



**Florida Power**  
A Progress Energy Company

fax

To: Greg DeAngelo

Company: FDEP

Fax No.: 850/922-6979

Subject: PSD Growth Info

From: Jamie Hunter

Phone No.: 727/826-4363

Date: February 13, 2003

Pages: 28

**Comments:**

As we discussed. The original was sent via mail on Tuesday.

Thanks,

Jamie



February 10, 2003

Mr. Greg DeAngelo  
Florida Department of Environmental Protection  
Bureau of Air Regulation, New Source Review Section  
2600 Blair Stone Road, MS 5505  
Tallahassee, Florida 32399-2400

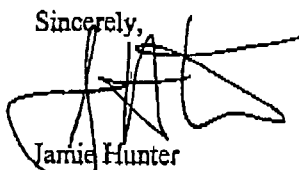
Re: **Hines Energy Complex - Power Block 3**  
**Additional Information Related to**  
**Project No. 1050234-006-AC/Air Permit No. PSD-FL-330 and**  
**Supplemental Site Certification Application to PA 92-33**

Dear Mr. DeAngelo:

Please find enclosed additional information relating to the air quality impacts of, and the nature and extent of, all general, residential, commercial, industrial and other growth which has occurred since August 7, 1977 in the area of this proposed project. This information is provided to supplement the information provided in the above referenced application and to fully satisfy the requirements of 62-212.400(3)(h)(5), F.A.C.

Should you have any questions regarding this information, please contact me at (813) 826-4363.

Sincerely,



Jamie Hunter  
Lead Environmental Specialist  
Environmental Services

jjh/jjh055

Enclosure

c/enc: Hamilton Owen - FDEP Siting Office  
Doug Roberts - HG&S

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

2/4/03

0237539/4.1/010403/Growth Analysis

**HINES ENERGY COMPLEX, POWER BLOCK 3  
GENERAL, RESIDENTIAL, COMMERCIAL, INDUSTRIAL GROWTH**

In support of Progress Energy's response to Florida Department of Environmental Protection (FDEP) sufficiency questions, December 18, 2002, Progress Energy submits the following information to satisfy the requirements of 62-212.400(3)(h)(5), Florida Administrative Code (F.A.C.), which states that an application must include information relating to the air quality impacts of, and the nature and extent of, all general, residential, commercial, industrial and other growth which has occurred since August 7, 1977, in the area the facility or modification would affect. This information is consistent with the EPA Guidance related to this requirement in the Draft New Source Review Workshop Manual (1990).

In general, there has been minimal residential, commercial, and industrial growth within a 5-mile radius of the Hines Energy Complex site since 1977. The site is located in Polk County in central Florida and is the fourth largest county in Florida consisting of 1,823 square miles. The site 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. The site itself consists of approximately 8,000 acres that is wholly owned by Progress Energy. The adjacent land uses consist almost entirely of active phosphate mining, or mined and reclaimed lands. See Figure 2.2.3-2 of the Supplemental Site Certification Application (SSCA). From the standpoint of land use compatibility, the availability of transportation facilities, the lack of noise and visual impacts during construction and operation activities, the Siting Board has already determined the site location to be suitable for power plant facilities. A discussion of land use in the area of the Hines Energy Complex site is presented in Section 2.2 of the SSCA.

The following discussion presents general trends in residential, commercial, industrial, and other growth that has occurred since August 7, 1977, in Polk County. As such, the information presents information available from a variety of sources (e.g., Florida Statistical Abstract, FDEP) that characterizes Polk County as a whole.

**RESIDENTIAL GROWTH**

**POPULATION AND HOUSEHOLD TRENDS**

As an indicator of residential growth, the trend in the population and number of single- and multi-family household units in Polk County since 1977 are shown in Figure 1.

2/4/030237539/4/4.1/010403/Growth Analysis

Over 3 million people live within a 50-mile radius and 6 million within a 100-mile radius of the Polk County. The county experienced a 73 percent increase in population for the years 1977 through 2000. During this period, there was an increase in population of about 204,000 with about 123,000 due to births and the rest from people moving into the county.

Similarly, the number of households in the county increased by about 68,000 or about 58 percent since 1977.

### **GROWTH ASSOCIATED WITH THE OPERATION OF THE PROJECT**

The nearest community to the project is the unincorporated community of Homeland that is approximately 1 mile northeast of the site boundary. There are very few residences near the plant site. Because of the limited number of workers needed to operate the project, residential growth due to the project is expected to be minimal.

### **COMMERCIAL GROWTH**

#### **RETAIL TRADE AND WHOLESALE TRADE**

As an indicator of commercial growth in Polk County, the trends in the number of commercial facilities and employees involved in retail and wholesale trade are presented in Figure 2. The retail trade sector comprises establishments engaged in retailing merchandise. The retailing process is the final step in the distribution of merchandise. Retailers are, therefore, organized to sell merchandise in small quantities to the general public. The wholesale trade sector comprises establishments engaged in wholesaling merchandise. This sector includes merchant wholesalers who buy and own the goods they sell; manufacturers' sales branches and offices who sell products manufactured domestically by their own company; and agents and brokers who collect a commission or fee for arranging the sale of merchandise owned by others.

Since 1977 retail trade has increased by 524 establishments and 21,000 employees or 38 and 108 percent, respectively. For the same period, wholesale trade has increased by 413 establishments and 4,600 employees or 107 and 98 percent, respectively.

#### **LABOR FORCE**

The trend in the labor force in Polk County since 1977 is shown in Figure 3. The county is designated as a labor surplus area by the U.S Department of Labor. The unskilled labor supply consistently exceeds local demand. The estimated unemployment rate for 2000 was 4.7 percent.

2/4/03

0237539/4/4.1/010403/Growth Analysis

Between 1977 and 1999, approximately 88,600 persons were added to the available work force for an increase of 85 percent.

### **TOURISM**

Another indicator of commercial growth in Polk County is the tourism industry. As an indicator of tourism growth in the county, the trend in the number of hotels and motels and the number of units at the hotels and motels are presented in Figure 4.

This industry comprises establishments primarily engaged in marketing and promoting communities and facilities to businesses and leisure travelers through a range of activities, such as assisting organizations in locating meeting and convention sites; providing travel information on area attractions, lodging accommodations, restaurants; providing maps; and organizing group tours of local historical, recreational, and cultural attractions.

Between 1978 and 2000, there was a decrease of about 25 percent in the number of hotels and motels in the county; however there was a slight increase of 7 percent in the number of units at those facilities.

### **TRANSPORTATION**

As an indicator of transportation growth, the trend in the number of vehicle miles traveled (VMT) by motor vehicles on major roadways in Polk County is presented in Figure 5. The county is the center of Florida's industrial belt and is within 500 miles of 40 major metropolitan areas.

The county straddles Interstate I-4, the main conduit for the central Florida growth corridor. Interstate I-4 connects with Interstate I-75 between Lakeland and Tampa (16 miles west of Lakeland to the interchange). Interstate I-4 extends from Orlando in the east, connecting with the Florida Turnpike, and continues to Daytona where it connects with Interstate I-95. Other major highways in the county include U.S Highways 27, 60, 92, and 98.

Between 1977 and 2001, there was an increase of about 5,100,000 VMT or 62 percent in the amount of travel by motor vehicles on major roadways in the county.

2/4/03

0237539/4/4.1/010403/Growth Analysis

**GROWTH ASSOCIATED WITH THE OPERATION OF THE PROJECT**

The existing commercial and transportation infrastructure should be adequate to provide any support services that might be required during construction and operation of the project. The workforce needed to operate the proposed project is expected to be about 12 workers that represent a small fraction of the labor force present in the immediate and surrounding areas.

**INDUSTRIAL GROWTH****UTILITIES**

Existing power plants in Polk County include the following:

- Ridge Generating Station;
- TECO Polk Power Station;
- Lakeland Electric McIntosh Plant;
- Lakeland Electric Larsen Plant;
- Calpine Auburndale Plant;
- Orange Cogen Plant;
- Mulberry Cogen Plant;
- Progress Energy, Hines Energy Complex, Power Block 1; and
- Progress Energy Tiger Bay Plant.

Together, these power plants have an electrical generating capacity of over 2,300 megawatts (MW).

Proposed sources that have received air permits or sources under construction include the following:

- CPV Pierce;
- Calpine Osprey Plant;
- Lakeland Electric Winston Peaking Station;
- Decker Peace River Plant;
- Calpine Auburndale Unit 2;
- TECO Polk Modification; and
- Progress Energy, Hines Energy Complex, Power Block 2.

Together, these power plants have a proposed electrical generating capacity of over 2,200 megawatts (MW).

2/4/03

0237539/4/4.1/010403/Growth Analysis

As an indicator of electrical utility growth, the electrical generation capacity in Polk County since 1977 is shown in Figure 6.

### **MINING, MANUFACTURING, AND CITRUS INDUSTRIES**

As an indicator of industrial growth, the trend in the number of employees in the mining and manufacturing industries in Polk County since 1977 are shown in Figure 7. As shown, the mining industry has experienced a decrease of 36 percent in the number of employees since 1977. Meanwhile, the manufacturing industry has experienced a slight increase of 5 percent in the number of employees.

As another indicator of industrial growth, the trend in the number of boxes of citrus produced in Polk County since 1977 is also shown in Figure 7. The citrus industry has experienced increases in the 1980s and early 1990s but, since 1977, has decreased by 22 percent.

