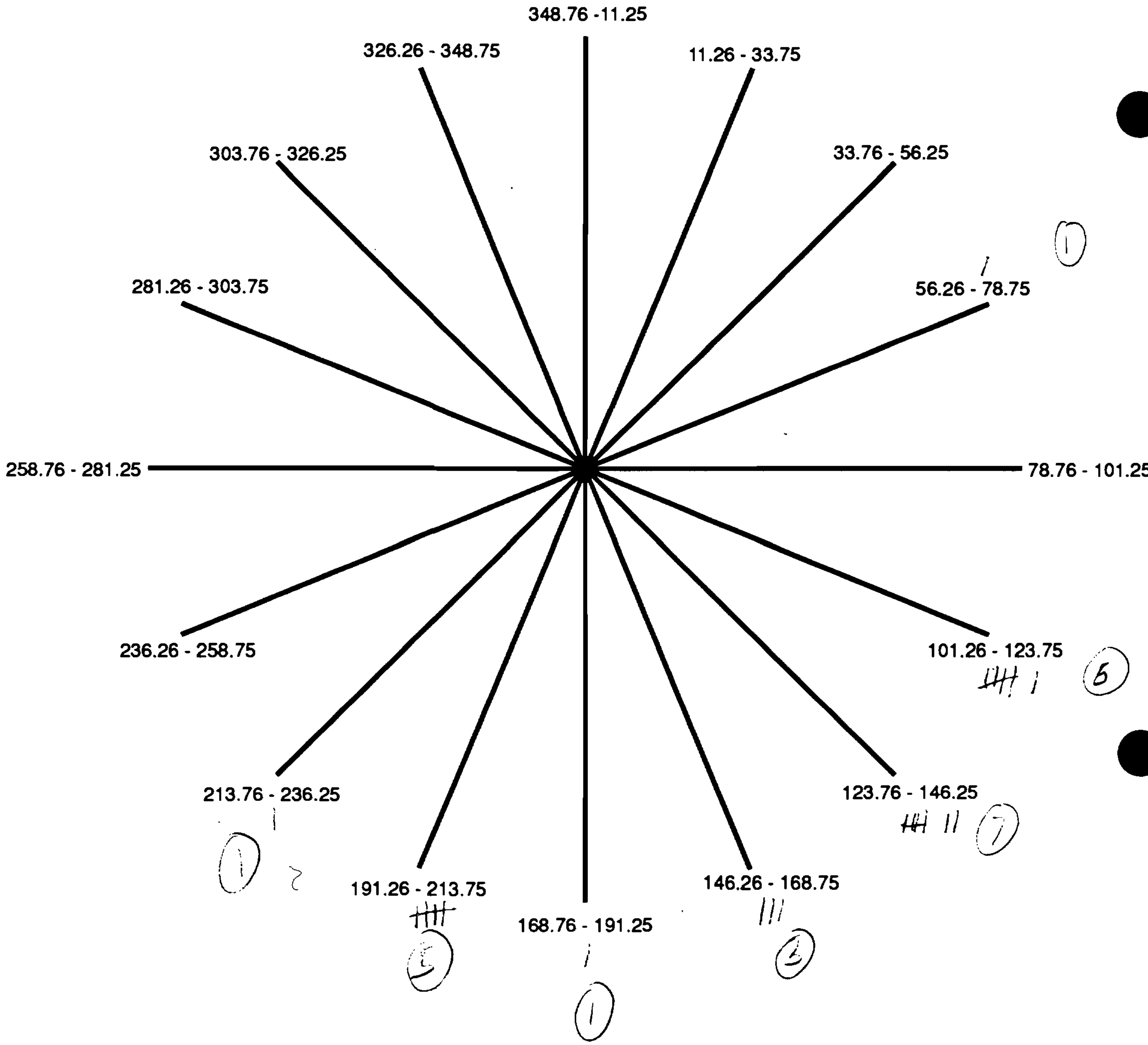
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 8-10-92

CONCENTRATION: 17.7 ug/M^3

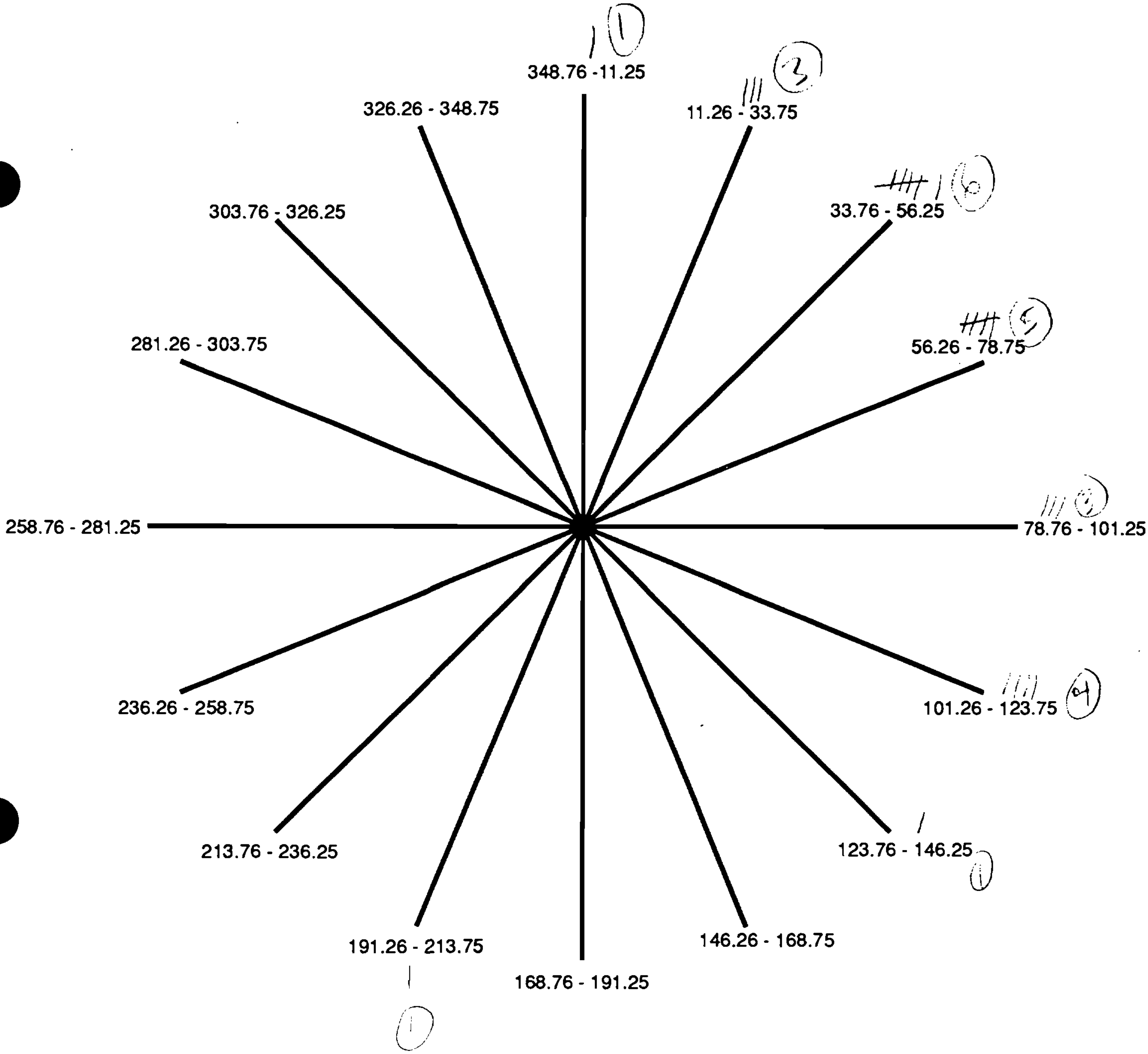
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 8-16-92

