GULF COAST RECYCLING, INC.

1901 NORTH 66th STREET • TAMPA, FLORIDA 33619
PHONE: (813) 626-6151 FAX: (813) 622-8388

Assigned to John Reynolds
June 7, 1994

May 23, 1994

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blairstone Road
Tallahassee, FL 32399-2400

Dear Mr. Fancy:

Attached are five copies of a Prevention of Significant Deterioration (PSD) application for the modification of our lead-acid battery recycling facility located in Tampa, FL Also included is check in the amount of $7,500 to cover the application fee. The modeling outputs, both hard copy and on disk, are included in three of the copies. The modeling summary is included in all copies. Although this modification was initially deemed exempt from PSD by the DEP in 1984, this application was recently requested retroactively for the replacement of a blast furnace. The new furnace is currently listed in permit number AO29-173310.

Should you have any question or require additional information, please contact me at (813) 626-6151.

Sincerely,

Willis M. Kitchen

Willis M. Kitchen
President

File:GTA4-355

GULF COAST RECYCLING, INC.
1901 NORTH 66th STREET
TAMPA, FLORIDA 33619
(813) 626-6151

GCR

Barnett Bank
Barnett Bank of Tampa

63-469
631

029519

DATE	CHECK NO.	CHECK AMOUNT
5/23/94	29519	$7500.00

SEVEN THOUSAND FIVE HUNDRED DOLLARS AND NO/100

PAY TO THE ORDER OF
FLORIDA DEPT. OF ENVIRONMENTAL PROTECTION
TWIN TOWERS OFFICE BLDG.
2600 BLAIR STONE ROAD
TALLAHASSEE, FL 32399-2400

Willis M. Kitchen

⑈029519⑈ ⑆063104697⑆ 2712341126⑈

GULF COAST RECYCLING, INC.

VENDOR NO.

VENDOR NAME

TRANSACTION DATE	REFERENCE	GROSS AMOUNT	DEDUCTION	NET AMOUNT
	PSD APPLICATION			

CHECK DATE	CHECK NO.	TOTAL GROSS	TOTAL DEDUCTION	CHECK AMOUNT

ORIGINAL APPL. 5-31-94

Prevention of Significant Deterioration Application

for a Construction Permit to Modify a Battery Recycling Facility

Volume I

Gulf Coast Recycling, Inc.
Tampa, Florida
Permit Number AO29-173310

Lake Engineering, Inc.
35 Glenlake Parkway, Suite 500
Atlanta, GA 30328
460.20001

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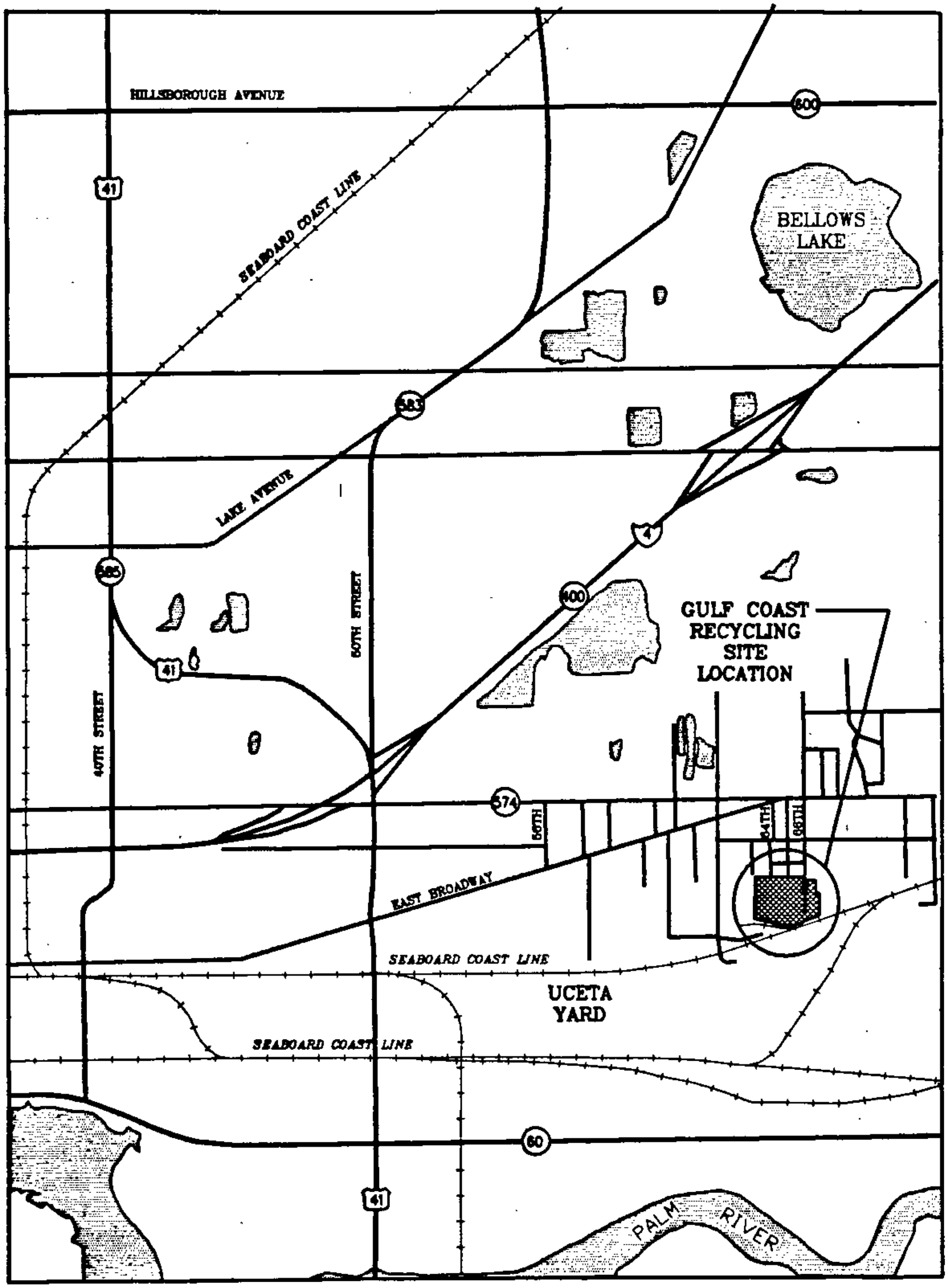
1.0
INTRODUCTION

Gulf Coast Recycling, Inc. ("Gulf Coast") is herein making application to the Florida Department of Environmental Protection (DEP) for a Construction Permit to modify a battery recycling facility located southeast of the intersection of Interstate 4 and U. S. Highway 41 in the city of Tampa, Hillsborough County, Florida. The site is depicted on **Figures 1.1 and 1.2**. Based on the emission levels and the location involved, the permitting of this source is subject to the USEPA requirements of 40 CFR §51.166 "Prevention of Significant Deterioration" (PSD) and the corresponding Florida Air Quality Regulations Rule 17-2.500.

This document describes the anticipated air quality impacts from, and the air pollution control techniques used in, the modification of Gulf Coast's facility. It presents a technical demonstration that this modification, which consisted of the replacement of two existing blast furnaces with one furnace 25 percent larger, has and will comply with all applicable state and federal air pollution control regulations. This demonstration generally uses conservative estimates and values regarding control efficiencies and estimates of impacts for purposes of presenting a worst-case scenario. Actual impacts are expected to be significantly less than the projected estimates contained herein.

The actual startup of the new furnace took place in late 1984. This furnace was first permitted on January 28, 1985 by permit number AO29-95366, later by permit number AO29-173310 on July 17, 1990, and finally by amended permit number AO29-173310 on November 19, 1990 (see **Appendix A**). This latter permit expires on November 15, 1995. At the time of the modification it was determined by DEP that no PSD review was required. Subsequent events have, however, determined that a PSD review was applicable and that a full PSD analysis needs to be performed retroactively (see **Appendix B**). The history of the exhaustive permitting process for this modification can be found in the "After-the-Fact Construction Application" previously submitted on February 10, 1992.