### **GROWTH ASSOCIATED WITH THE OPERATION OF THE PROJECT**

Since the baseline date of August 7, 1977, there have been only a few major facilities built within a 10-mile radius of the plant site including but not limited to: Orange Cogen Plant, TECO Polk Power Station, Progress Energy Tiger Bay Plant, and Mulberry Cogen Plant. These facilities consist of combustion turbines primarily operating in combined cycle mode and firing natural gas. Based on their locations in different areas around the Hines Energy Complex, it is not expected that there will be concentrated industrial/commercial growth due to the operation of the project.

### **AIR QUALITY DISCUSSION**

#### **AIR EMISSIONS AND SPATIAL DISTRIBUTION OF MAJOR FACILITIES**

The spatial distribution of major air pollutant facilities in Polk County is shown in Figure 8. Based on actual emissions reported in 1999, total emissions of stationary sources from the county are as follows:

- SO<sub>2</sub>: 31,900 TPY;
- Particulate matter with diameter of 10 microns or less (PM<sub>10</sub>): 1,100 TPY;
- Nitrogen oxides (NO<sub>x</sub>): 10,200 TPY;
- Carbon monoxide (CO): 1,050 TPY; and
- Volatile organic compounds (VOC): 320 TPY.

2/4/030237539/4/4.1/010403/Growth Analysis**AIR EMISSIONS FROM MOBILE SOURCES**

The trends in the air emissions of CO, VOC, and NO<sub>x</sub> from mobile sources are presented in Figure 9. Between 1977 and 2002, there were significant decreases in these emissions. The decrease in CO, VOC, NO emissions were about 81, 7, and 4 tons per day, respectively, which represent decreases of 80, 80, and 56 percent, respectively, from 1977 emission estimates.

**AIR MONITORING DATA**

Since 1977, Polk County has been classified as attainment for all criteria pollutants. There are currently four air quality monitors that are operated by the FDEP in Polk County. These monitors measure sulfur dioxide (SO<sub>2</sub>) concentrations (Mulberry and Nichols), PM<sub>10</sub> concentrations (Mulberry and Nichols), and ozone (two sites in Lakeland). Data collected from these stations are considered to be representative of air quality in Polk County. A summary of the maximum pollutant concentrations measured in Polk County from 1998 through 2001 is presented in Table 2.3.7-7 of the SSCA application.

These data indicate that the maximum air quality concentrations measured in the region comply with and are well below the applicable ambient air quality standards. These monitoring stations are generally located in areas where the highest concentrations of a measured pollutant is expected due to the combined effect of emissions from stationary and mobile sources as well as meteorology. Therefore, the ambient concentrations in areas not monitored should have pollutant concentrations less than those monitored concentrations.

In addition, since 1977, SO<sub>2</sub> and PM in the form of PM<sub>10</sub> or total suspended particulates (TSP) have been collected in the county at numerous monitoring stations. Ozone data have been collected at several monitoring stations in the county since 1992.

**SO<sub>2</sub> Concentrations**

The trends in the annual, 24-hour, and 3-hour average SO<sub>2</sub> concentrations measured in Polk County since 1977 are presented in Figures 10 through 12, respectively. SO<sub>2</sub> concentrations have been measured at more than 15 stations for various time periods throughout these years. The information presented in these figures is for those stations which operated for more than one year from 1977 through 2002.



2/4/03

0237539/4/4.1/010403/Growth Analysis

As shown in these figures, measured SO<sub>2</sub> concentrations have been and continue to be well below the AAQS.

#### **PM<sub>10</sub>/TSP Concentrations**

The trends in the annual and 24-hour average PM<sub>10</sub> and total suspended particulate (TSP) concentrations measured in Polk County since 1977 are presented in Figures 13 and 14, respectively. TSP concentrations are presented through 1988 since the AAQS was based on TSP concentrations through that year. In 1988, the TSP AAQS was revoked and the PM standard was revised to PM<sub>10</sub>. TSP, and PM<sub>10</sub> concentrations have been measured at more than 20 stations for various time periods throughout these years. Similar to the SO<sub>2</sub> concentrations, the information presented in these figures is for those stations which operated for more than one year from 1977 through 2002.

As shown in these figures, measured TSP concentrations were generally below the TSP AAQS although, at several monitors, the TSP concentrations approached and exceeded the AAQS. Since 1988 when PM<sub>10</sub> concentrations have been measured, the PM<sub>10</sub> concentrations have been and continue to be below the AAQS.

#### **Ozone Concentrations**

The trends in the 1-hour and 8-hour average ozone concentrations measured in Polk County since 1991 are presented in Figures 15 and 16, respectively. Ozone concentrations were not measured in Polk County prior to 1991. Ozone concentrations have been measured at four stations since 1991.

As shown in these figures, measured ozone concentrations have approached but have not exceeded the AAQS. This trend is similar to measured ozone concentrations in surrounding counties that exhibit similar trends as those for Polk County. Ozone is a regional pollutant that is produced due to the interaction of regional VOC and NO<sub>x</sub> emissions with sunlight. These emissions originate not only in Polk County but from adjacent counties to produce ozone concentrations across the region.

#### **AIR MODELING ANALYSES FOR THE PROJECT**

Additionally, results of air modeling analyses demonstrate that the Project will comply with all applicable AAQS and PSD Class II and I increments. In fact, the project's maximum impacts are predicted to be below the significant impact levels in PSD Class II and I areas.

2/4/030237539/4/4.1/010403/Growth Analysis**CONCLUSIONS**

*Because of the minimal number of operational workers required for the project, the limited amount of current and expected commercial and industrial development around the existing plant site, and the low predicted impacts of the project in an area that currently complies and is anticipated to comply with ambient air quality standards, the air quality associated with the general, residential, commercial, and industrial growth in the county which has occurred since August 7, 1977 is expected to remain below ambient standards once the project is constructed and operated.*

Hines Energy Complex

**Table 2.3.7-7. Summary of Maximum Measured SO<sub>2</sub>, PM<sub>10</sub>, O<sub>3</sub>, and NO<sub>2</sub> Concentrations Representative of the Hines Energy Complex, 1998 to 2001**

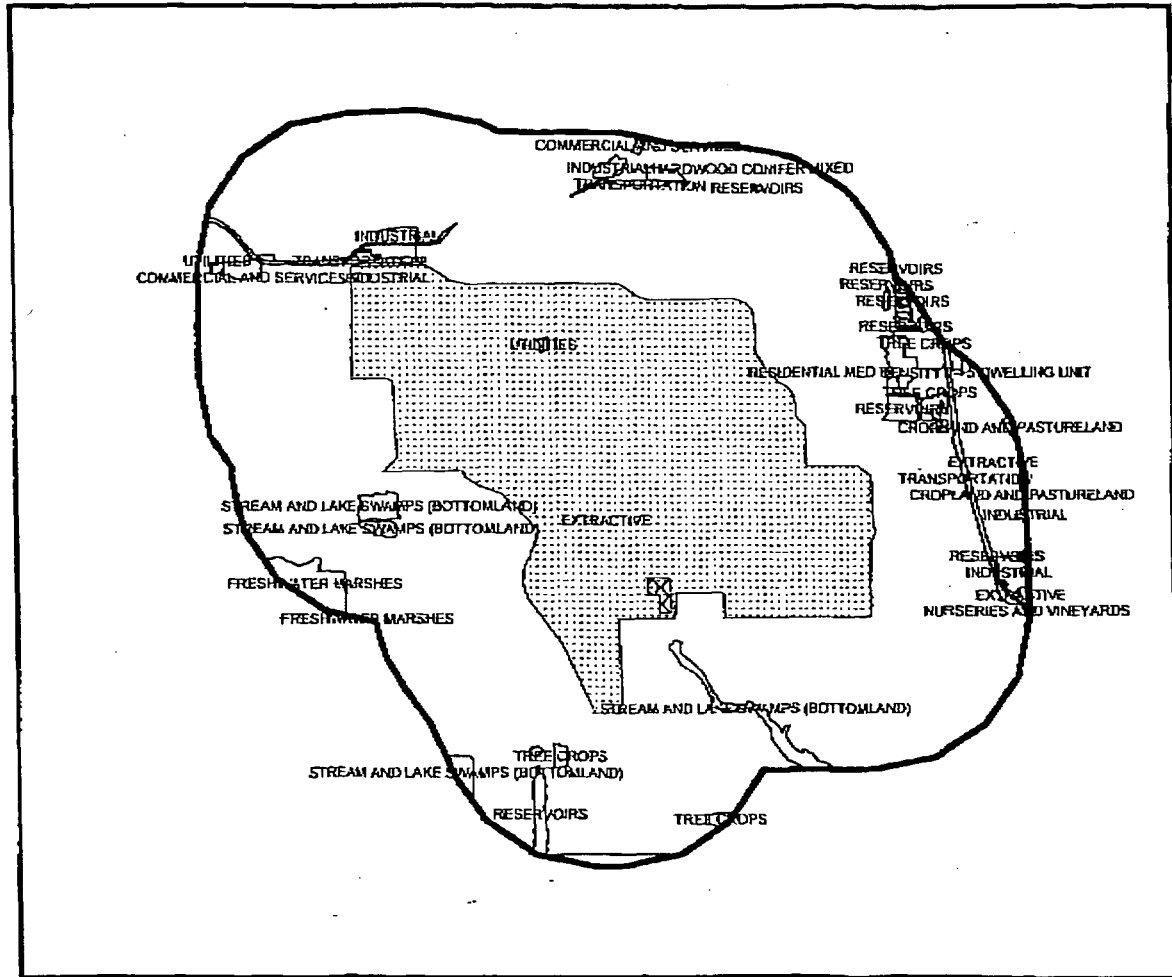
AIRS/ Sarnad Site No.	Operator	Location	Concentration										
			Measurement Period		1-Hour		3-Hour		8-Hour 3-year Average		24-Hour		Annual
			Year	Months	2nd		2nd		4th Highest	Highest	2nd		Average
					Highest	Highest	Highest	Highest			Highest	Highest	
Sulfur dioxide 2860006R12	Polk County	Florida AAQS Mulberry	1998	Jan-Dec	NA	NA	NA	0.5 ppm	NA	NA	0.1 ppm	0.02 ppm	
			1999	Jan-Dec	NA	NA	0.078	0.069	NA	0.029	0.027	0.006	
			2000	Jan-Dec	NA	NA	0.070	0.052	NA	0.019	0.019	0.006	
			2001	Jan-Dec	NA	NA	0.074	0.062	NA	0.022	0.018	0.005	
PM <sub>10</sub> <sup>a</sup> 121052006-1	Polk County	Florida AAQS Mulberry	1998	Jan-Dec	NA	NA	NA	NA	NA	NA	150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	
			1999	Jan-Dec	NA	NA	NA	NA	NA	108	91	22.2	
			2000	Jan-Dec	NA	NA	NA	NA	NA	50	50	20.8	
			2001	Jan-Dec	NA	NA	NA	NA	NA	46	45	25.4	
Ozone <sup>b</sup> 121056006-1	Polk County	Florida AAQS Lakeland	1998	Jan-Dec	NA	0.12 ppm	NA	NA	0.08 ppm	NA	NA	NA	
			1999	Jan-Dec	0.119	0.106	NA	NA	NA	NA	NA	NA	
			2000	Jan-Dec	0.103	0.101	NA	NA	NA	NA	NA	NA	
			2001	Jan-Dec	0.105	0.102	NA	NA	NA	NA	NA	NA	
Nitrogen dioxide 120570081-1	Hillsborough	Florida AAQS Tampa	1998	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	0.053 ppm	
			1999	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	0.006	
			2000	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	0.007	
			2001	Jan-Dec	NA	NA	NA	NA	NA	NA	NA	0.008	