CONCENTRATION: 11.4 ug/M^3

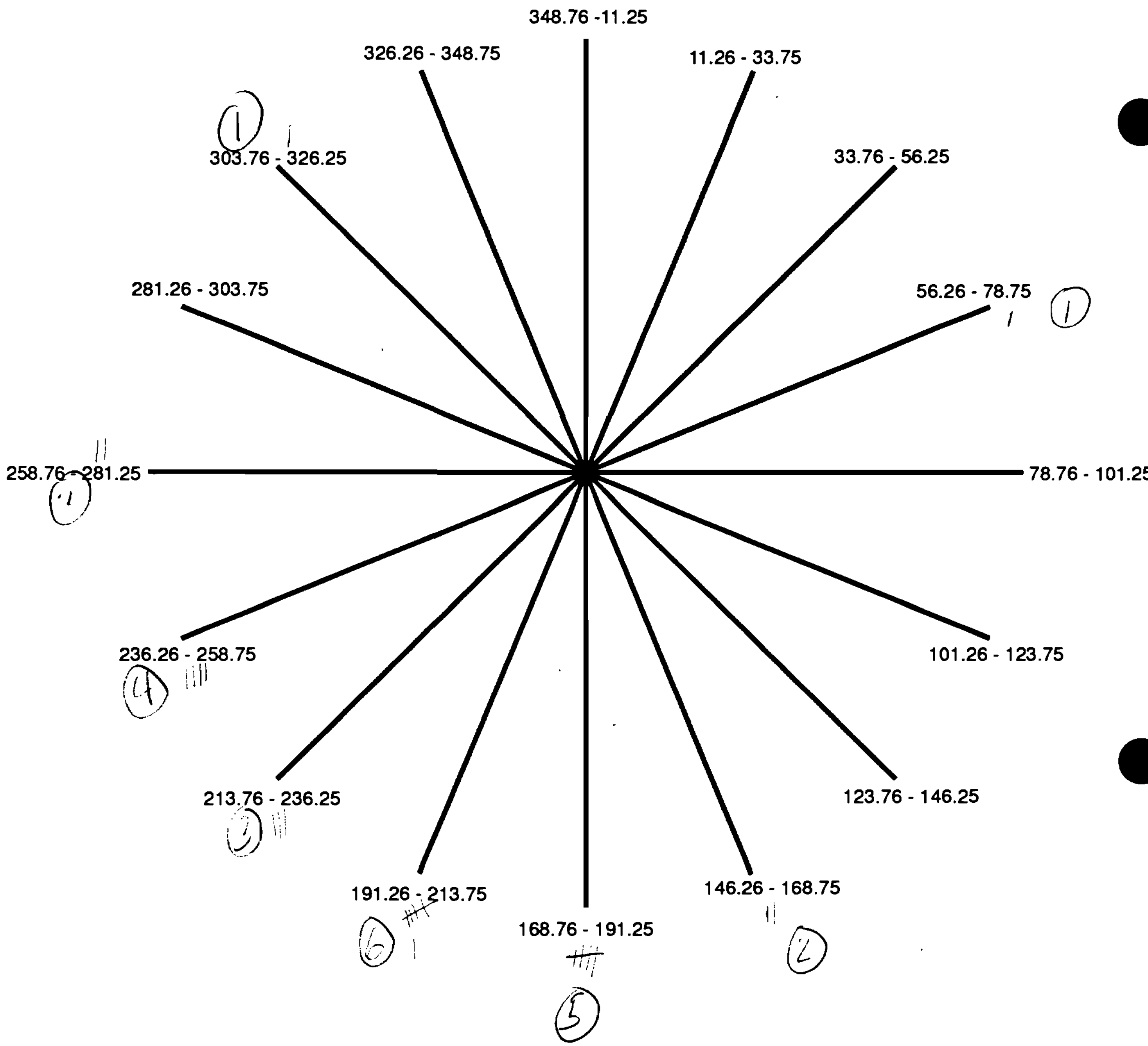
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 9-22-92

CONCENTRATION: 9.9 ug/M^3

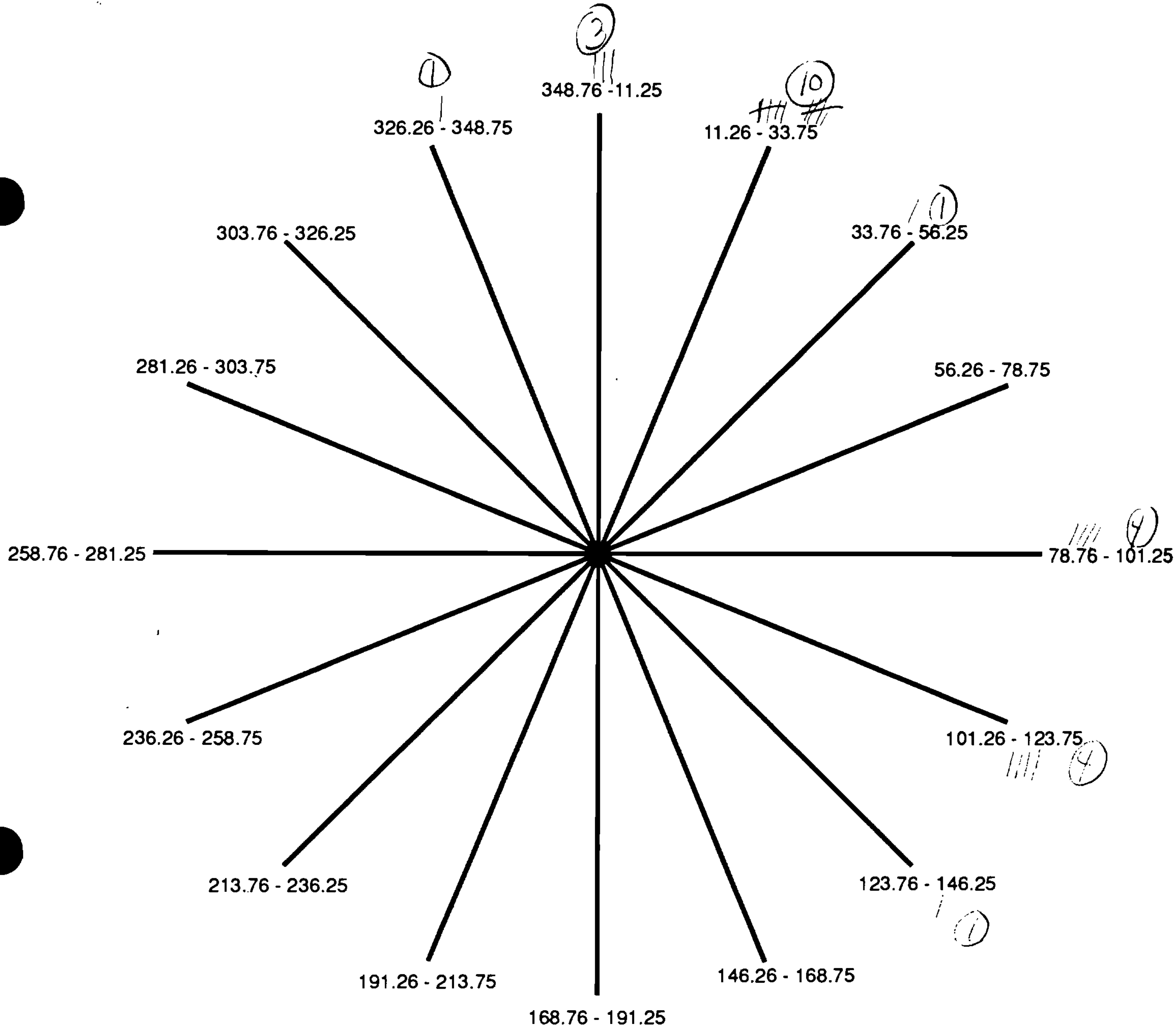
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 5-28-92