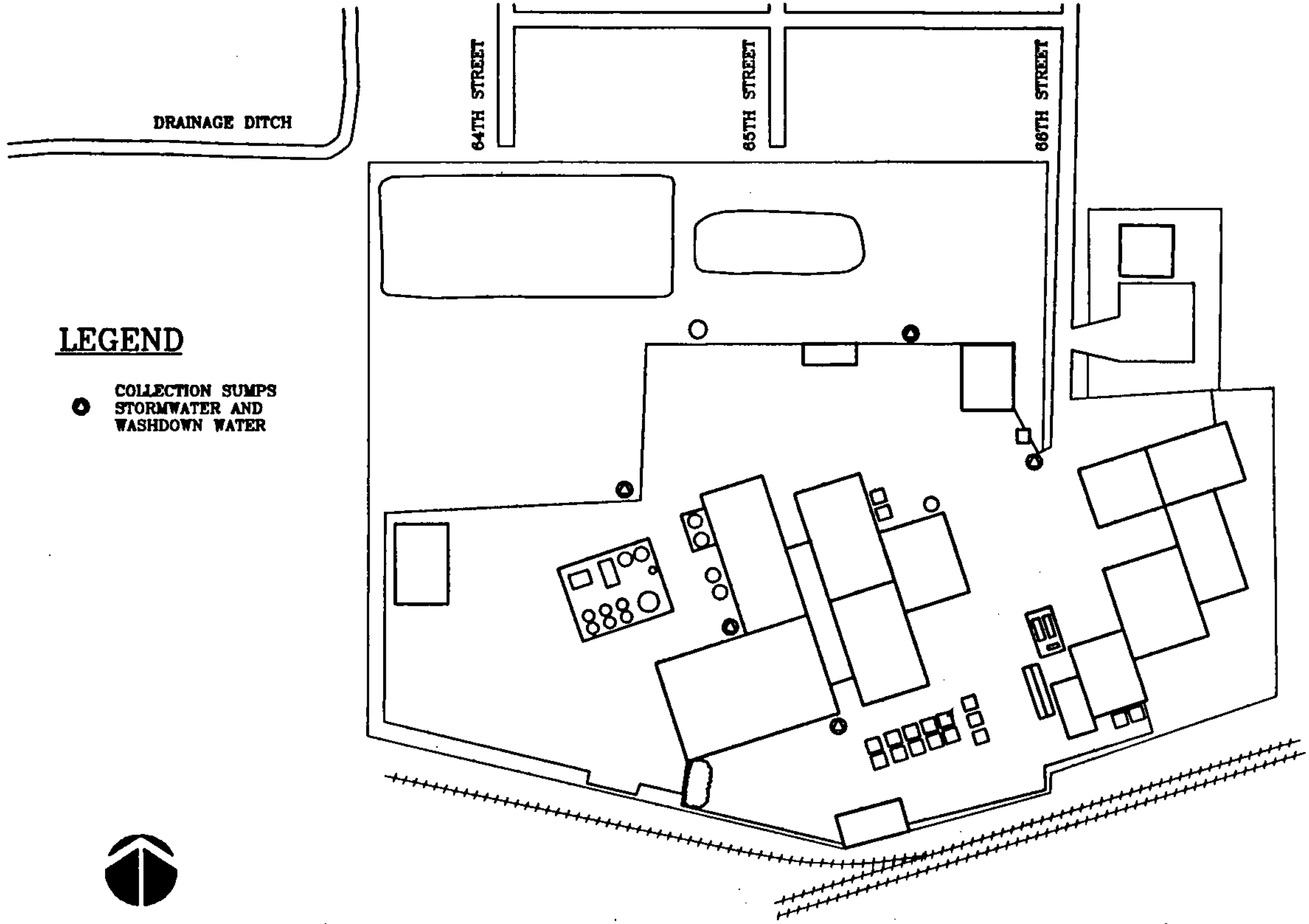


AREA MAP
GULF COAST RECYCLING, INC.
TAMPA, FLORIDA

FIGURE 1.1

460-010 1=1 04-14-94 BKE 460.26001

460-006 1=1 08-18-93 RCW 460.20001



SITE MAP

GULF COAST RECYCLING, INC.

FIGURE 1.2

1.1 PROCESS DESCRIPTION

In the battery recycling process, discarded automotive and industrial lead-acid storage batteries are crushed and mechanically separated into their component fractions. In this process, the sulfuric acid is drained and neutralized while the plastic casings are segregated and shipped off-site for further processing and eventual resale. The lead-bearing components are then fed into the blast furnace for lead recovery. The lead is then refined further and eventually combined with alloying metals in refining kettles to produce finished lead alloys meeting customer specifications. Finished lead from the kettles is cast into ingots for shipment and eventual re-use. The major source of air pollution at the facility is the blast furnace which burns metallurgical coke in the smelting of lead scrap. Exhaust gases are emitted to the atmosphere through an existing baghouse and stack. It is this blast furnace which is the subject of this application. A simplified flow diagram is shown on **Figure 1.3**.

1.2 PSD APPLICABILITY

PSD regulations seek to protect areas in which the ambient air quality is better than the federally-established health-related National Ambient Air Quality Standards (NAAQS). Florida has established lower ambient standards than the federal standards. They will be referred to as the Florida Ambient Air Quality Standards (FAAQS). Sources are considered "major stationary sources" and are subject to the PSD regulations if they fall into either one of the following two categories: (1) One of the 28 specific categories of industries specified in Title 40 of CFR Part 51.166 (b)(1)(i)(a) and with the "potential" to emit more than 100 tons/yr of a regulated pollutant; or, (2) Any source with the "potential" to emit 250 tons or more/yr of a regulated pollutant.

Pollutants emitted from the new blast furnace include lead (Pb), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter (PM), nitrogen oxides (NO_x), and volatile organic compounds (VOCs). The Gulf Coast facility is considered a secondary lead smelter which is one of the 28 specific categories mentioned above (secondary metal production plants). PSD regulations also establish "significant" or "de minimus" levels for all regulated pollutants. For "major" sources, these "significant" levels determine applicability of PSD review for all pollutants emitted.