Note: NA = not applicable.  
AAQS = ambient air quality standard.

<sup>a</sup> On July 18, 1997, EPA promulgated revised AAQS for particulate matter and ozone. For particulate matter, PM<sub>10</sub> standards were introduced with a 24-hour average standard of 65 µg/m<sup>3</sup> (based on the 3-year averages of the 98th percentile values) and an annual standard of 15 µg/m<sup>3</sup> (3-year averages at community monitors). The form of the 24-hour PM<sub>10</sub> standard was changed; compliance is based on 3-year average of 99th percentile concentrations that is 150 µg/m<sup>3</sup> or less. The O<sub>3</sub> standard was modified to be 0.08 ppm for the 8-hour average; achieved when the 3-year average of 99th percentile values is 0.08 ppm or less. The courts have stayed these standards. Florida DEP has not yet adopted the revised standards.



-  Plant Island
-  Site Boundary
-  5 Miles from Boundary



SOURCE: SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT 1985 LAND USE

FIGURE 2.2.3-2  
EXISTING LAND USE WITHIN  
5 MILES OF THE PLANT



Figure 1. Population and Household Unit Trends in Polk County

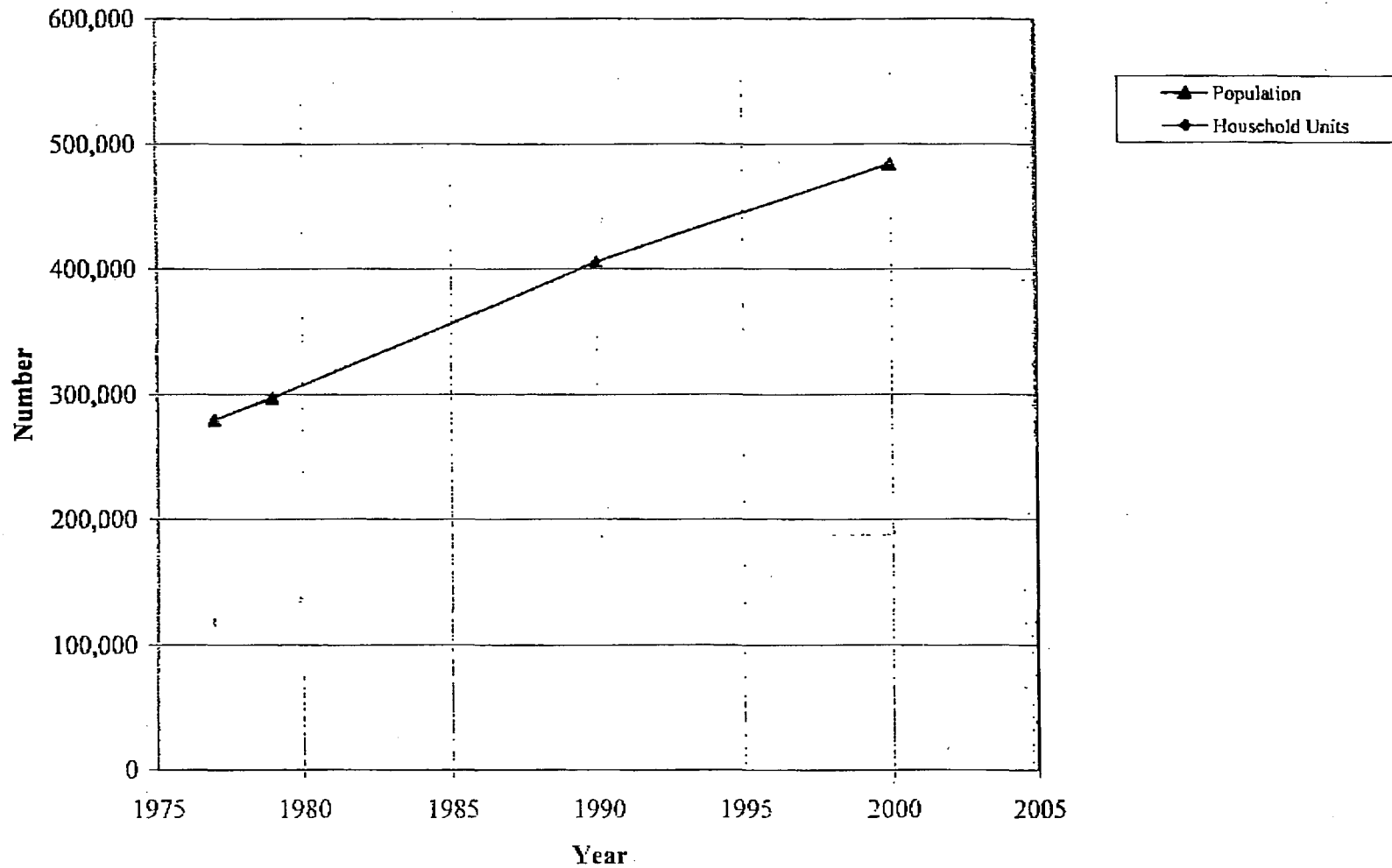


Figure 2. Retail and Wholesale Trade Trends in Polk County

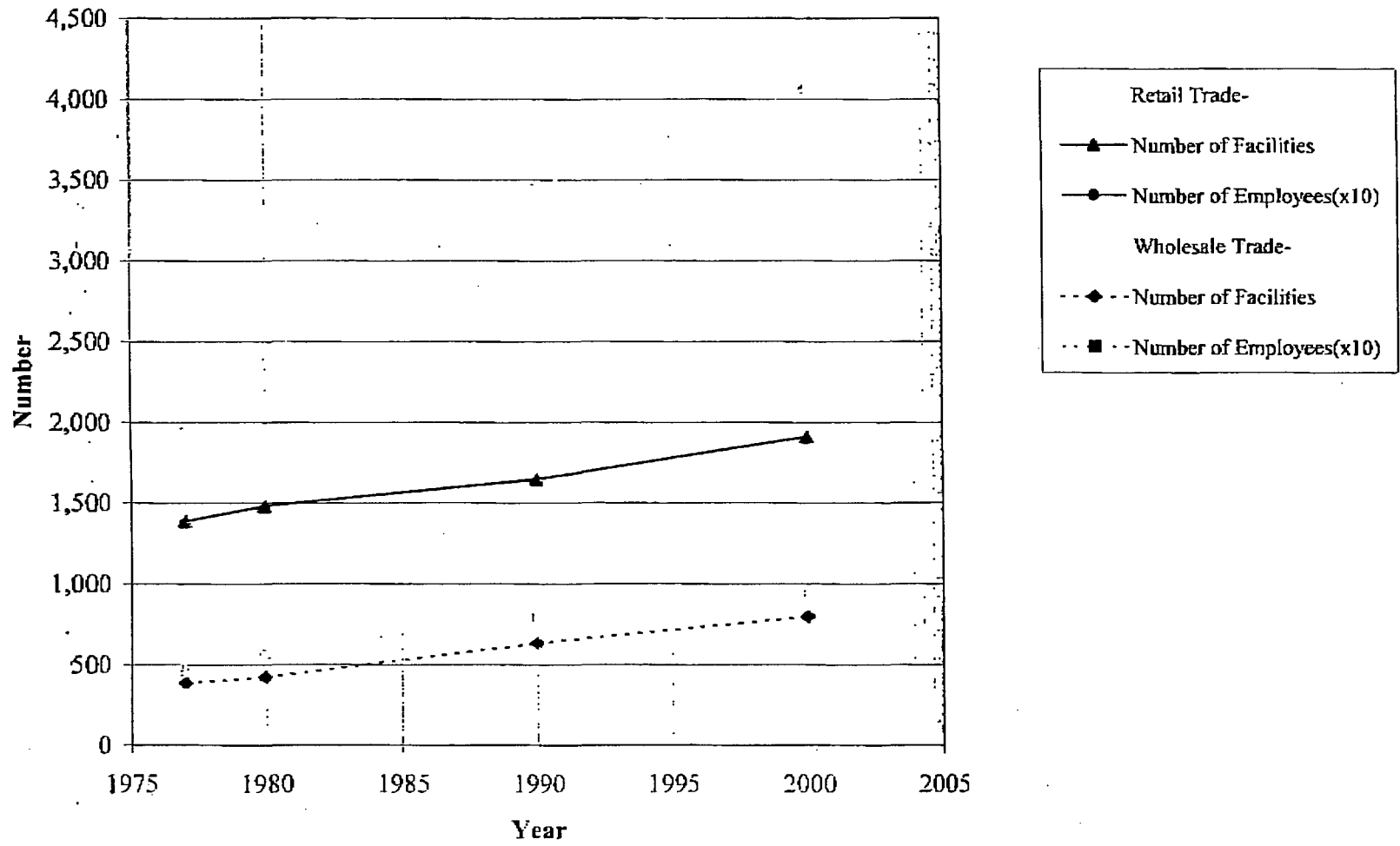


Figure 3. Labor Force Trend in Polk County

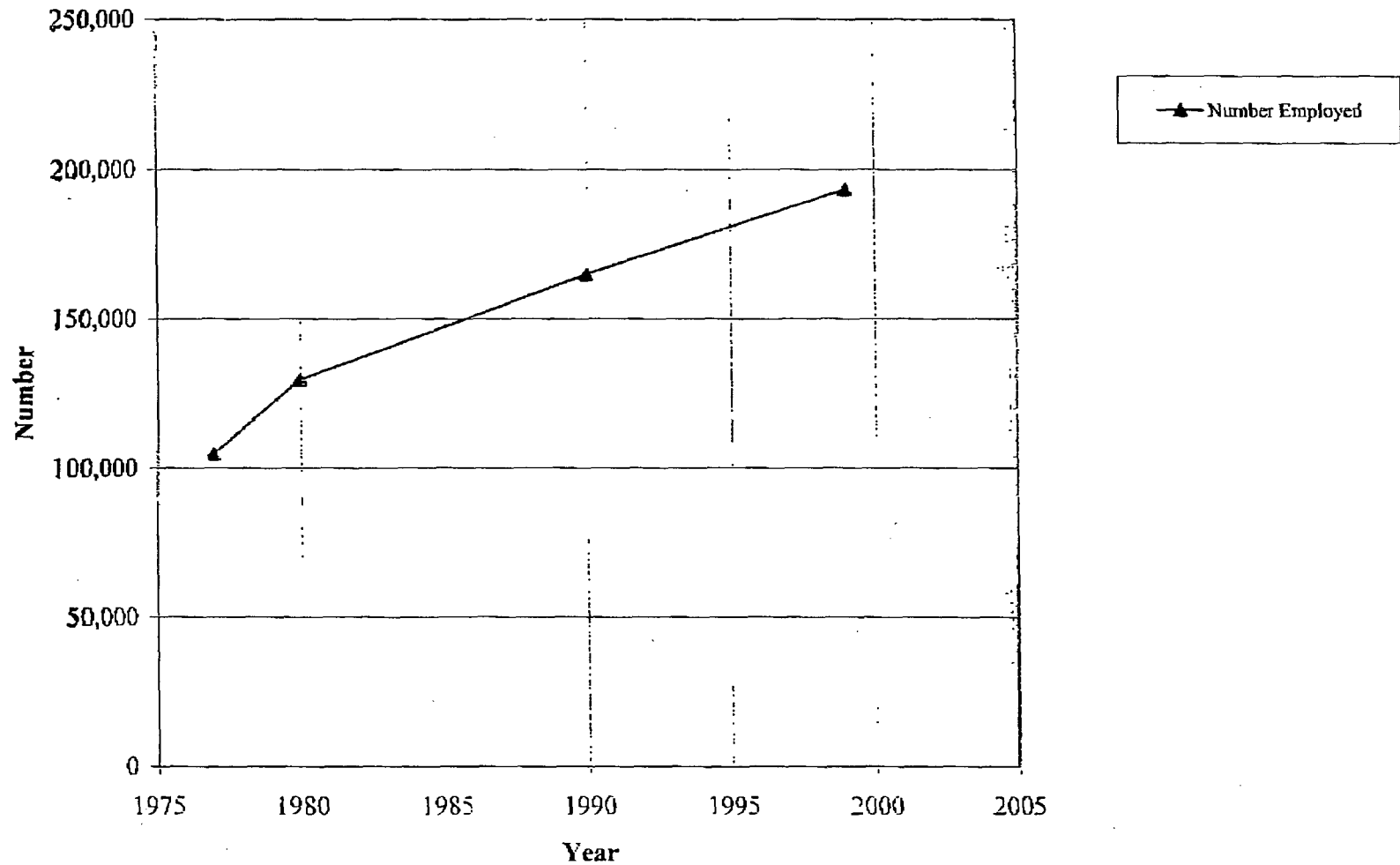


Figure 4. Hotel and Motel Trend in Polk County

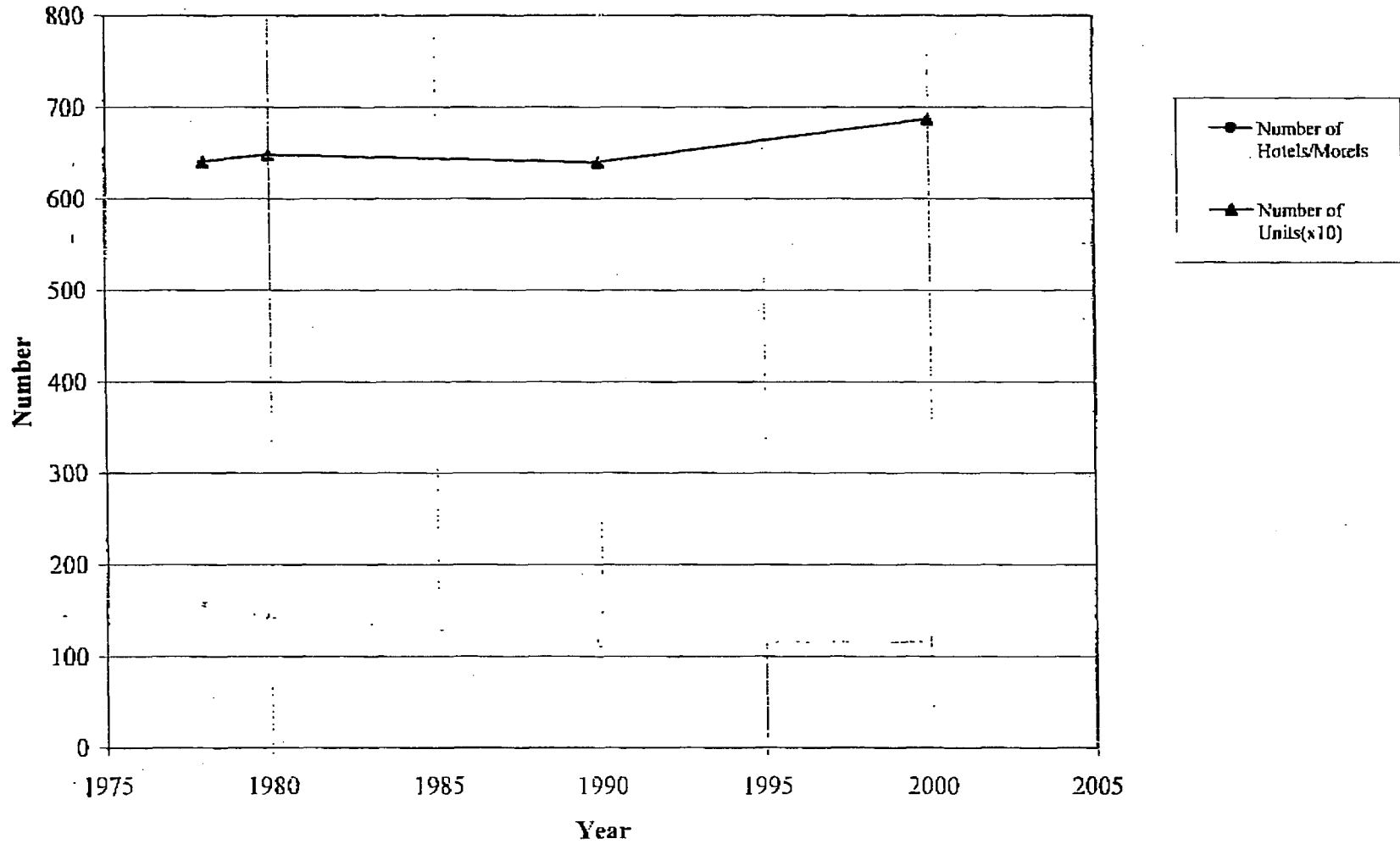




Figure 5. Vehicle Miles Traveled (VMT) Estimates for Motor Vehicles for Polk County