CONCENTRATION: 13.7 ug/M^3

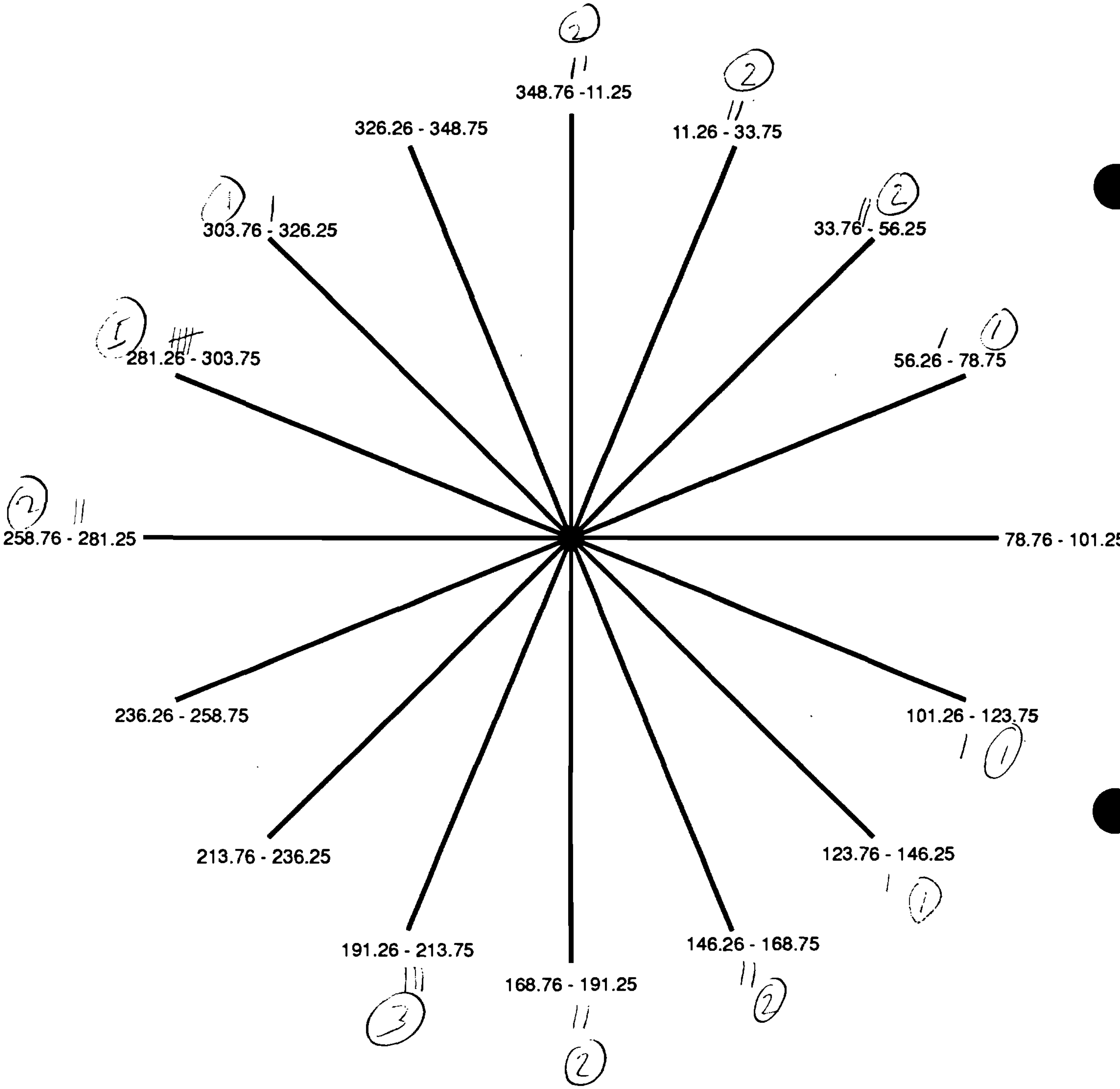
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 9-9-92