480-009 1=1 04-14-94 BKE 480.20001

FLOW DIAGRAM

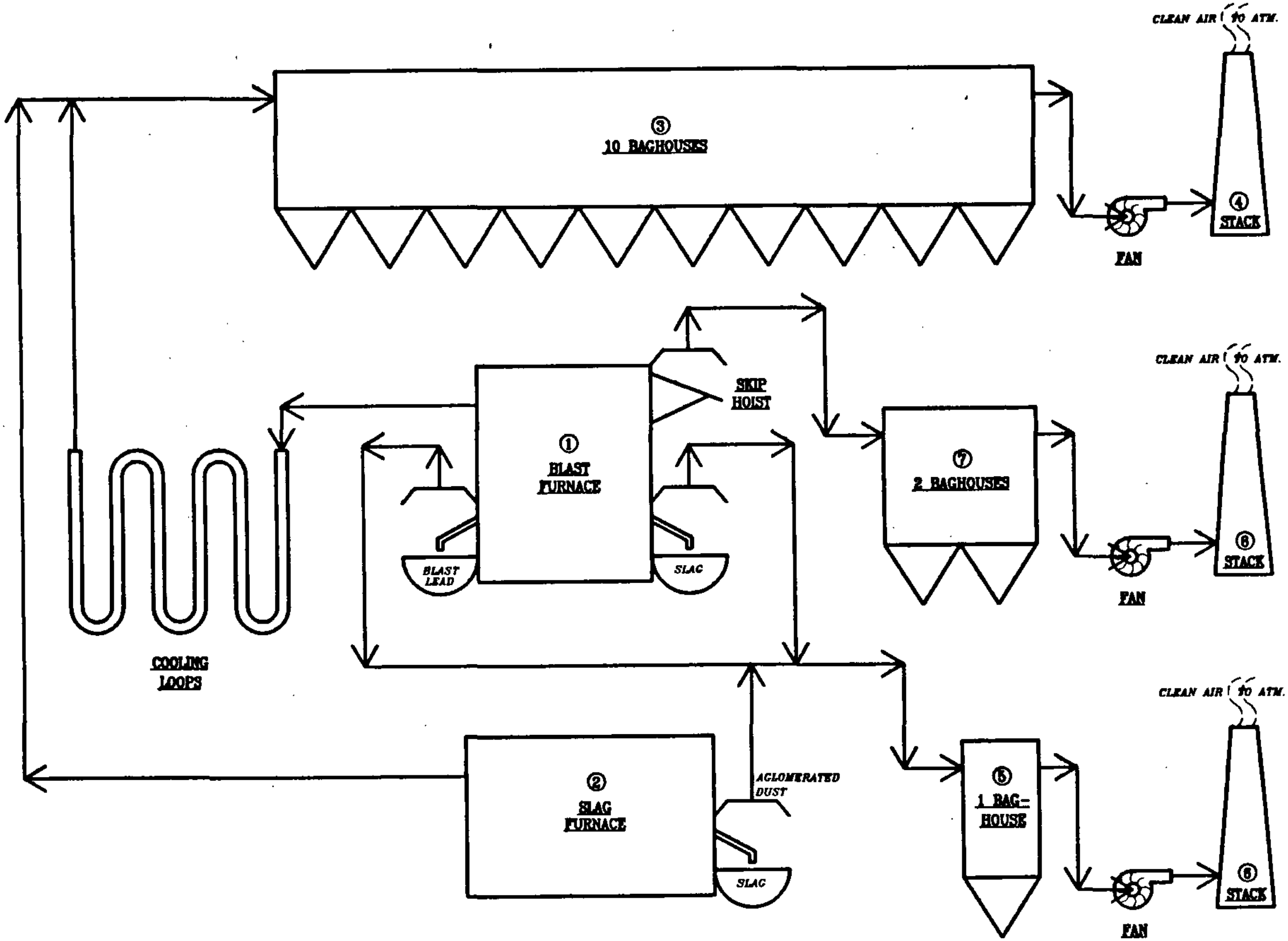


FIGURE 1.3

Once a facility is determined to be "major" for one pollutant (either the 100 or 250 tons/yr limit described above), then a PSD review must also be done for all other pollutants that have the "potential" to exceed the significant levels. Gulf Coast Recycling was already considered a "major" source due to its existing CO and SO_2 emission levels being greater that 100 tons/yr. It was subsequently determined that the CO and SO_2 emissions increases associated with the replacement of the blast furnace exceeded the 100 and 40 tons/yr significance levels. This made the modification subject to PSD review.

2.0 BEST AVAILABLE CONTROL TECHNOLOGY REVIEW

All affected emissions units, regardless of size, must undergo a Best Available Control Technology (BACT) analysis. However, in light of the criterion of economic reasonableness, an analysis should only be as extensive as the quantity of pollutants emitted and the ambient air impacts created. Experience has shown that facilities that emit small amounts of pollutants have extremely high costs associated with the installation and operation of highly effective emission controls. This section describes and quantifies emissions from the new blast furnace as well as from the rest of the facility and performs a BACT review for each applicable pollutant. A "top-down" BACT review identifies all reasonable control technologies and analyzes them for control efficiency and environmental, energy, and economic impacts. This analysis is performed for each identified technology in order of control efficiency. If the first technology (highest control efficiency) is not chosen an indication, e.g., cost prohibitiveness, of why it was not chosen must be given.

An emissions summary is presented in **Table 2.1**. The only source associated with this modification is the new blast furnace. Since it has been in operation for about nine years, there are good source test data available. There are three distinct operations associated with the furnace. In addition to the basic smelting there is *charging*, when raw material is being added to the furnace, and *tapping*, when the molten lead is tapped from the furnace. All operations are included in the blast furnace total.

2.1 SULFUR DIOXIDE

The primary source of SO_2 is from the furnace exhaust. Gulf Coast is currently permitted for a maximum of 384.2 lbs/hr and 7,800 hours/yr. However, this application requests a federally enforceable permit limit of 374 lbs/hr and to allow for 8,760 hours/yr, limits which were used in the air dispersion modeling analysis. The installation of the new blast furnace increased emissions above the 40 tons/yr significance level for SO_2 and subsequently made PSD/BACT applicable for this pollutant. As stated previously, the blast furnace is the primary source of SO_2 emissions and therefore this blast furnace will be the focal point of the BACT analysis. This analysis will attempt to discuss a representative sample of control

TABLE 2.1

PSD APPLICABILITY FOR NEW BLAST FURNACE

values are in tons/year

POL	CURRENT EMISSIONS (based on 7,800 hrs/yr)	PROPOSED EMISSIONS (based on 8,760 hrs/yr)	OLD FURNACE EMISS.	EMISSIONS INCREASE [10]	SIGNIF LEVEL	PSD	EMISSION REDUCTION W/ AFTERBURNER [10]	AFTERBURNER EMISSIONS [10] (products of combustion)	NET EMISSIONS INCREASE [10]	EMISSIONS W/ AFTERBURNER [10]
SO_2	1,498.00 [1]	1,638.12 [6]	1,387.00	251.12	40	YES	0.00	0.09	251.21	1638.21
Pb	0.0234 [2]	0.59 [7]	6.69	-6.10	0.6	NO	0.00	0.00	-6.10	0.59
PM	12.48 [3]	14.02 [8]	9.51	4.51	15	NO	0.00	0.75	5.26	14.77
CO	2,665.00 [4]	2,992.95 [9]	1,774.00	1,218.95	100	YES	2,693.66 [5]	5.23	-1,469.48	304.53
NO_x	7.72 [4]	8.67 [9]	5.14	3.53	40	NO	0.00	20.91	24.44	29.58
VOC	129.09 [4]	144.98 [9]	85.91	59.07	40	N/A [11]	137.73 [12]	0.42	-78.24	7.67

[1] Based on permitted maximum of 384.2 lbs/hr, 7800 hrs/yr

[2] Based on October 24, 1991 source test (0.006 lbs/hr, 7,800 hrs/yr)

[3] Based on permitted maximum, 7,800 hrs/yr

[4] Based on October 21, November 4, 1991 source tests, 7800 hrs/yr

[5] Based on a design destruction efficiency of 90%

[6] Based on requested limit of 374 lbs/hr, 8,760 hrs/yr

[7] Based on requested limit of 0.134 lbs/hr, 8,760 hrs/yr

[8] Based on permitted limit, 8,760 hrs/yr

[9] Based on October 21, November 4, 1991 source tests, 8,760 hrs/yr

[10] Based on 8,760 hrs/yr

[11] Surrounding area classified as non-attainment for ozone (VOCs), PSD not applicable

[12] Based on a design destruction efficiency of 95%

technologies for SO_2 removal while evaluating the environmental, energy, and economic impacts of each.

Nearly twenty different types of flue gas desulfurization systems (FGDs) have been developed over the years, each of which removes SO_2 from the flue gas by an absorption process. For convenience, FGDs are classified either as "throwaway" or "regenerable," depending on whether the absorber product is treated to recover the reagents or simply disposed. Furthermore, it would not be feasible in this analysis to evaluate the advantages and disadvantages of each and every scrubbing alternative available on the market today. The selection of a specific process as the ideal one would be virtually impossible since so many factors are involved: capital investment, construction costs, operating costs, reagent costs, waste treatment, stabilization, disposal, and possible by-product reclaim.

The New Source Performance Standards (NSPS) concerning this industry do not address SO_2 emissions due to the variation and cost of controlling them. For purposes of this analysis, two representative control strategies have been selected for a detailed evaluation. The two strategies that have proven to be effective in reducing potential SO_2 emissions are dry lime slurry injection (dry scrubbing) and wet limestone scrubbing (wet scrubbing). A third control strategy, desulfurization, is also included for comparison purposes.

2.1.1 Dry Scrubbing

In a semi-dry process, the exhaust flue gas from the furnace's metallurgical baghouse and a lime slurry are mixed in a spray dryer. The lime then reacts with and absorbs the sulfur dioxide components in the gas stream forming sulfur-bearing particulates. Baghouses are excellent devices for controlling particulates, including lead. For this reason, the metallurgical baghouse catch is rich in lead and is typically cycled back into the furnace for reprocessing.