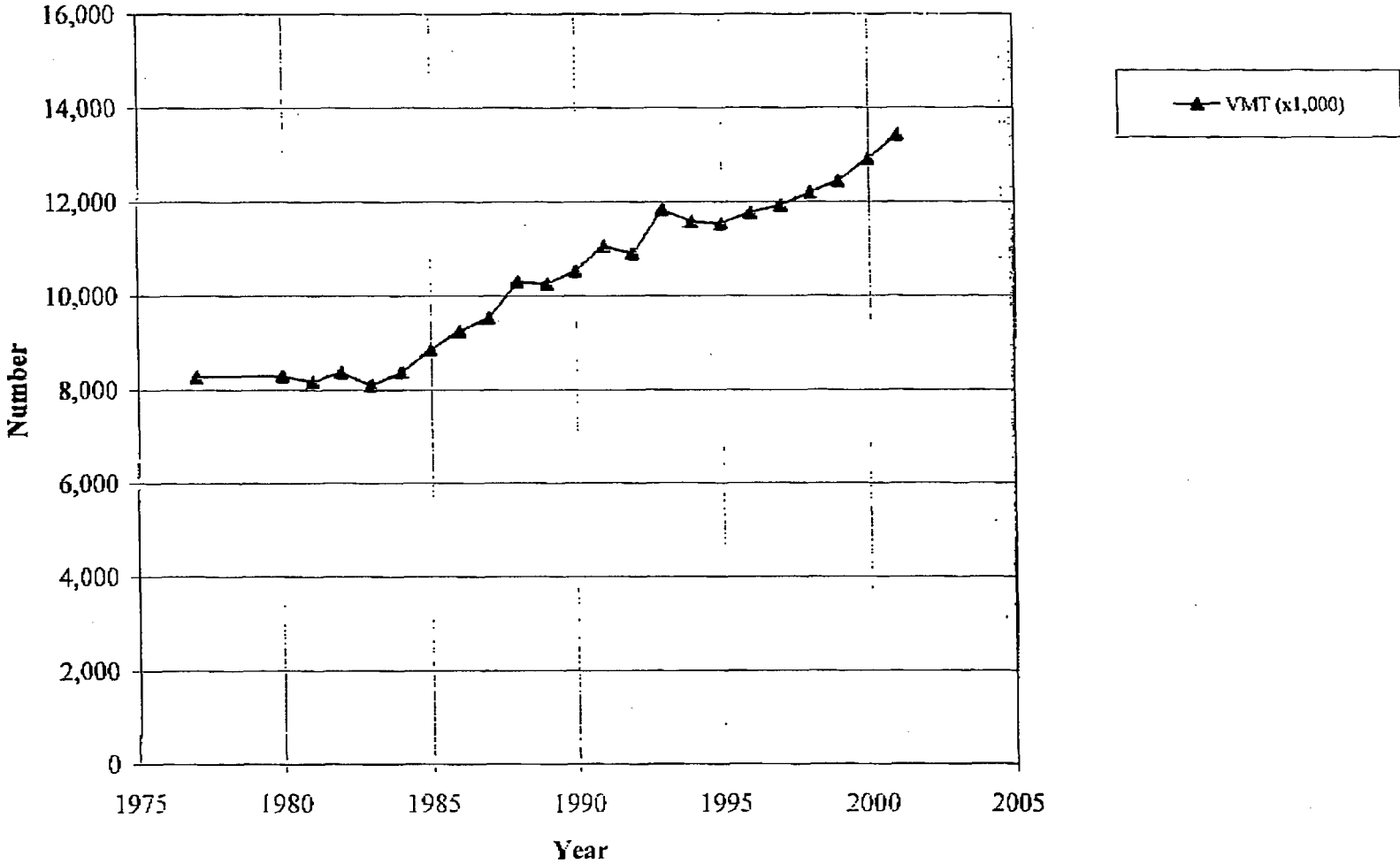


Figure 6. Electrical Power Generation Capacity in Polk County

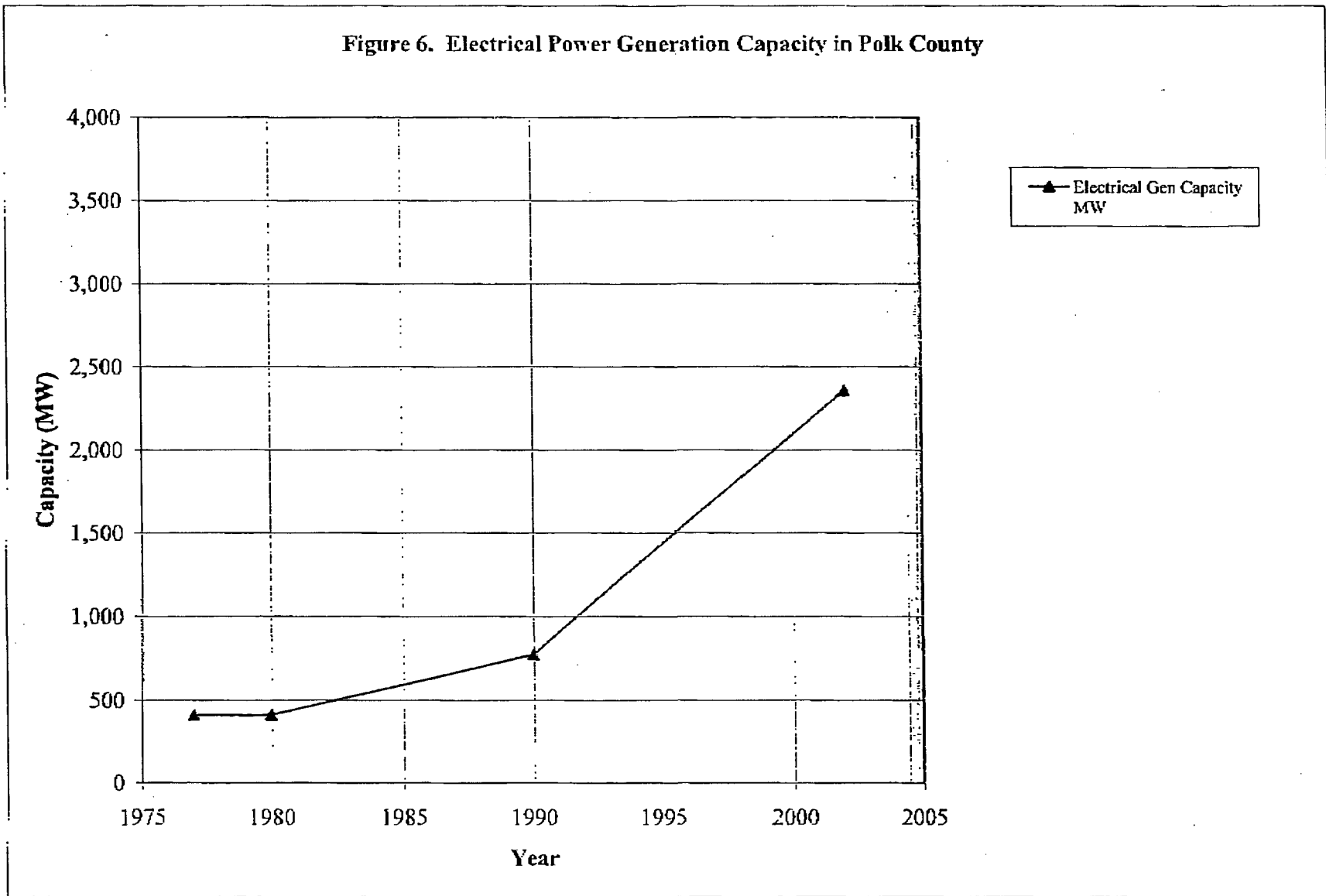
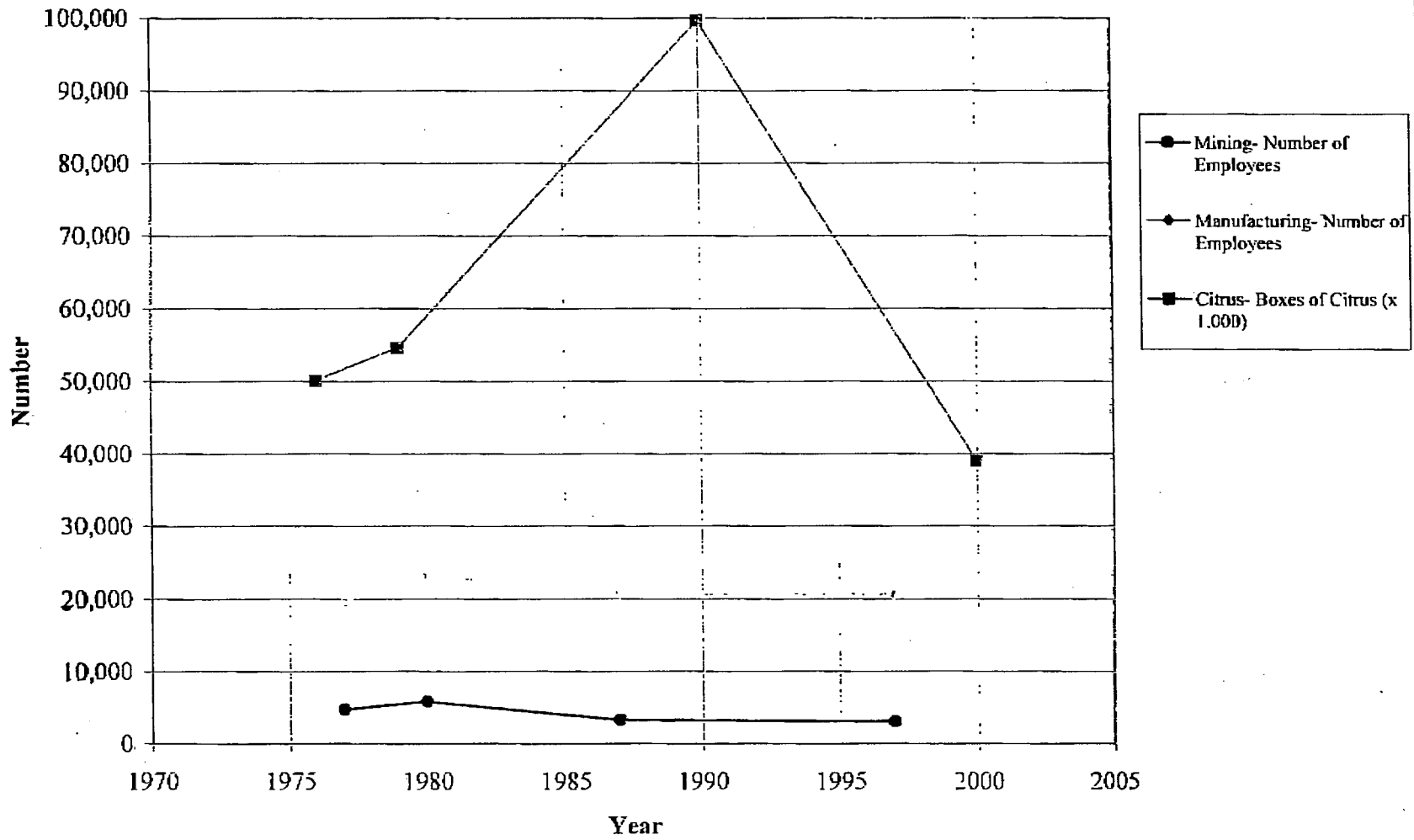