CONCENTRATION: 11.9 ug/M^3

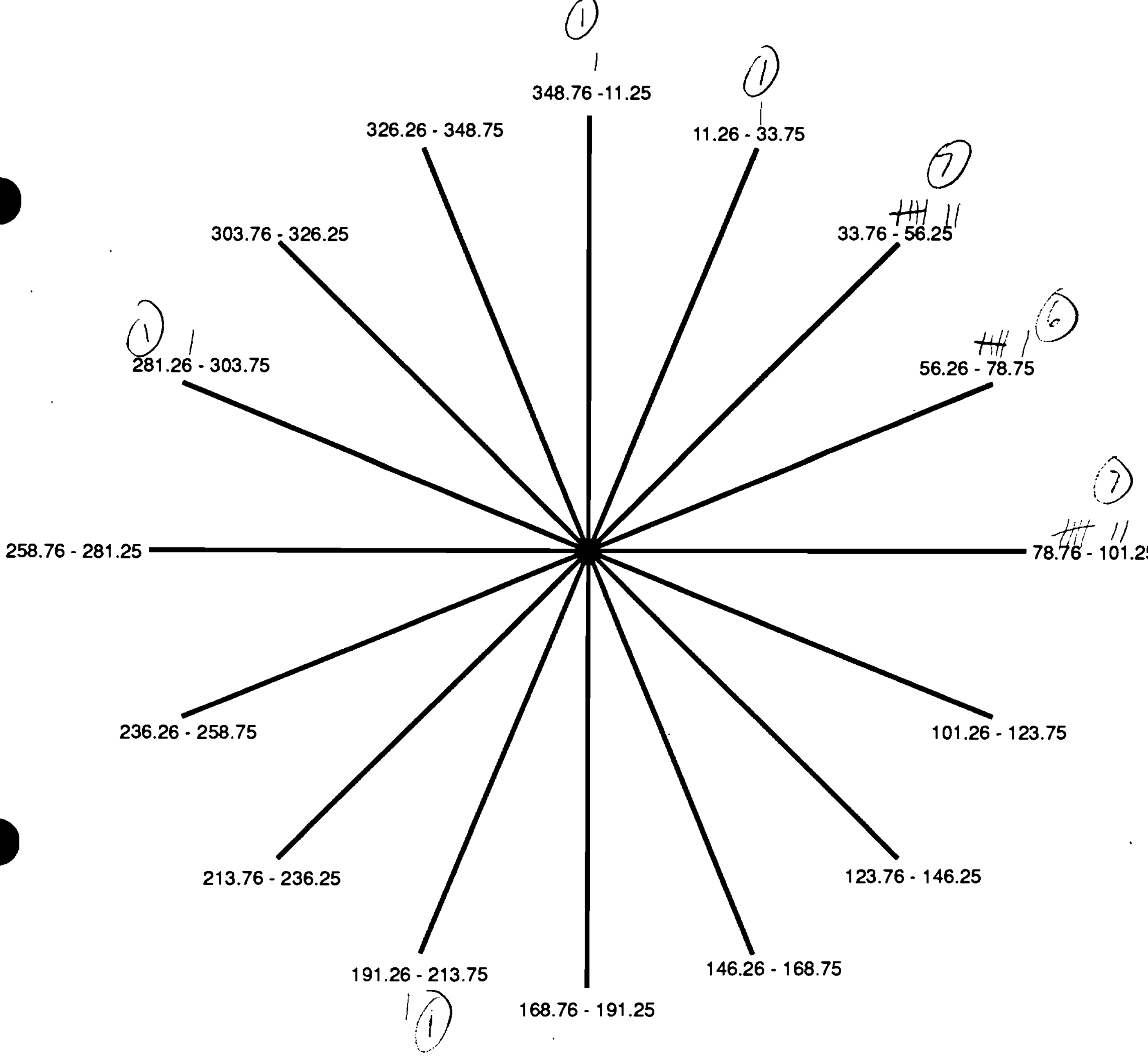
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 9-11-92

CONCENTRATION: 21.2 ug/M^3

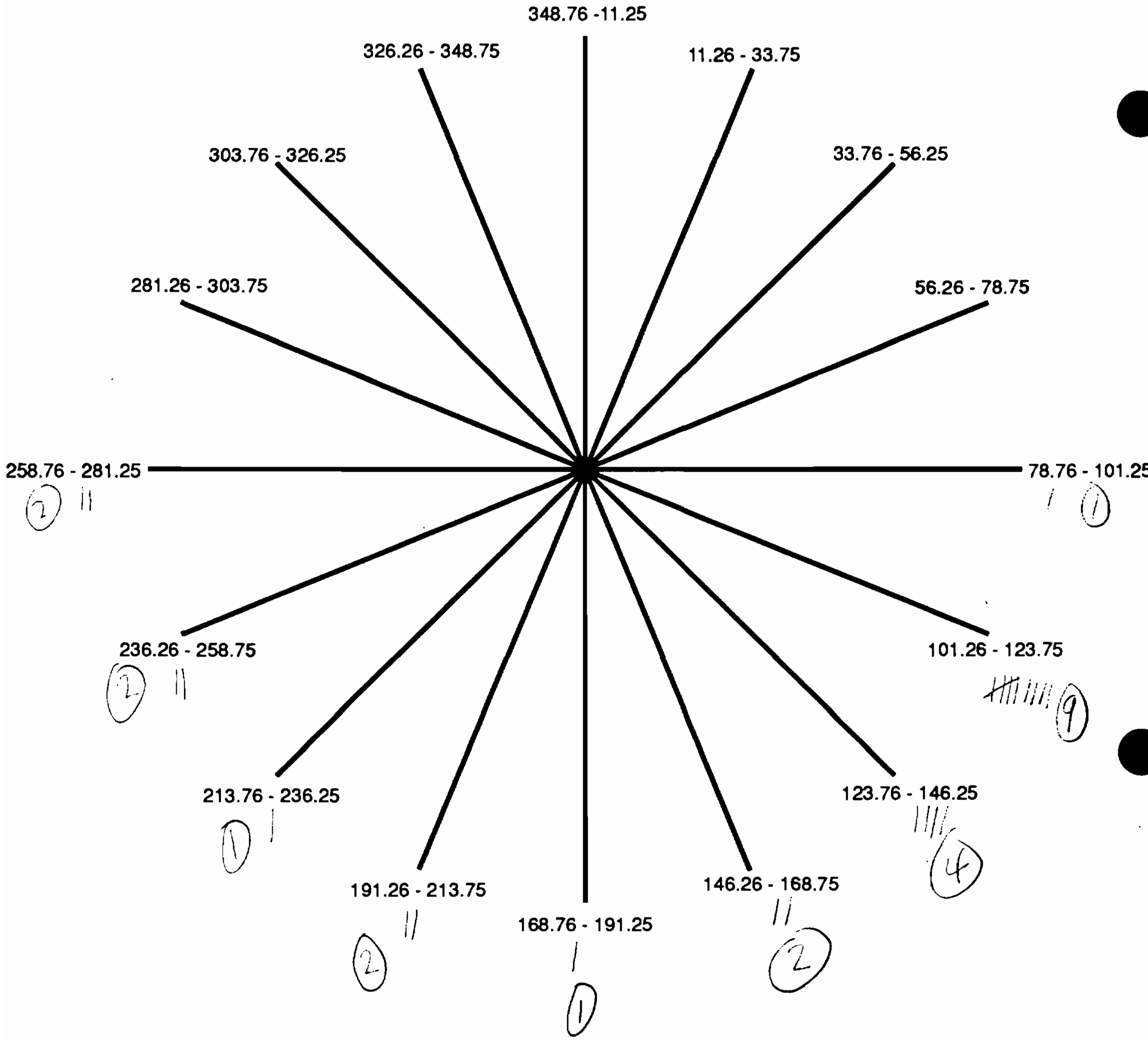
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 9-15-92