There are some process-related constraints concerning dry scrubbing inherent in Gulf Coast's current operation. If a dry scrubber were to precede the metallurgical baghouse, the sulfate particles would contaminate the lead catch and would also be recycled back into the furnace, which would increase the potential for increased SO_2 loading. The only logical solution is to follow the dry scrubbing system with an additional baghouse including a segregated hopper/receiving bin. The collected particulates from this secondary baghouse could not be recycled through the furnace but would have to be classified as a hazardous waste and transported to a certified landfill. Historical control efficiencies for this particular type of control technology range from 75-90 percent. The following economic impact analysis is based on an overall removal efficiency of 90 percent.

ECONOMIC IMPACT ANALYSIS

Design Parameters:	
Flow rate:	24,300 acfm
SO_2 Emission Rate:	374 lbs/hr
Temperature:	154°F
Removal Efficiency:	90%
Expected Life of Equipment:	10 years
Capital Investment[1]:	
Control Equipment[2] (delivered):	$ 506,250
Site Preparation[3]/Installation:	$ 300,000
Total:	$ 806,250

[1] Quote from Electric Controls & Service Co., Inc., Birmingham, AL

[2] Control equipment includes: spray dryer absorber, associated baghouse, reagent and slurry preparation and handling equipment, solids transfer and recycle equipment, fan/motor, other support equipment/instrumentation, delivery, etc.

[3] Installation includes: engineering design, site preparation, erection, field management, startup, etc.

Annual Costs

Operating Labor and Supervision:	$ 15,000
Maintenance and Repairs:	$ 15,200
Power and Utilities:	$ 129,441
Depreciation @ 10%/yr:	$ 101,250
Disposal Cost:	$ 464,750
Total:	$ 725,641

Annualized SO_2 Removal Calculation

Inlet Emission Rate:	374 lbs/hr
Removal Efficiency:	90%
Total SO_2 Removed:	336.6 lbs/hr
Hours of Operation:	8,760 hours (requested)
Annual Reduction:	1,474 tons/yr
Net Annual Cost:	$ 725,641
Net Ann Cost/Ton SO_2 Removed:	$ 492/ton
Capital Cost:	$ 806,250
Capital Cost/Ton SO_2 Removed:	$ 547/ton

Control Technology Costing Calculations

1. Cost of Dry Scrubbing Reagent (lime)
   88 lbs/hr of lime x $ 75/ton ÷ 2,000 lbs/ton x 8,760 hrs/yr = $ 28,908/yr

2. Cost of Handling and Disposal of Hazardous Waste ($ 250/ton)
   (1,474 tons/yr of SO_2 removed + 385 tons/yr of lime) x $ 250/ton = $ 464,750/yr

3. Power Requirements for Pollution Control System
   Booster Fan/Motor, Process Req., Instrumentation, Air Compressor, etc = 342 hp
   342 hp x 745.7 watts/hp ÷ 1000 watts/kW = 255 kW/hr
   255 kW/hr x $ 0.045/kW x 8,760 hrs/yr = $100,533/yr

Product Costs

Avg. annual pounds of lead produced/sold:	49,415,000 (@ 8,760 hrs/yr)
Annual cost of scrubbing system:	$ 725,641
Cost per pound of lead produced:	$ 0.0147
Current price received for lead:	$ 0.23/lb
Percent of gross income from product sales spent on scrubber system:	6.38%

The economic impact of this technology is estimated above at $492/ton of SO_2 removed. Due to the relatively low throughput of this facility, it is also estimated that 6.38 percent of gross income from product sales would be spent on the scrubbing system. Based on these costs, it is recommended that this technology not be considered BACT for this particular application.

ENERGY IMPACT ANALYSIS

The total power requirements were addressed in the economic analysis, as far as determining total annual cost for the operation of the subject pollution control equipment. It has been shown that the electrical requirements will be 255 kW or 1.99 million kWh/yr. It has been estimated that the 255 kW electrical demand, for this subject control system, would require an equivalent heat value of 870,672 Btu/hr or approximately 69.6 lbs of coal/hr at 12,500 Btu/lb. Based on these energy requirements, it is recommended that this technology not be considered BACT for this particular application.

ENVIRONMENTAL IMPACT ANALYSIS

In conjunction with the additional cost for power, the incremental SO_2 increase associated with the power production phase and the solid waste disposal requirements must also be considered. To provide the 255 kW needed to operate this system, it was estimated above that 271.4 additional tons of coal would need to be burned at a typical power generating station in the area. Assuming a typical coal sulfur content of 1.2 percent would result in a net annual potential increase in air emissions of 12,704 lbs of SO_2/yr.

It was estimated above that approximately 1,656 tons of sulfur-bearing particulates would be generated each year. These particulates must then be classified as a hazardous waste and buried in a certified landfill. The country's landfills are rapidly nearing capacity, and new ones are proving to be very difficult to permit, especially those that accept hazardous substances. In this situation, the scrubbing system is merely a trade-off of pollutants. Air emissions are reduced while hazardous waste is increased at a cost of reduced landfill space. It is, therefore, recommended that this technology not be considered as BACT for this project.

2.1.2 Wet Scrubbing

Conventional wet limestone scrubbing was selected over the many other wet scrubbing alternatives because it utilizes a cheap, abundant absorbent and is widely applied commercially. As of 1989, over 48 percent of all scrubbing applications in this country employed wet limestone technology. In this process, a limestone slurry solution is injected in a spray tower to absorb SO_2 and form a calcium sulfite/sulfate sludge. The advantage of this system is that, in some situations, it is capable of achieving an overall removal efficiency of more than 90 percent. The industry average for this type of control technology is more on the order of 82 percent. Some of the disadvantages are:

1. A wet effluent is produced that requires additional treatment with complex effluent treatment systems. For every ton of SO_2 removed, 4.25 tons of sludge are produced and, in this particular application, the sludge would be classified as hazardous, thereby requiring highly specialized treating, stabilizing, handling, and disposal requirements.

2. Economics and space requirements are not as attractive as for other alternatives.

3. Wet scrubbers are more prone to corrosion problems and may require expensive materials of construction.

4. Historically, wet scrubbers have experienced more operating problems (i.e., scaling, plugging, erosion, and corrosion) and higher maintenance requirements than the alternatives.

ECONOMIC IMPACT ANALYSIS

Design Parameters:

Flow Rate:	24,300 acfm
SO_2 Emission Rate:	374 lbs/hr
Temperature:	154°F
Removal Efficiency:	90%
Expected life of equipment:	10 years

Capital Investment[1]:

Control Equipment[2] (delivered):	$ 530,100
Site Preparation/Installation[3]:	$ 570,000
Total:	$ 1,100,100

1 Quote from Electric Controls & Service Co., Inc., Birmingham, AL

2 Control equipment includes: spray dryer absorber, associated baghouse, reagent and slurry preparation and handling equipment, solids transfer and recycle equipment, fan/motor, other support equipment/instrumentation, delivery, etc.

3 Installation includes: engineering design, site preparation, erection, field management, startup, etc.

Annual Costs

Operating Labor and Supervision:	$ 15,000
Maintenance and Repairs:	$ 20,000
Power & Utilities:	$ 121,430
Depreciation @ 10%/yr:	$ 25,200
Disposal Cost:	$ 1,566,125
Total:	$ 1,747,755

Annualized SO_2 Removal Calculation

Inlet Emission Rate:	374 lbs/hr
Removal Efficiency:	90%
Total SO_2 Removed:	336.6 lbs/hr
Hours of Operation:	8,760 (requested)
Annual Reduction:	1,474 tons/yr
Net Annual Cost:	$ 1,747,755
Net Ann Cost/Ton SO_2 Removed:	$ 1,186/ton
Capital Cost:	$ 1,100,100
Capital Cost/Ton SO_2 Removed:	$ 746/ton

Control Technology Costing Calculations

1. Cost of Wet Scrubbing Reagent (limestone)
   174 lbs/hr of limestone x \$ 75/ton ÷ 2,000 lbs/ton x 8,760 hrs/yr = \$ 57,159/yr

2. Cost of Handling and Disposal of Hazardous Waste = \$ 250/ton
   For every ton of SO_2 removed, 4.25 tons of sludge are generated
   1,474 tons of SO_2 removed/yr x 4.25 tons of sludge generated = 6,265 tons of sludge/yr
   6,265 tons sludge/yr x \$250/ton = \$ 1,566,125/yr

3. Power Requirements for Pollution Control System Booster Fan/Motor, pump/motors, agitators, process requirements, instrumentation, etc. = 165 hp
   Conversion Factor = 745.7 watts/hp
   165 hp x 745.7 watts/hp ÷ 1,000 watt/kW = 123 kW/hr
   123 kW/hr x \$0.045/kW x 8,760 hrs/yr = \$48,503/yr

4. Water Requirements
   15 gallons/min x 60 min/hr x 8,760 hrs/yr x \$ 2.00/1000 gals = \$ 15,768/yr

   In addition to the above water costs, there also exists a capacity problem. Gulf Coast's current wastewater disposal permit allows for 20 gallons per minute to be discharged into the City's sewer line which runs from the facility to the main trunk line approximately 1 mile away. This rate of 20 gallons per minute is also the current maximum capacity of the line. In a letter from the City of Tampa concerning this issue (see **Appendix C**) they state that the capacity of this line is not scheduled to be increased until 1995 at the earliest.