Figure 7. Mining, Manufacturing, and Citrus Industry Trends in Polk County



**Figure 8. Major Sources of Air Emissions in Polk County**

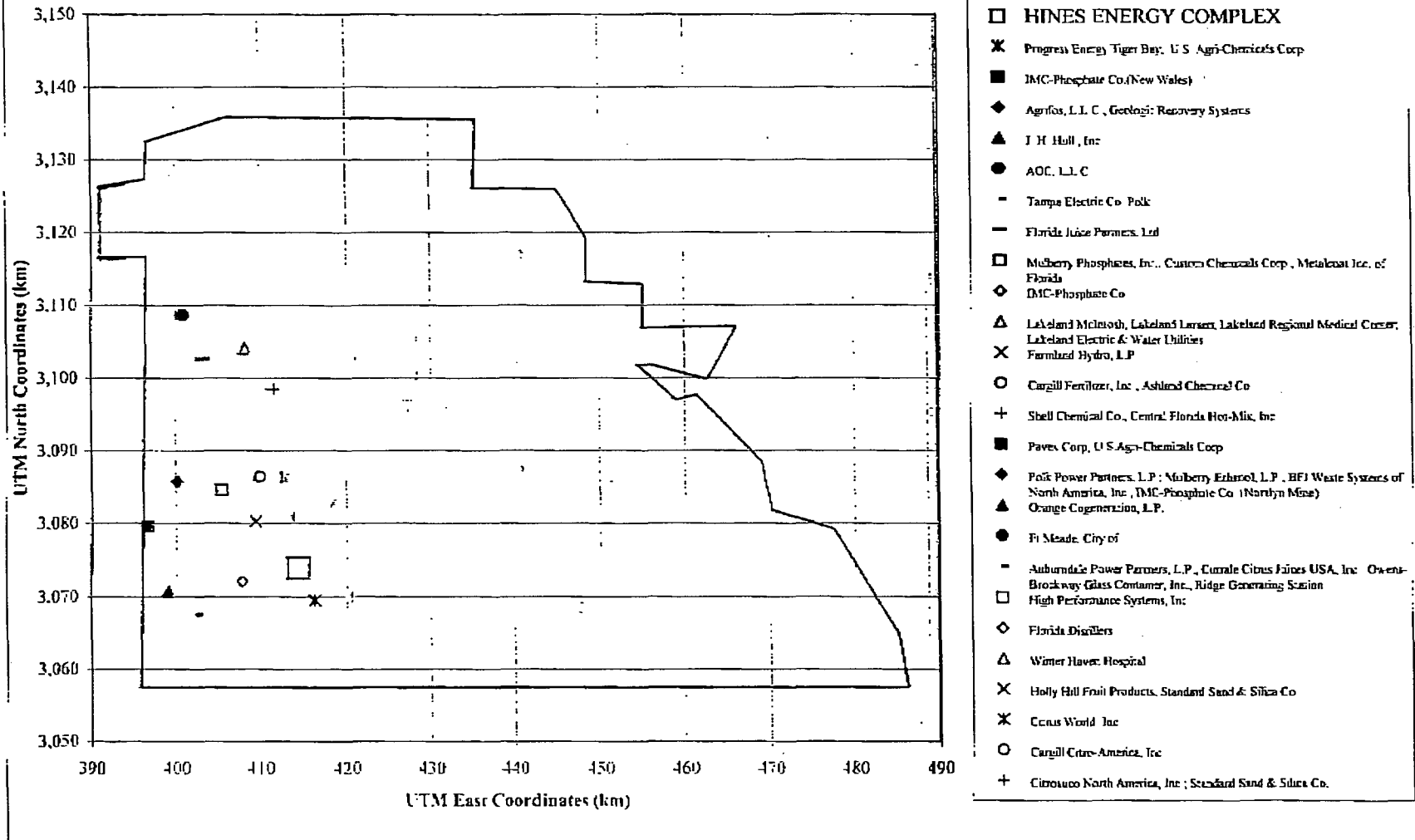


Figure 9. Mobile Source Emissions (Tons per Day) of CO, VOC, and NOx in Polk County

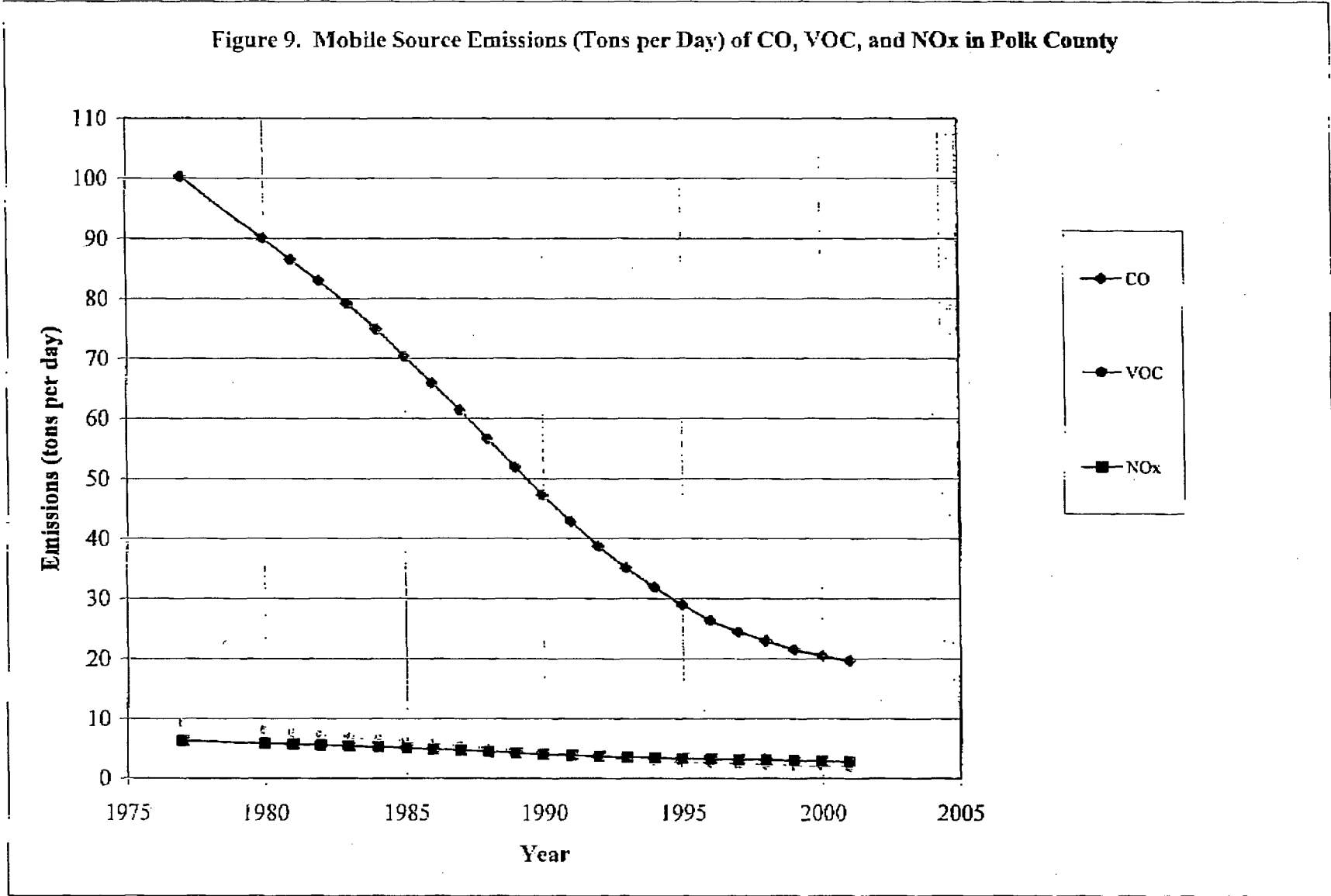


Figure 10. Measured Annual Average Sulfur Dioxide Concentrations  
from 1977 to 2002- Polk County