CONCENTRATION: 15.3 ug/M^3

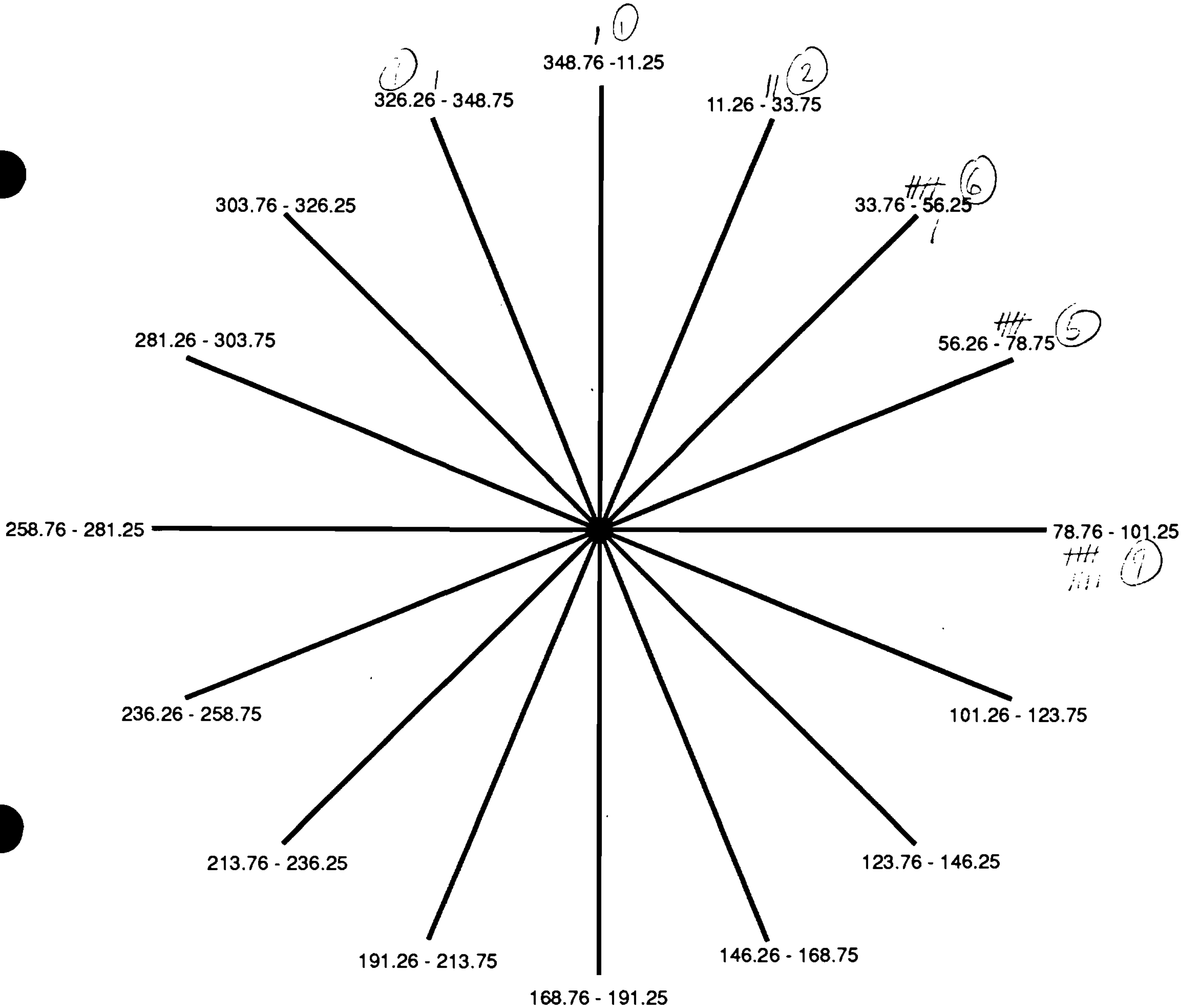
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 7-21-92

CONCENTRATION: 91 ug/M^3

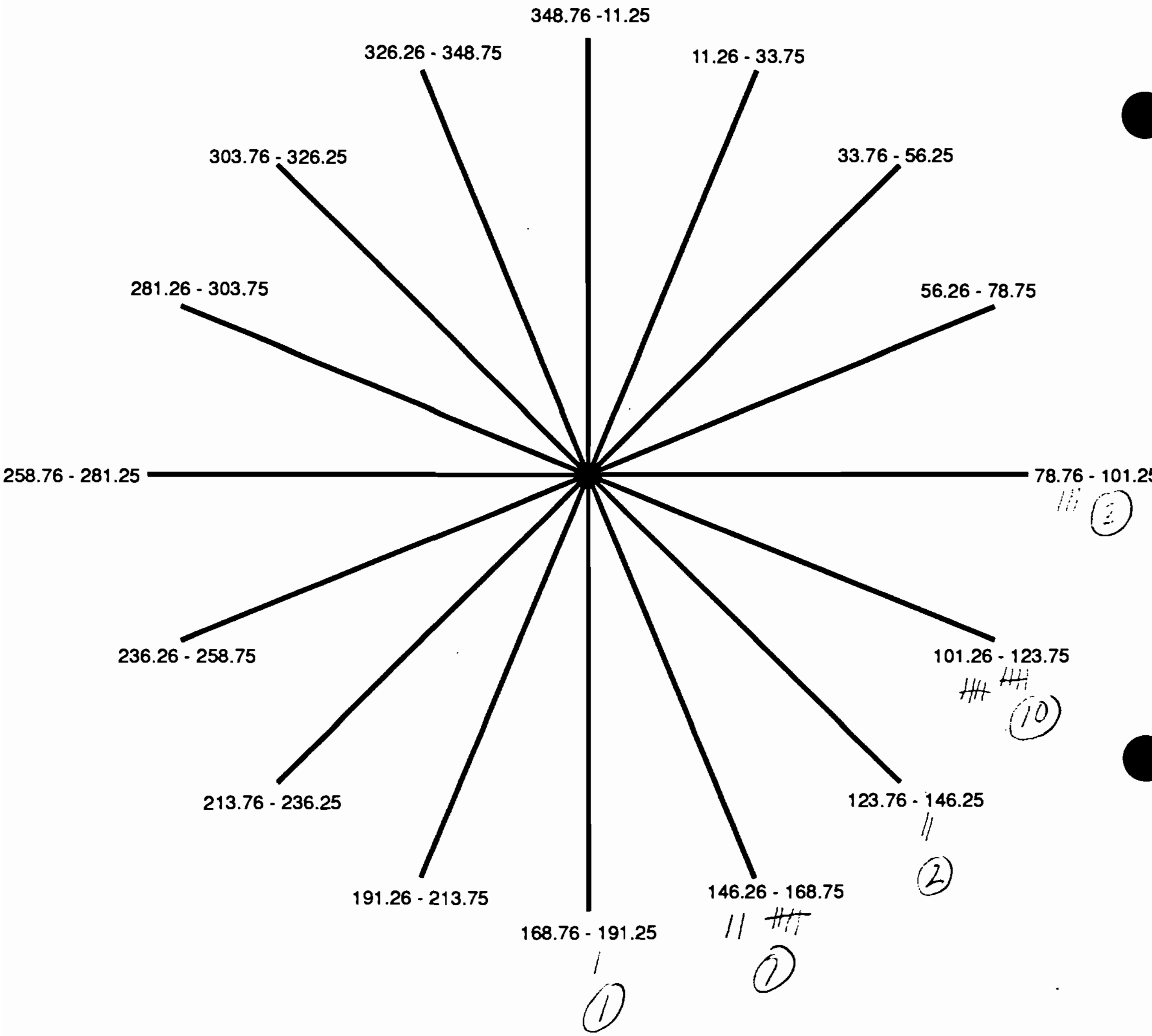
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 9-27-92