Product Costs

Avg. annual pounds of lead produced/sold:	\$49,415,000 (@ 8,760 hrs/yr)
Annual cost of scrubbing system:	\$ 1,747,755
Cost per pound of lead produced:	\$ 0.0354
Current price received for lead:	\$ 0.23/lb
Percent of gross income from product sales spent on scrubber system:	15.38%

The economic impact of this technology is estimated above at $1,186/ton of SO_2 removed. Due to the relatively low throughput of this facility, it is also estimated that 15.38 percent of gross income from product sales would be spent on the scrubbing system. Based on these costs, it is recommended that this technology not be considered BACT for this particular application.

ENERGY IMPACT ANALYSIS

The total power requirements were addressed in the economic analysis, as far as determining total annual cost for the operation of the subject pollution control equipment. It has been shown that the electrical requirements will be 123 kW/hrs or 1,077,480 kWh/yr. It has been estimated that the 123 kW electrical demand, for this subject control system, would require an equivalent heat value of 471,785 Btu/hr or approximately 37.7 lbs of coal/hr at 12,500 Btu/lb. Based on these energy requirements, it is recommended that this technology not be considered BACT for this particular application.

ENVIRONMENTAL IMPACT ANALYSIS

In conjunction with the additional cost for power, the incremental SO_2 increase associated with the power production phase and the solid waste disposal requirements must also be considered. To provide the 123 kW needed to operate this system, it was estimated above that 165 additional tons of coal would need to be burned at a typical power generating station in the area. Assuming a typical coal sulfur content of 1.2 percent would result in a net annual potential increase in air emissions of 7,700 lbs of SO_2/yr.

It was estimated above that approximately 6,265 tons of sludge would be generated each year. This sludge must then be classified as hazardous and then treated, handled, and buried as such in an appropriate landfill. The country's landfills are rapidly nearing capacity and new ones are proving to be very difficult to permit, especially those that accept hazardous substances. An additional 15 gallons of wastewater per minute is also required by this technology. As stated earlier, the sewer line is already operating at capacity and it is unknown at this time when, or if, the capacity will be increased. It is, therefore, recommended that this technology not be considered as BACT for this project.

2.1.3 Desulfurization

Desulfurization removes the sulfur contained in the furnace feed material before it is fed into the furnace. The sulfur-bearing paste from the batteries is not sent directly to the smelting furnaces, but rather is chemically processed first to remove most of the sulfur. The resultant desulfurized paste is then fed into the furnace where as much as a 95 percent reduction can be realized in potential sulfur dioxide emissions. Rather than relying on the exclusive use of add-on pollution control devices, this technology can achieve equivalent reductions in emissions based on modifications of the conventional lead recovery process through such means as material separation and desulfurization. Presently, there are two new lead recovery plants operating in this country which have successfully demonstrated the technological effectiveness of desulfurization as a viable means of minimizing SO_2 emissions. In both cases desulfurization was the accepted control methodology for SO_2 emissions and no add-on controls were required. However, this technology requires an upgraded breaker and reverberatory furnace, which Gulf Coast does not currently have. To successfully implement desulfurization, this additional equipment would have to be installed, at a great monetary cost and with the additional associated air emissions.

Since desulfurization qualifies as an emissions reduction technique, the cost effectiveness of this process should be addressed for comparison purposes. To quantify the economic impacts of the proposed desulfurization process would prove to be a difficult task since it is an integral part of the overall battery recycling process. It would suffice to say that the capital expenditure for this process, which would include the breaker and reverberatory furnace mentioned above, is substantial and has been estimated, since this is an existing plant, at roughly $4-6 million. However, is would not be justifiable to assign 100 percent of this expenditure to the traditional cost-benefit analysis as typically required for BACT determinations. However, a practical budgetary estimate would assign a capital value of approximately $1.65 million. Conservative emissions estimates, using a 90 percent removal efficiency, have shown that 1,313 tons of SO_2 will be removed on an annual basis. The associated capital cost-per-ton of SO_2 removal for this process will be approximately $1,257 per ton.

2.1.4 Sulfur Dioxide Conclusions

The primary function of this recycling facility is to recover lead from spent lead-acid batteries and then to sell this lead on the open market at a profit. As such point where the recovery costs equal or exceed the market price for lead, such a facility fails to substantiate its existence. Based on rough industry estimates, average plant operating costs vary from 16.8 to 19.6 cents per pound of refined lead. The current price of lead is approximately 23 cents. Just six months ago the average price was 17 cents per pound. It has been estimated that additional SO_2 control equipment would add between 1.5 and 3.5 cents per pound of refined lead to the proposed operating costs for this facility.

As has been shown in the preceding economic analysis, the economic burden of additional SO_2 removal controls would create distinct economic disadvantages for this recycling facility to compete on the open market. Reasonable cost effectiveness (cost/ton of pollutant removed) for non-boiler sources (Metals Industry) for non-hazardous situations has been estimated at $293/ton ("Cost for Control of SO_2 Emissions," *CEP* June 1982 pg. 52). The scrubbing systems discussed earlier range from $492/ton to $1,186/ton. Desulfurization was previously estimated at $1,257/ton. Therefore, economic reasonableness has not been achieved.

This BACT analysis showed sulfur dioxide emissions are not reasonably controllable due to the relatively low output of SO_2 at the Gulf Coast facility and high cost of the control systems. Both dry and wet scrubbing systems are cost prohibitive and raise additional solid waste disposal problems. Desulfurization of the raw feed material is inappropriate at this time due to the cost as well as the unsuitability of Gulf Coast's current plant configuration. With the addition of the proposed afterburner discussed in section 2.4.3, the blast furnace will be able to operate at lower temperatures. By operating the furnace at lower temperatures sulfur dioxide formation will decrease, thereby decreasing SO_2 emissions. The exact expected reduction is unknown at this time. The EPA BACT/LAER Clearinghouse lists the BACT determination for SO_2 emissions from the cupola or blast furnace for Sanders Lead, BLIS ID AL-0028 to be process controls. It is believed that with process controls, including the lower operating temperatures allowed by the addition of the afterburner, Gulf Coast can continue to be in compliance with the requested SO_2 emission rate of 374 pounds per hour.

Gulf Coast is the only lead-acid battery recycler remaining in the State of Florida. If Gulf Coast is required to install cost-prohibitive control technology, it will be placed in an extremely tight economic situation that could easily result in the facility becoming uneconomical to operate if an uncontrollable event, such as a slight drop in lead prices, occurs. If this should happen, the nearest battery recycling facility would be in Columbus, Georgia—approximately 425 miles away. The estimated 1.1 million batteries that Gulf Coast recycles annually would therefore have to be shipped by truck to the Columbus facility. This would inherently increase the cost of recycling which would hinder recycling efforts. There is no environmentally acceptable alternative to recycling spent lead-acid batteries. Resource Conservation and Recovery Act (RCRA) land-ban restrictions prohibit their disposal in hazardous waste landfills. As recycling becomes economically prohibitive, the potential for the public discarding batteries along roadways, in vacant lots, etc. increases dramatically.