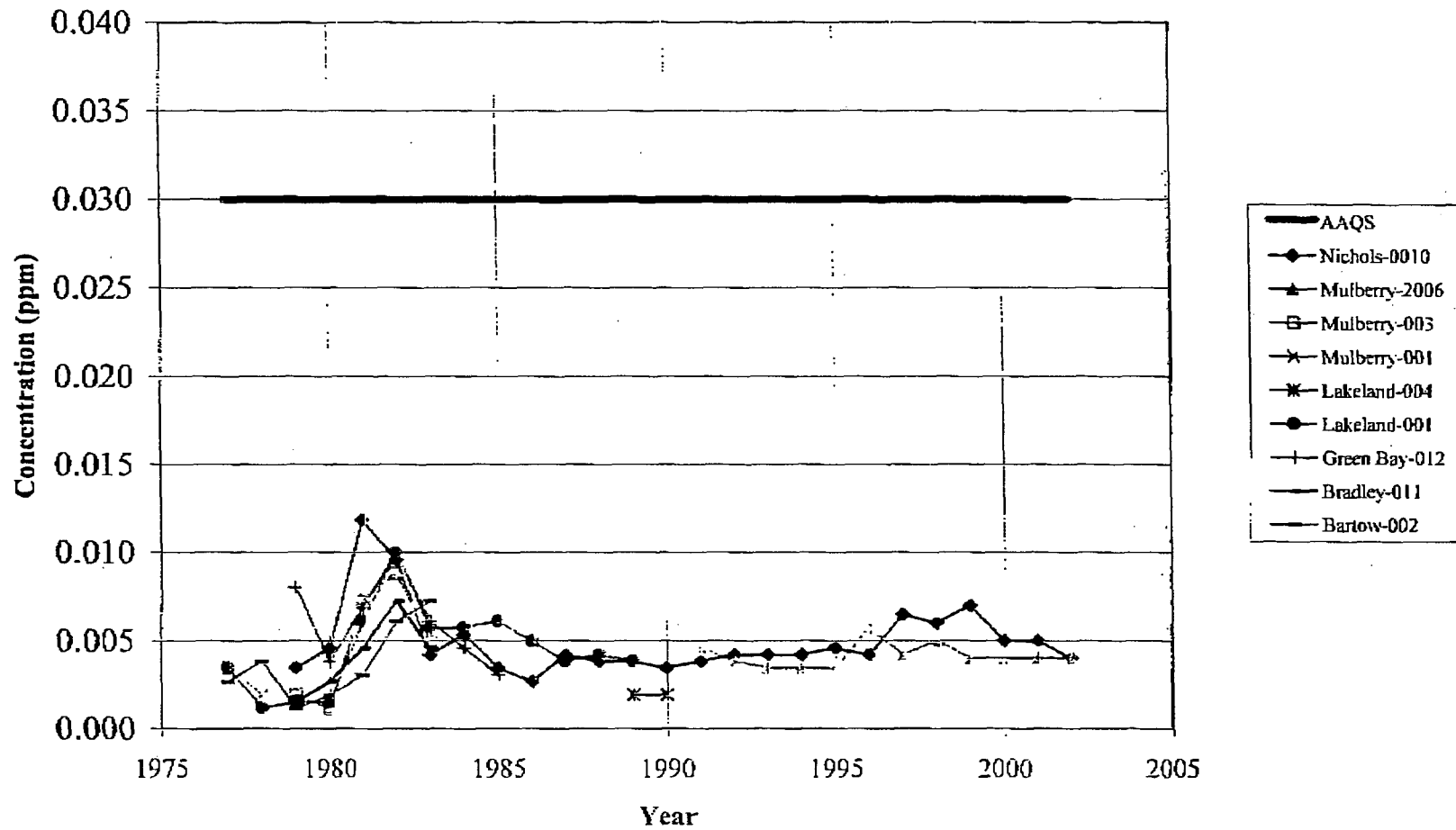
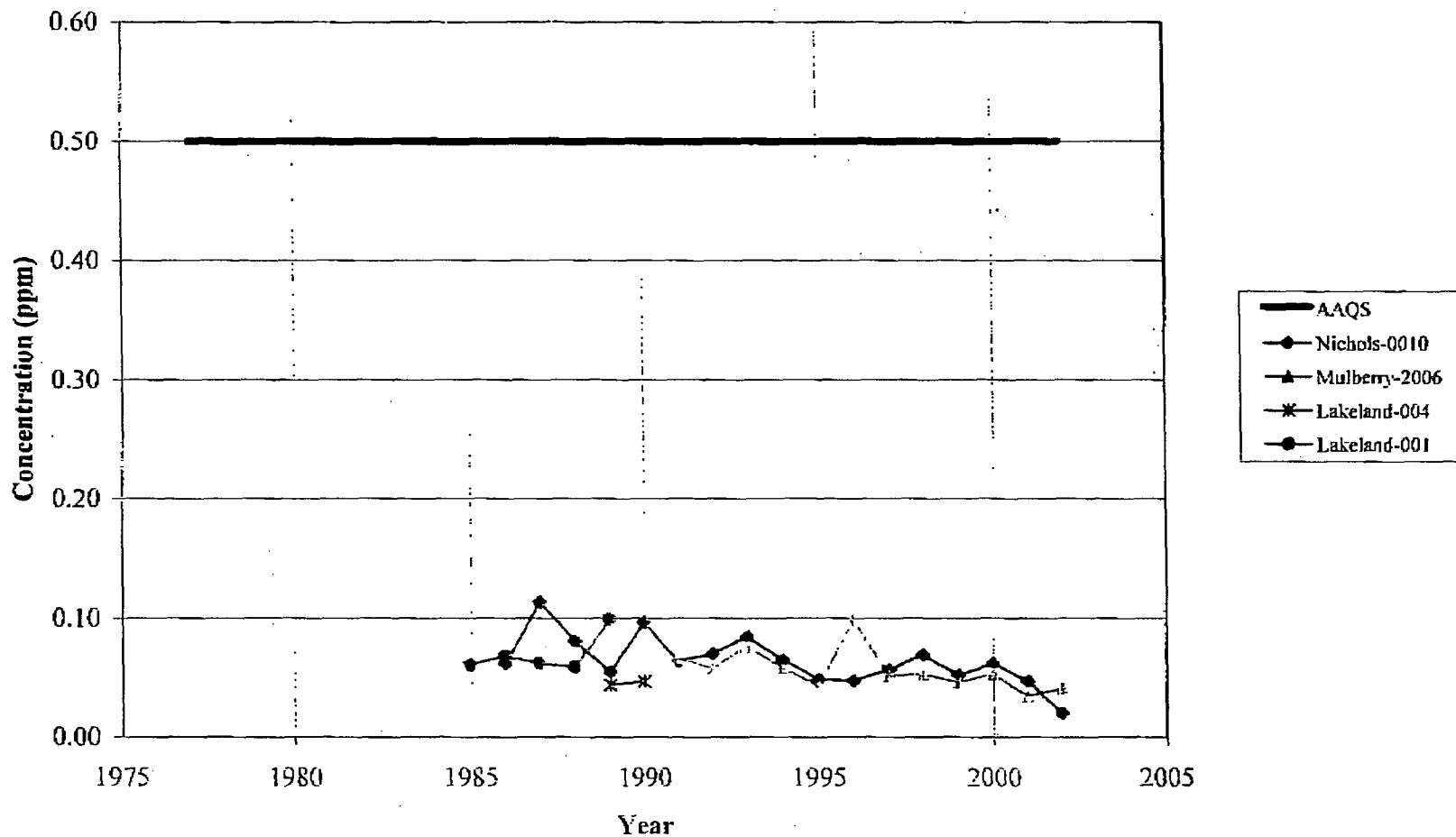


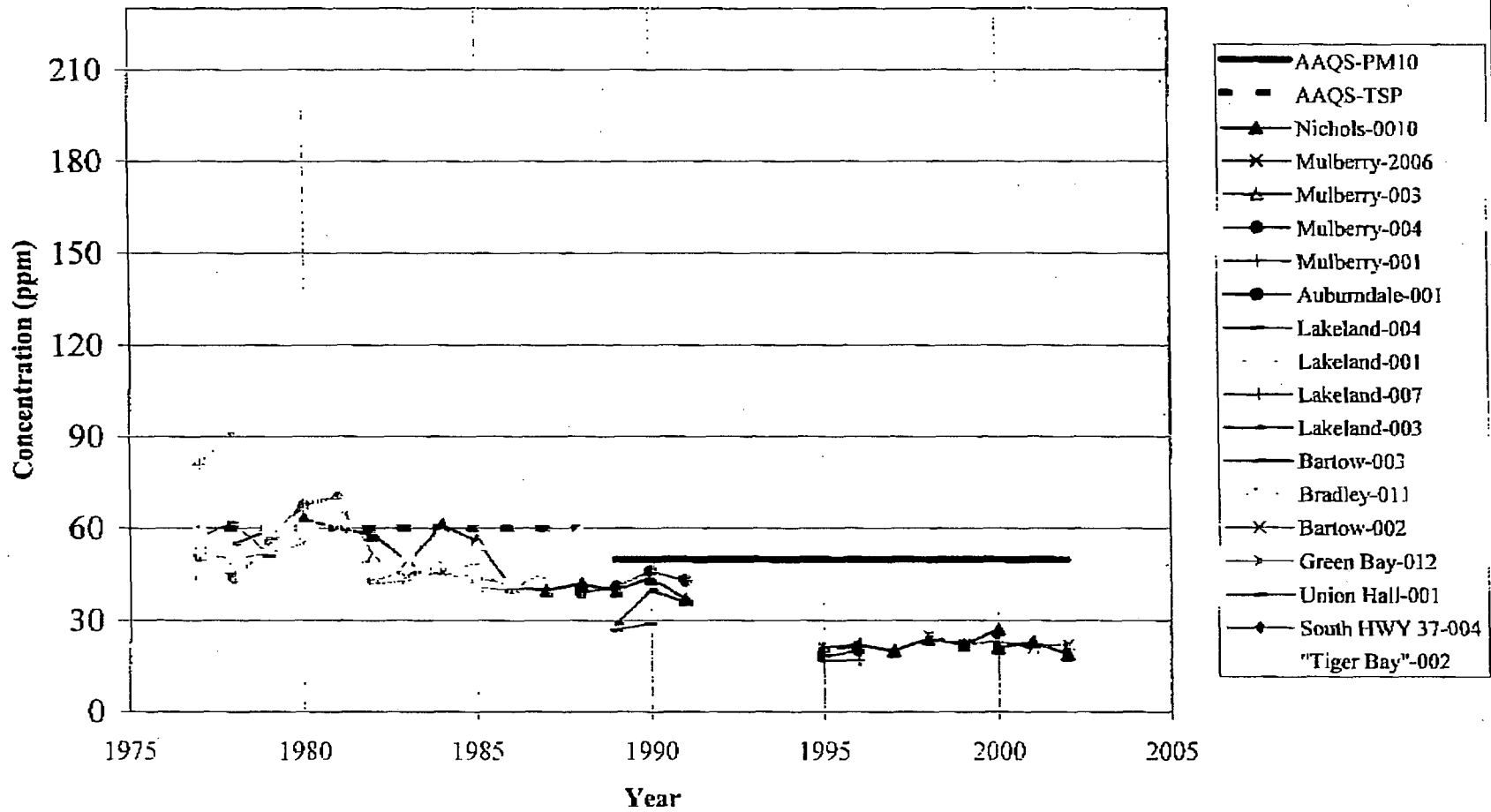


Figure 12. Measured 3-Hour Average Sulfur Dioxide Concentrations (2nd Highest Values) from 1977 to 2002- Polk County