CONCENTRATION: 10.0 ug/M^3

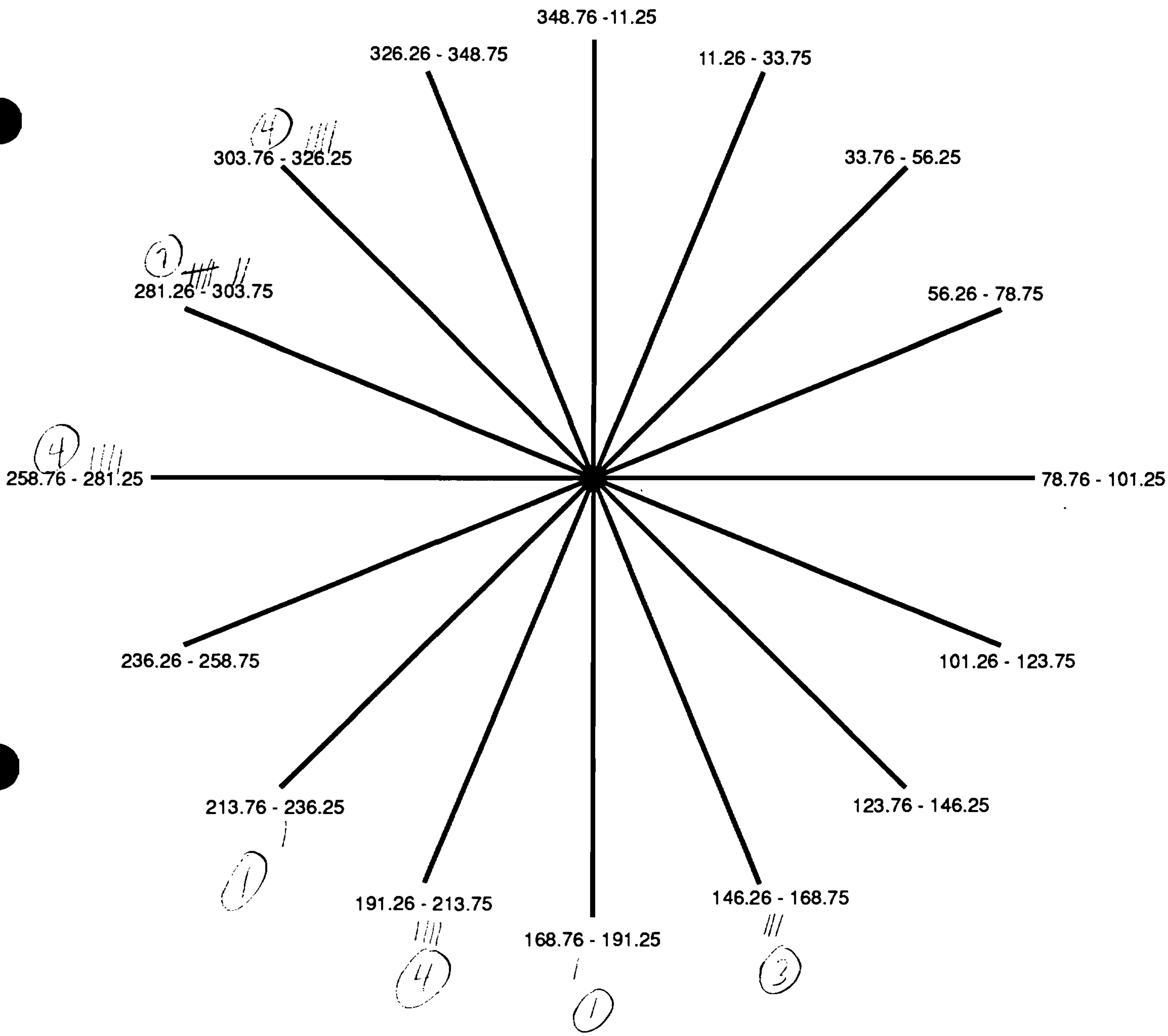
SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 10-3-92

CONCENTRATION: 15.4 ug/M^3

SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE



DATE: 10-9-92

CONCENTRATION: 9.2 ug/M^3

SUMMARY OF WIND DIRECTION OCCURRENCE
DURING PM_{10} SAMPLING PERIOD
FPC POLK COUNTY SITE

10.5.6.6 Summary of Air Quality Monitoring Data (10/15/91 -10/14/92)

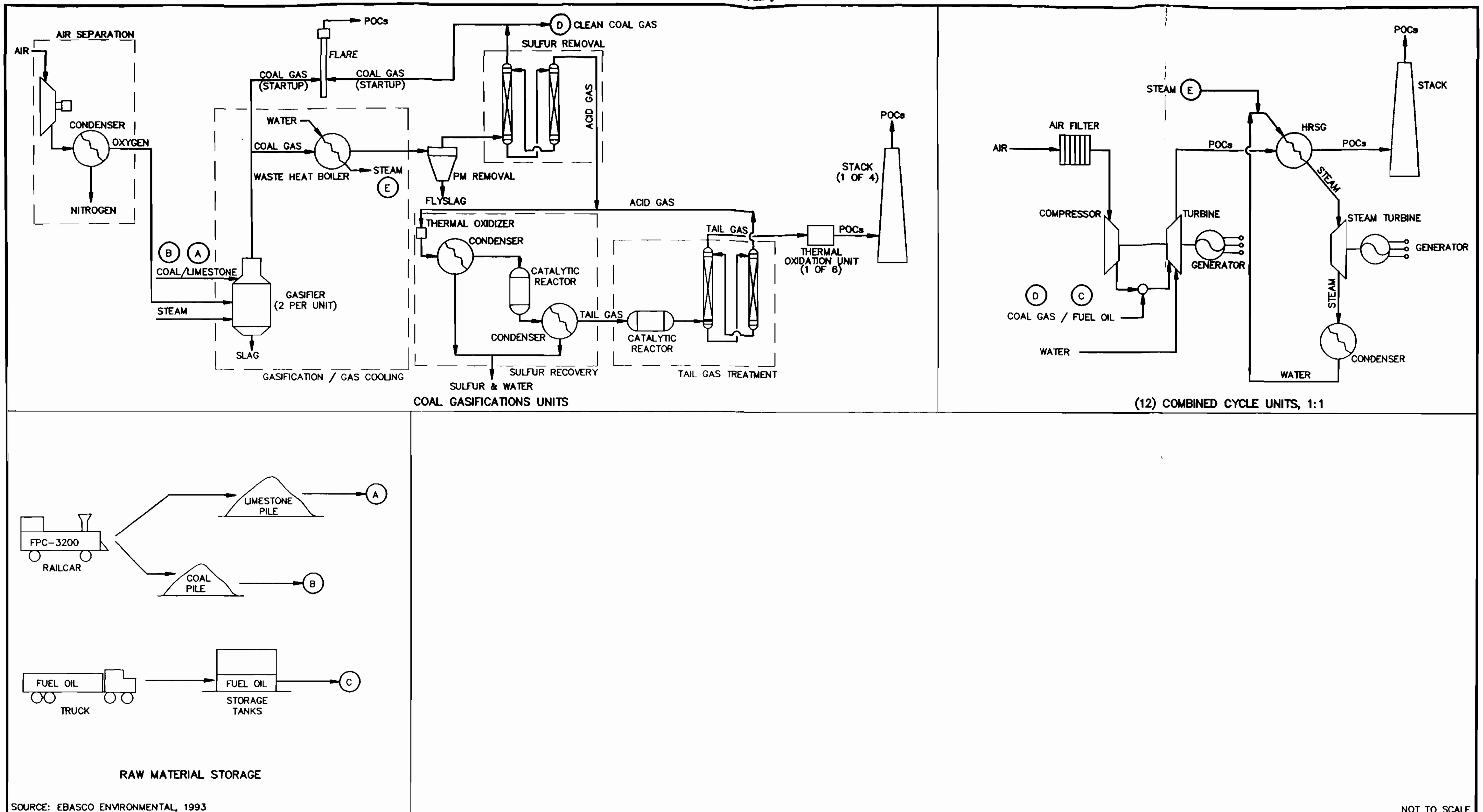
SUMMARY OF POLK COUNTY SITE ON-SITE AIR QUALITY MONITORING DATA					
Pollutant	Averaging Period*	Highest Monitored Concentration ($\mu g/m^3$)	Second Highest Monitored Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	FAAQS ($\mu g/m^3$)
Sulfur Dioxide (SO_2)	3 hr	169	133	1,300	1,300
	24 hr	42	42	365	260
	Annual	5	--	80	60
Ozone (O_3)	1 hr	186	186	235	235
Particulate Matter (PM_{10})	24 hr	70	44	150	150
	Annual	20	--	50	50