2.2 LEAD

The current blast furnace permit limits lead emissions to 2.09 lbs/hr and 8.15 tons/yr. This permitted level was established years ago by assuming the lead levels to be a certain percentage of total particulates. This facility employs baghouses for particulate control including control of the blast furnace exhaust. These baghouses typically operate in excess of 99.5 percent control efficiency. Since lead is a particulate these baghouses are also very efficient in controlling lead. A source test performed on October 24, 1991 showed lead levels to be 0.006 lbs/hr (see **Appendix D**). Assuming that rate for a full year of 8,760 operational hours would give 0.0263 tons/yr, well below the 0.6 tons/yr significance level for lead. Therefore, lead levels from the blast furnace have actually decreased as a result of the modification.

Gulf Coast is hereby requesting a federally-enforceable, facility-wide permit limit for lead emissions of 0.59 tons/yr, which correlates to 0.134 lbs/hr for 8,760 hrs/yr. As mentioned above, Gulf Coast utilizes baghouses for particulate (and lead) control throughout the facility. A roof-mounted sprinkler system is also used for ambient dust suppression which minimizes fugitive emissions of particulates (and lead). Since the 0.59 tons/yr requested limit is below the significance level for lead, PSD/BACT is not applicable for this pollutant.

2.3 TOTAL PARTICULATES

Current permitted levels are 3.20 lbs/hr and 12.48 tons/yr, which are based on 7,800 hrs/yr. With the requested 8,760 hrs/yr, the annual emission rate correlates to 14.02 tons/yr. This level does not exceed the 15 tons/yr significance level for particulates. Therefore, PSD/BACT is not applicable for this pollutant. In addition, Gulf Coast is located within an Air Quality Maintenance Area for particulate matter, subjecting them to F.A.C. Rule 17-2.650 (2), Reasonably Available Control Technology (RACT). The 14.02 tons/yr emission level requested above also keeps Gulf Coast in compliance with Specific Condition Number Two in the permit, and Exemption Number One of the RACT regulations which exempts facilities from the RACT requirements if facility-wide emissions are less than 5.0 lbs/hr and 15 tons/yr.

The NSPS pertaining to this industry is 40 CFR Subpart L §60.120. This standard limits particulate matter emissions from the blast furnace to 0.022 gr/dscf and 20% opacity. The flow rate of the blast furnace baghouse is 24,350 acfm, correlating to 20,250 dscfm. Assuming the allowable grain loading this results in an allowable emission rate of 3.82 lbs/hr:

$$20{,}250 \text{ dscfm} \times 0.022 \text{ gr/dscf} \div 7{,}000 \text{ gr/lb} \times 60 \text{ min/hr} = 3.82 \text{ lbs/hr}$$

The blast furnace is currently permitted for a maximum of 3.20 lbs/hr, below the NSPS limit. Because of this, it would be expected that the furnace is also in compliance with the opacity limit.

2.4 CARBON MONOXIDE

A source test performed on October 21 and November 4, 1991 showed CO emissions from the new blast furnace to be 683.32 lbs/hr (see **Appendix E**). With the requested hours of operation of 8,760 hrs/yr, the annual rate correlates to a maximum 2,993 tons/yr, compared to the old furnace emission rate of 1,774 tons/yr. This is an increase of 1,219 tons/yr, greater than the 100 tons/yr significance level and making the furnace applicable to PSD/BACT for this pollutant.

There are several technologies available to control carbon monoxide emissions. Most of them fall into one of two categories: *incineration* or *catalytic conversion*. Both categories convert CO to carbon dioxide and water. Incineration techniques employing the combustible properties of CO burn it while catalytic conversion utilizes a catalyst instead of combustion. One catalytic conversion technology and two incineration technologies are reviewed in the following section.

2.4.1 Catalytic Oxidation

This technology utilizes a catalyst bed for the conversion of CO to carbon dioxide and water instead of a combustion device. Advantages to this system are lower fuel costs and no additional emissions from the combustion of natural gas. Disadvantages are high initial cost, cost of new or regenerating the catalyst bed, catalyst disposal problems, and fouling of the catalyst. Because of the high content of impurities in the gas stream from the furnace, e.g., SO_2, lead, particulates, and trace amounts of other metals, fouling of the catalyst would be a significant problem. It is not believed this technology is being used anywhere in this industry for controlling carbon monoxide emissions. It is therefore determined for this analysis that this technology could not be considered BACT.

2.4.2 Incineration Technology Number One: CO Waste-Heat Boiler

Carbon Monoxide boilers are widely used in the petroleum refining industry as a means of controlling the CO emissions from the Fluid Catalytic Cracking Unit (FCCU). Combustible CO and auxiliary fuel is introduced into the firebox of the boiler. The CO is then converted into carbon dioxide and water. As this control technology may be appropriate for a refinery with large steam needs, it is not appropriate for Gulf Coast. Also, as mentioned previously, Gulf Coast has a wastewater discharge capacity issue. CO boilers also require a very "clean" fuel source, meaning the auxiliary fuel (usually natural gas) and FCCU waste gases must be combined with a high concentration of CO and other combustibles. CO boilers do not work well if large amounts of particulates or non-combustible gases are present. Any inorganic dusts and fumes deposit on heat transfer surfaces causing excess maintenance costs and decreased efficiencies.

2.4.3 Incineration Technology Number Two: Afterburner/Incineration

A search of EPA's BACT/LAER Clearinghouse listed the following BACT determinations for carbon monoxide emissions from cupola and blast furnaces:

Thermal incineration	- 99.5% efficiency	Partek Insulations, Inc.	BLIS ID AL-0063
Afterburner	- 94% efficiency	U.S. Gypsum	BLIS ID IN-0004
3 stack afterburners	- 94% efficiency	Lufkin Industries, Inc.	BLIS ID TX-0023
Incineration	- 98.7% efficiency	Vermont Castings	BLIS ID VT-0001
Incineration	- 1300°F & 0.3 sec	Waupaca Foundry #2	BLIS ID WI-0012

The *Best Available Control Technology Guidelines* document published by the South Coast Air Quality Management District (SCAQMD) in Los Angeles address CO emissions from lead melting furnaces (cupola or blast furnace) associated with secondary lead smelting. The BACT determination for CO from this source type is an afterburner with ≥ 0.3 second retention time at ≥ 1400°F (see **Appendix F**).

2.4.4 Carbon Monoxide Conclusions

Gulf Coast is hereby proposing to install an afterburner on the new furnace as BACT in addition to following good combustion practices to decrease the emissions increase to below the significance level. Assuming a minimum 90 percent reduction in emissions with the added CO emissions from the afterburner, this would result in annual emissions of approximately 299 tons/yr (68.3 lbs/hr for 8,760 hrs/yr). A screening model using this emission rate resulted in an 8-hour high, second-high impact of 27.2 $\mu g/m^3$, well below the significance level of 575 $\mu g/m^3$ (see section 4.1.4). This exempts CO from a refined air quality analysis.

All other sources of CO from the facility, while minor compared to the new furnace, will continue to incorporate operating parameters in an effort to minimize CO formation. An afterburner system with a minimum 1400°F temperature and 0.5-2.0 second retention time to reduce CO emissions at least 90 percent has been identified. Gulf Coast is currently in the process of accepting bids on afterburner systems. A separate application will be submitted at such time as the specific system has been selected. Estimated capital cost is $350,000-500,000.

2.5 NITROGEN OXIDES

The October through November 1991 source tests showed NO_x emissions to be 1.98 lbs/hr (see **Appendix E**). With the requested hours of operation of 8,760 hrs/yr, the annual rate correlates to a maximum 8.67 tons/yr, compared to the old furnace emission rate of 5.14 tons/yr. This is an increase of 3.53 tons/yr, well below the 40 tons/yr significance level. Even with the additional emissions from the proposed afterburner (20.91 tons/yr) NO_x emissions will remain below the significance level. Therefore, PSD/BACT is not applicable for this pollutant.

2.6 VOLATILE ORGANIC COMPOUNDS

The October through November 1991 source tests determined VOC emissions to be 33.10 lbs/hr (see **Appendix E**). With the requested hours of operation of 8,760 hrs/yr, the annual rate correlates to a maximum 145 tons/yr, compared to the old furnace emission rate of 86 tons/yr. This is an increase of 59 tons/yr, greater than the 40 tons/yr significance level outlined in the PSD regulations.