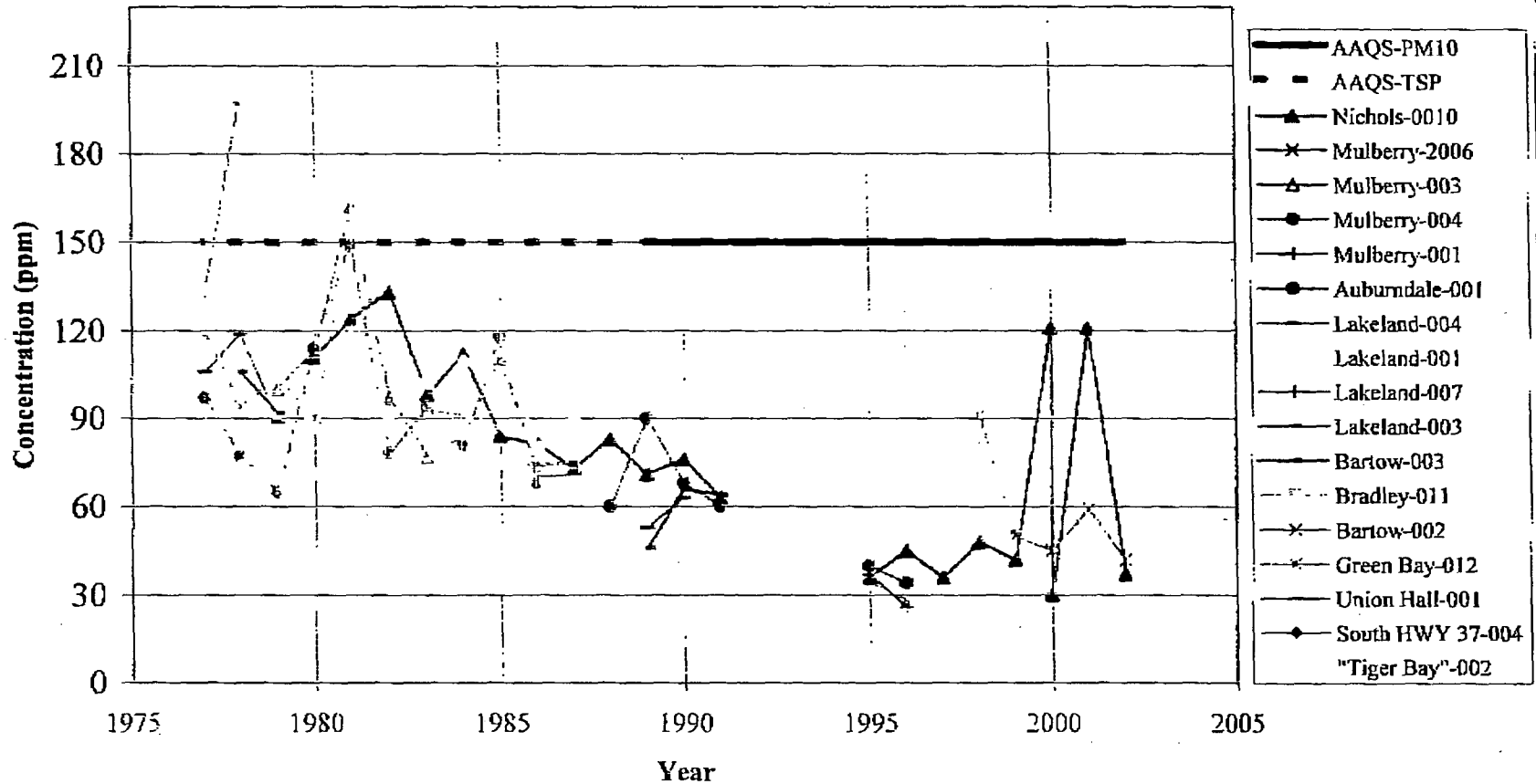




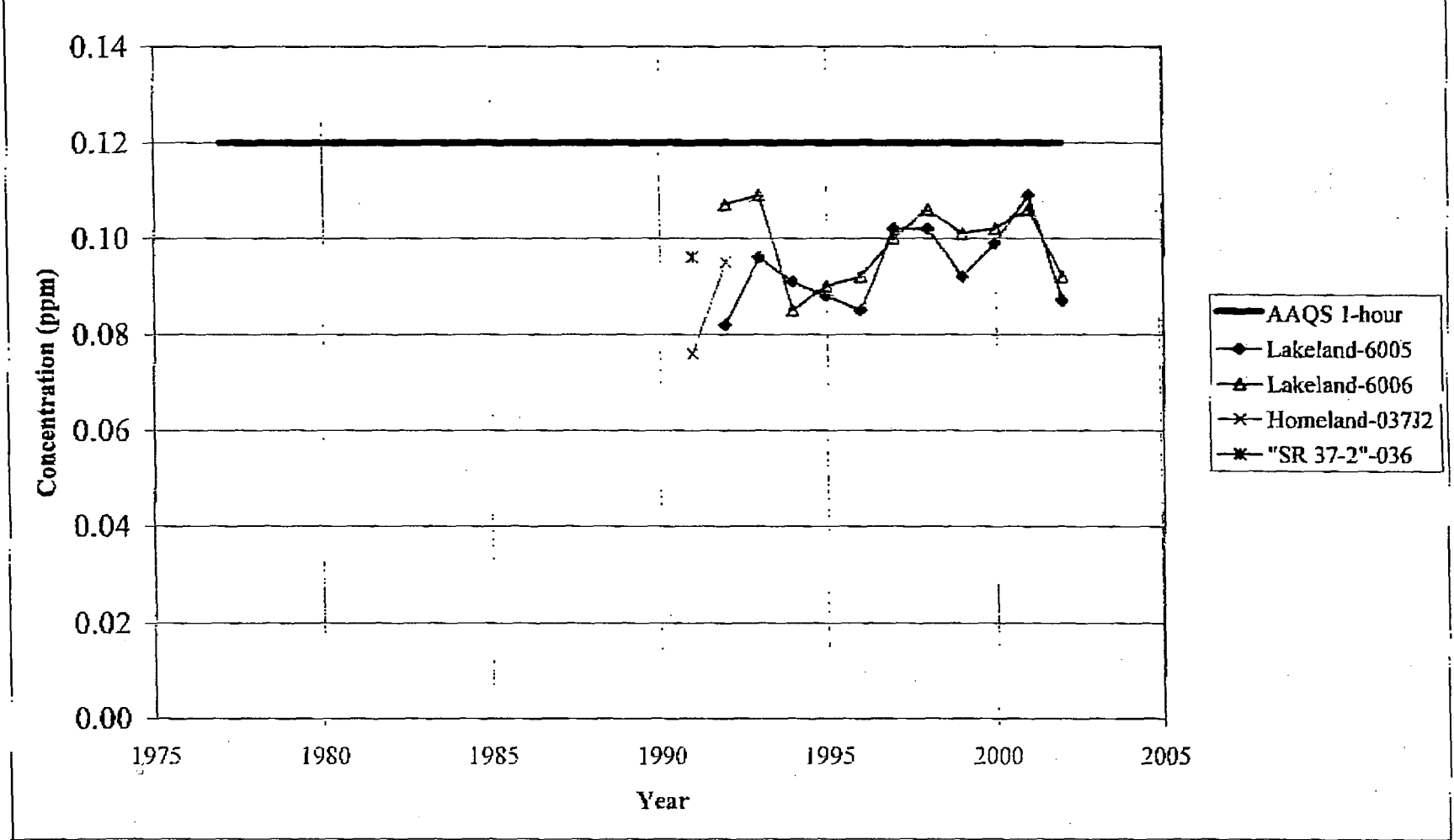
**Figure 13. Measured Annual Average PM10 Concentrations (1988 to 2002) and Total Suspended Particulate Concentrations (1977 to 1987) - Polk County**



**Figure 14. Measured 24-Hour Average PM10 Concentrations (1988 to 2002) and Total Suspended Particulate Concentrations (1977 to 1987) (2nd Highest Values) - Polk County**



**Figure 15. Measured 1-Hour Average Ozone Concentrations (2nd Highest Values) from 1977 to 2002- Polk County**



**Figure 16. Measured 8-Hour Average Ozone Concentrations (3-Year Average of the 4th Highest Values) from 1995 to 2002- Polk County**