*Period of Record: October 15, 1991 through October 14, 1992

Source: Ebasco Environmental, 1992

10.6 SUMMARY AIR QUALITY ANALYSIS

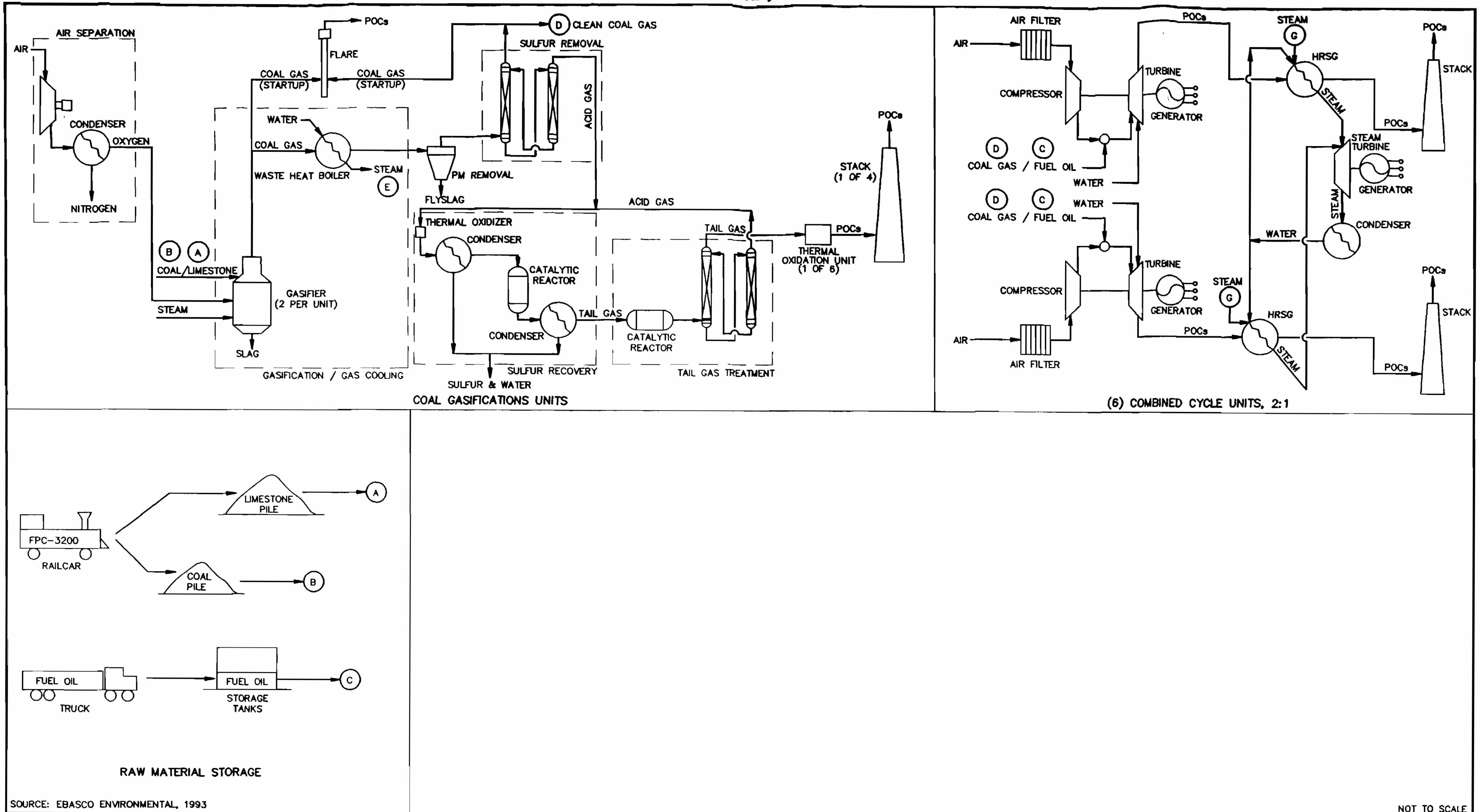
This information will be filed in a supplement to the SCA.