VOC emissions have not been addressed in detail specific to this industry. Neither the EPA BACT/LAER Clearinghouse nor the SCAQMD BACT Guidelines address VOC or reactive organic gases (ROG) from this source type. In addition, the applicable NSPS do not set limits for VOCs. Control technology in other industries varies widely from incinerators and flares to carbon adsorption and condensation. Due to the type of organics present, the lack of in-house reuse opportunities for collected organics, and lack of storage capacity, recovery techniques are not desirable at Gulf Coast. Of the various destruction technologies being used, flares and other open-flame combustion systems are not desirable in urban settings.

Afterburner destruction efficiencies for VOCs are typically in the 90-99 percent range. Therefore, assuming a 95 percent efficiency, VOC emissions with the proposed afterburner presented earlier (including VOC emissions from the afterburner) are estimated to be 7.67 tons/yr. This is a 90+ percent reduction from the 86 tons/yr from the old furnace. Since the Tampa-St. Petersburg area is classified as non-attainment for ozone, of which VOCs are considered precursors, the non-attainment regulations apply instead of the PSD regulations. This 90 percent reduction, obtained by internal offsets, complies with the net decrease provisions in the non-attainment regulations.

VOCs are not addressed in the current operating permit for the furnace. Gulf Coast is currently in the process of accepting bids on afterburner systems. A separate application will be submitted once a specific system has been selected. All other sources of VOCs from the facility are minor compared to the furnace.

3.0 BASELINE DATA

This section discusses the existing air quality and the major sulfur dioxide-emitting sources in the subject area.

3.1 AMBIENT MONITORING DATA SUMMARY

Gulf Coast Recycling, Inc. was not required to conduct any pre-construction monitoring given the availability of data from nearby state-operated monitors. The area is designated as "unclassifiable" (cannot be classified as attainment or non-attainment) for SO_2. According to the Florida Department of Environmental Regulation, the ambient concentrations of sulfur dioxide near the Gulf Coast facility are 21 $\mu g/m^3$, annual average; 93 $\mu g/m^3$, 24-hour average (second-highest 24-hour monitored value in 1992); and 304 $\mu g/m^3$, 3-hour average (second-highest 3-hour monitored value in 1992). These values were recorded at the Davis Island monitoring station, number 4360-0350-G02 located 8 kilometers (approximately 5 miles) WSW from Gulf Coast.

The responsible regulatory authority has discretion in requiring post construction monitoring data and, in general, will not require such monitoring. Factors such as complex terrain, fugitive emissions, and other uncertainties in source or emission characteristics result in significant uncertainties about the projected impact of the source. Gulf Coast is not located in complex terrain nor are fugitive emissions considered significant. Also, emissions of particulates that result in high concentrations near the property boundary are also not significant. Sulfur dioxide emissions, which are considered to result in more of a regional problem, have been modeled and have been shown to be below those emission rates that would result in exceedances of, or significantly contribute to, any air quality standards. In addition, the DEP operates the Davis Island SO_2 monitor which is only approximately 5 miles WSW from Gulf Coast. This monitor has not shown any exceedances of the FAAQS.

3.2 SURROUNDING SOURCE EMISSION INVENTORY

Table 3.1 shows the major sulfur dioxide-emitting sources within 30 km of the Gulf Coast facility and their respective operating data. This area has a high density of large utility power generating stations with high sulfur dioxide emissions. The nine largest emitting units collectively emit over 100,000 lbs/hr compared to Gulf Coast's 374 lbs/hr.

Gulf C[illegible] Recycling, Inc.
Source[illegible]ithin 30 km to be included in modeling
August 12, 1993
460.20001

Owner	Facilty ID	Model ID	Dist from GCR-km	UTM Coord, E	UTM Coord, N	SO2 Emissions lbs/hr	Stack Ht. ft	Stack Dia. ft	Temp F	Velocity ft/sec
Gulf Coast Recycling, Inc	40HIL290057	0001	0.0	364.0	3093.5	374.0000	150	2.0	160	123
Scrap-All, Inc.	40HIL290054	1302	4.5	359.4	3093.1	0.0200	38	0.7	435	51
Tampa City McKay Bay R-T-E	40HIL290127	1701	4.3	360.0	3091.9	42.500	160	5.7	450	41
Tampa City McKay Bay R-T-E	40HIL290127	1702	4.3	360.0	3091.9	42.500	160	5.7	450	41
Tampa City McKay Bay R-T-E	40HIL290127	1703	4.3	360.0	3091.9	42.500	160	5.7	450	41
Tampa City McKay Bay R-T-E	40HIL290127	1704	4.3	360.0	3091.9	42.500	160	5.7	450	41
Verlite Company	40HIL290077	1901	3.7	360.2	3093.0	1.1300	50	2.0	230	28
Cargill/Nutrena Feed Division	40HIL290037	2108	3.6	360.8	3095.8	0.3700	16	1.0	410	29
Couch Construction Company	40HIL290012	2402	3.4	362.1	3096.7	17.000	41	4.1	350	66
Nitram	40HIL290029	2703	4.9	362.5	3089.0	0.7200	90	4.5	260	35
Nitram	40HIL290029	2704	4.9	362.5	3089.0	0.7200	30	4.5	450	35
Nitram	40HIL290029	2713	4.9	362.5	3089.0		9	1.7	260	24
Weyerhauser Co	40HIL290070	2801	4.6	362.8	3098.3		25	2.0	375	18
Weyerhauser Co	40HIL290070	2802	4.6	362.8	3098.3	0.1000	25	1.7	375	20
Royster Co	40HIL290003	2901	4.7	362.8	3098.4	4.3500	25	2.5	500	28
Verlite Co	40HIL290136	3103	4.3	363.0	3098.1		40	1.0	171	41
W.R. Bonsal Co	40HIL290097	3301	4.3	363.6	3098.1		17	2.3	300	57
City of Tampa, Dept. San. Sew.	40HIL290373	3401	4.3	364.0	3089.5		75	5.0	216	29
City of Tampa, Dept. San. Sew.	40HIL290373	3402	4.3	364.0	3089.5		75	5.0	216	29
Griffin Industries	40HIL290163	3501	2.6	364.1	3096.4	0.0200	50	2.8	450	22
Griffin Industries	40HIL290163	3502	2.6	364.1	3096.4	0.0200	48	0.3	450	1414
Couch Construction Co	40HIL290223	3602	4.3	364.3	3098.1		34	4.5	325	62
Florida Steel Corp	40HIL290020	3701	1.2	364.6	3092.8	0.0420	40	2.8	105	148
Florida Steel Corp	40HIL290020	3702	1.2	364.6	3092.8	0.0690	40	2.0	150	482
Florida Steel Corp	40HIL290020	3703	1.2	364.6	3092.8	0.0700	40	3.3	155	194
Florida Steel Corp	40HIL290020	3704	1.2	364.6	3092.8	0.1400	40	2.3	155	641
Florida Steel Corp	40HIL290020	3706	1.2	364.6	3092.8	0.0800	76	7.2	1090	28
Florida Steel Corp	40HIL290020	3708	1.2	364.6	3092.8	0.0036	50	1.5	75	
Southeastern Wire	40HIL290090	3801	4.4	368.3	3094.5		14	3.5	68	34
Southeastern Galvanizing Div	40HIL290069	3901	4.6	368.5	3094.5		11	1.5	150	229
Sulfur Terminals Co, Inc.	40HIL290082	1001	7.0	358.0	3090.0	23.5400	30	1.8	660	17
TECO-Hookers Pt. Sta.	40HIL290038	1101	6.5	358.0	3091.0	328.0000	280	11.3	295	20
TECO-Hookers Pt. Sta.	40HIL290038	1102	6.5	358.0	3091.0	328.0000	280	11.3	329	18
TECO-Hookers Pt. Sta.	40HIL290038	1103	6.5	358.0	3091.0	452.7000	280	12.0	322	26
TECO-Hookers Pt. Sta.	40HIL290038	1104	6.5	358.0	3091.0	452.0000	280	12.0	300	24
TECO-Hookers Pt. Sta.	40HIL290038	1105	6.5	358.0	3091.0	671.0000	280	11.3	347	36
TECO-Hookers Pt. Sta.	40HIL290038	1106	6.5	358.0	3091.0	856.0000	280	9.4	322	73