Florida Power CORPORATION

Polk County Site

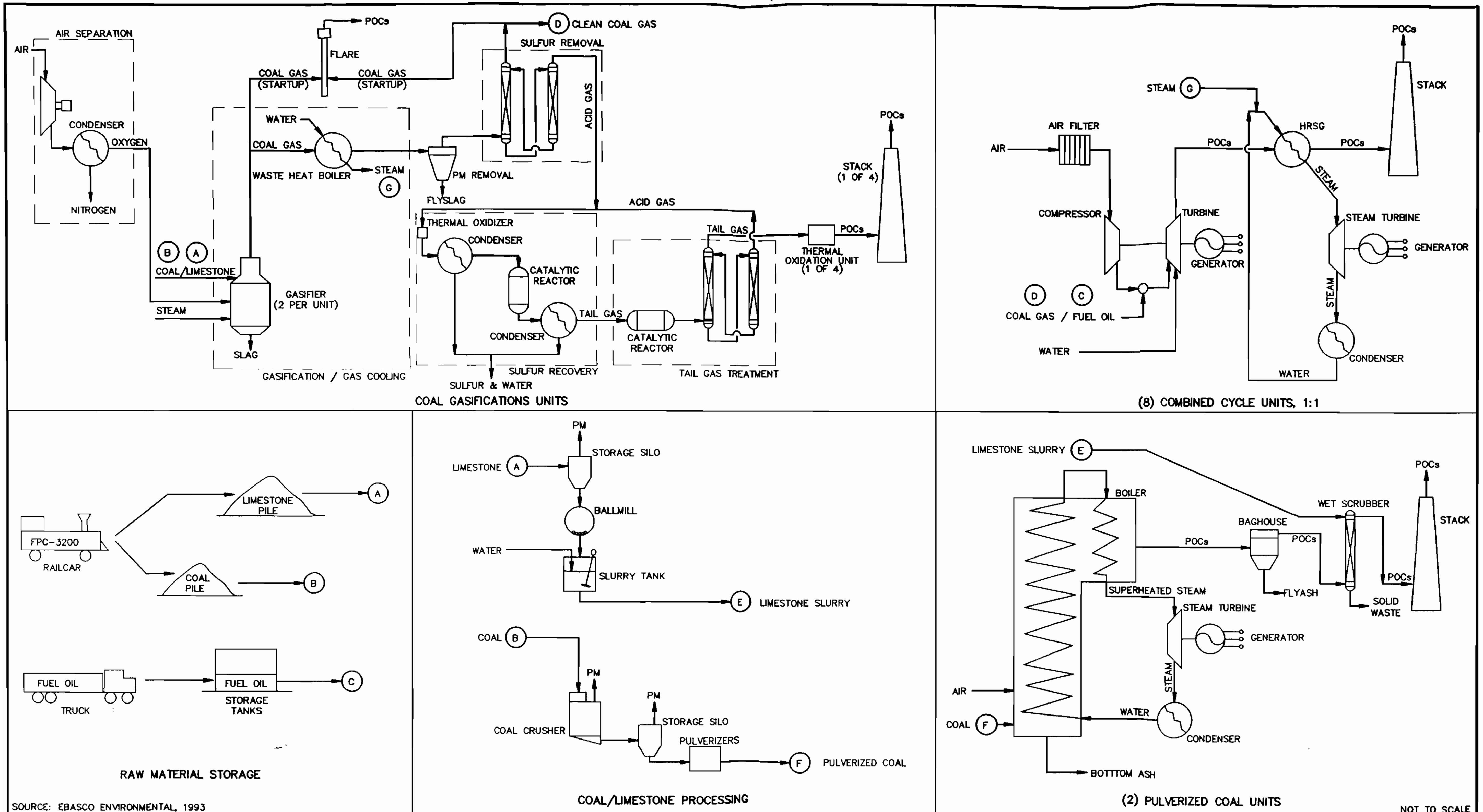
FIGURE 1A
SIMPLIFIED FLOW CHART – CASE A, 1:1, 3000 MW
(12) COMBINED CYCLE UNITS, (6) GASIFICATION UNITS



Florida Power CORPORATION

Polk County Site

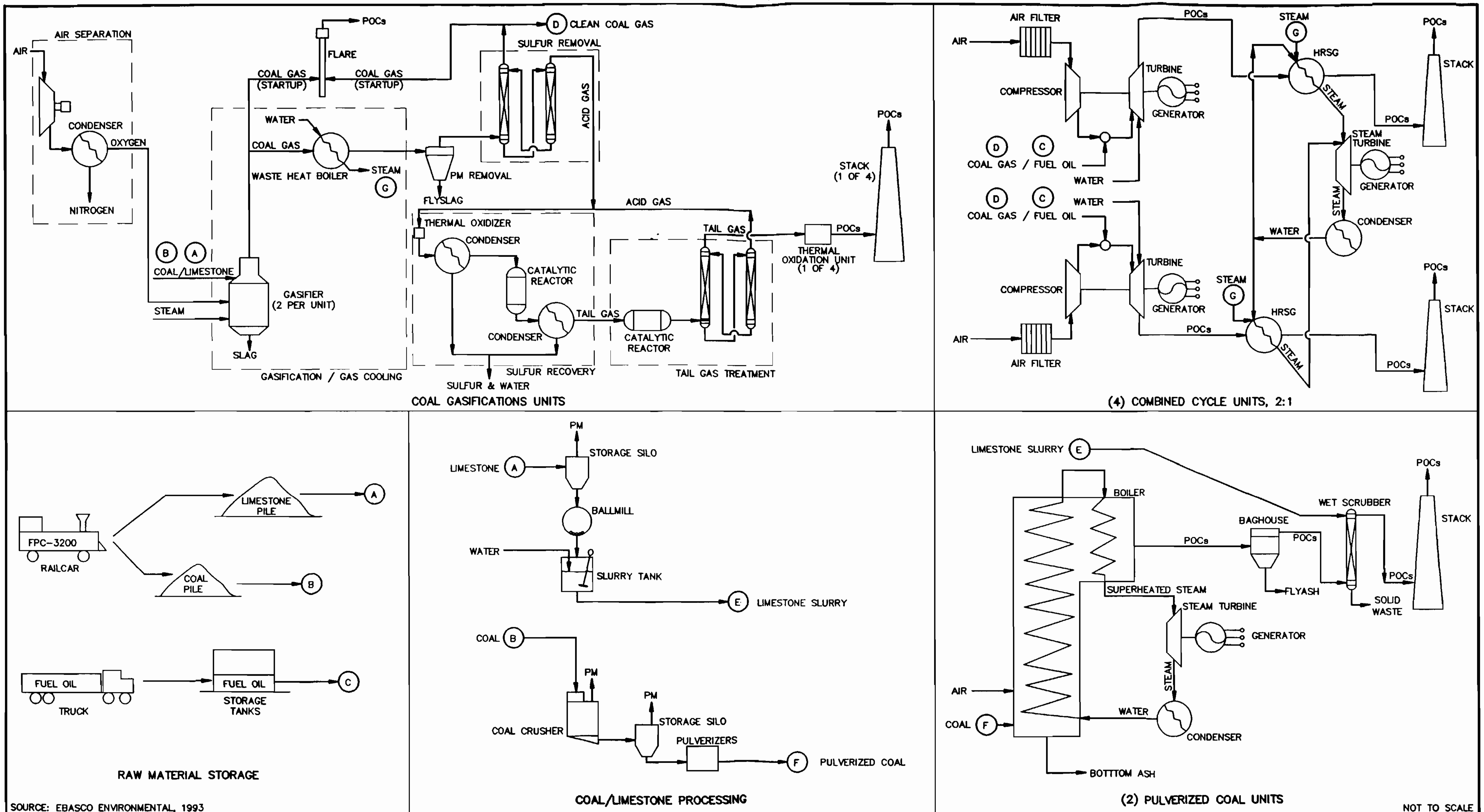
FIGURE 1B
SIMPLIFIED FLOW CHART – CASE A, 2:1, 3000 MW
(6) COMBINED CYCLE UNITS, (6) GASIFICATION UNITS



Florida Power CORPORATION

Polk County Site

FIGURE 2A
SIMPLIFIED FLOW CHART – CASE B, 1:1, 3200 MW
(8) COMBINED CYCLE UNITS, (2) PULVERIZED COAL UNITS, (4) GASIFICATION UNITS



Florida Power CORPORATION

Polk County Site

FIGURE 2B
SIMPLIFIED FLOW CHART – CASE B, 2:1, 3200 MW
(4) COMBINED CYCLE UNITS, (2) PULVERIZED COAL UNITS, (4) GASIFICATION UNITS