TABLE 3.1

Gulf Coast Recycling, Inc.
Sources within 30 km to be included in modeling
August 12, 1993
460.20001

Owner	Facilty ID	Model ID	Dist from GCR-km	UTM Coord, E	UTM Coord, N	SO2 Emissions lbs/hr	Stack Ht. ft	Stack Dia. ft	Temp F	Velocity ft/sec
TECO-Gannon Sta.	40HIL290040	1601	7.4	360.0	3087.5	3017.0000	306	10.0	289	94
TECO-Gannon Sta.	40HIL290040	1602	7.4	360.0	3087.5	3017.0000	306	10.0	298	101
TECO-Gannon Sta.	40HIL290040	1603	7.4	360.0	3087.5	3838.0000	306	10.6	296	126
TECO-Gannon Sta.	40HIL290040	1604	7.4	360.0	3087.5	4502.0000	306	10.0	309	75
TECO-Gannon Sta.	40HIL290040	1605	7.4	360.0	3087.5	5482.0000	306	14.6	303	76
TECO-Gannon Sta.	40HIL290040	1606	7.4	360.0	3087.5	9115.0000	306	17.6	320	81
TECO-Gannon Sta.	40HIL290040	1607	7.4	360.0	3087.5	9.2000	35	5.0	1010	448
Cargill Fertilizer, Inc.	40HIL290008	3004	11.3	362.9	3082.5	366.6700	150	7.5	153	44
Cargill Fertilizer, Inc.	40HIL290008	3005	11.3	362.9	3082.5	416.6700	150	8.0	152	34
Cargill Fertilizer, Inc.	40HIL290008	3006	11.3	362.9	3082.5	433.2000	70	9.0	160	37
Cargill Fertilizer, Inc.	40HIL290008	3007	11.3	362.9	3082.5		126	8.0	132	37
Cargill Fertilizer, Inc.	40HIL290008	3022	11.3	362.9	3082.5		133	7.3	120	48
Cargill Fertilizer, Inc.	40HIL290008	3023	11.3	362.9	3082.5		133	7.0	120	52
Cargill Fertilizer, Inc.	40HIL290008	3034	11.3	362.9	3082.5	0.0400	66	2.0	140	53
Cargill Fertilizer, Inc.	40HIL290008	3041	11.3	362.9	3082.5	0.8900	40	1.7	120	32
Cargill Fertilizer, Inc.	40HIL290008	3043	11.3	362.9	3082.5	0.5200	20	4.0	420	52
Cargill Fertilizer, Inc.	40HIL290008	3055	11.3	362.9	3082.5	31.8000	133	7.0	108	50
Cargill Fertilizer, Inc.	40HIL290008	3063	11.3	362.9	3082.5	0.4000				
Cargill Fertilizer, Inc.	40HIL290008	3064	11.3	362.9	3082.5	0.4000				
Cargill Fertilizer, Inc.	40HIL290008	3065	11.3	362.9	3082.5	0.4000				
Cargill Fertilizer, Inc.	40HIL290008	3069	11.3	362.9	3082.5	0.3000				
TECO-Big Bend Sta.	40HIL290039	2201	18.9	361.9	3075.0	26241.1300	490	24.0	269	45
TECO-Big Bend Sta.	40HIL290039	2202	18.9	361.9	3075.0	25974.0000	490	24.0	269	42
TECO-Big Bend Sta.	40HIL290039	2203	18.9	361.9	3075.0	26748.0000	490	24.0	279	47
TECO-Big Bend Sta.	40HIL290039	2204	18.9	361.9	3075.0	3551.0000	490	24.0	156	59
TECO-Big Bend Sta.	40HIL290039	2205	18.9	361.9	3075.0	277.0000	75	14.0	928	61
TECO-Big Bend Sta.	40HIL290039	2206	18.9	361.9	3075.0	277.0000	75	14.0	928	61
TECO-Big Bend Sta.	40HIL290039	2207	18.9	361.9	3075.0	79.0000	35	5.0	1010	447
Florida Power-Barlow	40PNL520011	5201	24.2	342.4	3082.6	3558.5000	300	9.0	312	119
Florida Power-Barlow	40PNL520011	5202	24.2	342.4	3082.6	3445.0000	300	9.0	305	102
Florida Power-Barlow	40PNL520011	5203	24.2	342.4	3082.6	5786.0000	300	11.0	275	113
Florida Power-Barlow	40PNL520011	5204	24.2	342.4	3082.6	14.4000	30	3.0	515	17
Florida Power-Barlow	40PNL520011	5205	24.2	342.4	3082.6	569.2000	45	17.3	930	73
Florida Power-Barlow	40PNL520011	5206	24.2	342.4	3082.6	569.2000	45	17.3	930	73
Florida Power-Barlow	40PNL520011	5207	24.2	342.4	3082.6		45	17.3	930	73
Florida Power-Barlow	40PNL520011	5208	24.2	342.4	3082.6		45	17.3	930	73
Florida Power-Higgins	40PNL520012	4901	27.7	336.5	3098.4	1434.0000	174	12.5	312	27
Florida Power-Higgins	40PNL520012	4902	27.7	336.5	3098.4	1368.0000	174	12.5	310	27
Florida Power-Higgins	40PNL520012	4903	27.7	336.5	3098.4	1434.0000	174	12.5	301	24
Florida Power-Higgins	40PNL520012	4904	27.7	336.5	3098.4	14.1100	55	15.1	850	372
Florida Power-Higgins	40PNL520012	4905	27.7	336.5	3098.4	14.1100	55	15.1	850	372
Florida Power-Higgins	40PNL520012	4906	27.7	336.5	3098.4	15.7300	55	15.1	850	372
Florida Power-Higgins	40PNL520012	4907	27.7	336.5	3098.4	15.7300	53	15.1	850	372

4.0 DISPERSION MODELING ANALYSIS

The PSD regulations require modeling analyses to predict the impacts on the ambient air quality standards and on the air quality increments for that area. The regulations also require an analysis of the predicted impacts on any Class I area that may be impacted. Thus, three separate analyses were done for SO_2 for this project:

1) The FAAQS analysis looked at the predicted impacts from Gulf Coast and surrounding sources on the human health-based Federal and Florida Ambient Air Quality Standards;
2) The Class I increment analysis predicted Gulf Coast's and other PSD sources' consumption of air quality increments at the Chassahowitzka National Wilderness Area;
3) The Class II increment analysis predicted Gulf Coast's and other PSD sources' consumption of air quality increments of the surrounding area, which is classified as a Class II area.

A screening analysis was performed for CO to determine if the predicted impacts exceeded the significance level. If it did, full FAAQS and Class I and II analyses would have to be performed.

Both increment analyses aimed at predicting the amount of remaining increments that would be consumed by Gulf Coast and other PSD sources and then comparing that prediction with the allowed consumption. This requirement provides for future growth by assuring that no one new source will deteriorate the air quality to the point that the ambient standards are on the verge of being violated, thereby not allowing any future source to locate in the area without causing a violation of the standards.

4.1 PROTOCOLS AND RESULTS

The modeling was conducted using EPA-approved methods as outlined in *Guideline on Air Quality Models* (Revised, EPA, 1986). The particular models used were the latest versions of the Industrial Source Complex Short Term model (ISCST2), used for the Class II and FAAQS SO_2 analyses and the CO screening analysis, and MESOPUFF II long-range transport model, used for the Class I SO_2 analysis.

A modeling protocol was submitted to DEP on August 17, 1993 for the SO_2 analyses (see **Appendix G**) and was approved as amended on September 24, 1993 (see **Appendix H**). The modeling protocol called for five years of meteorological data to be used for each analysis. The years 1982-86 were chosen, with the data being collected at the Tampa surface and upper air station number 12842 for all runs. The Class I analysis also utilized surface met data from Orlando and Gainsville. Each modeling run calculated SO_2 impacts for three averaging periods: 3-hour, 24-hour, and annual. For each analysis, the 3-hour and 24-hour standard (or increment) can be exceeded once per year at each receptor. Therefore, the maximum impact for each receptor for these averaging periods is the highest second-high value. The annual standard (or increment) cannot be exceeded. Therefore, the maximum impact for the annual averaging period for each receptor is the highest value.

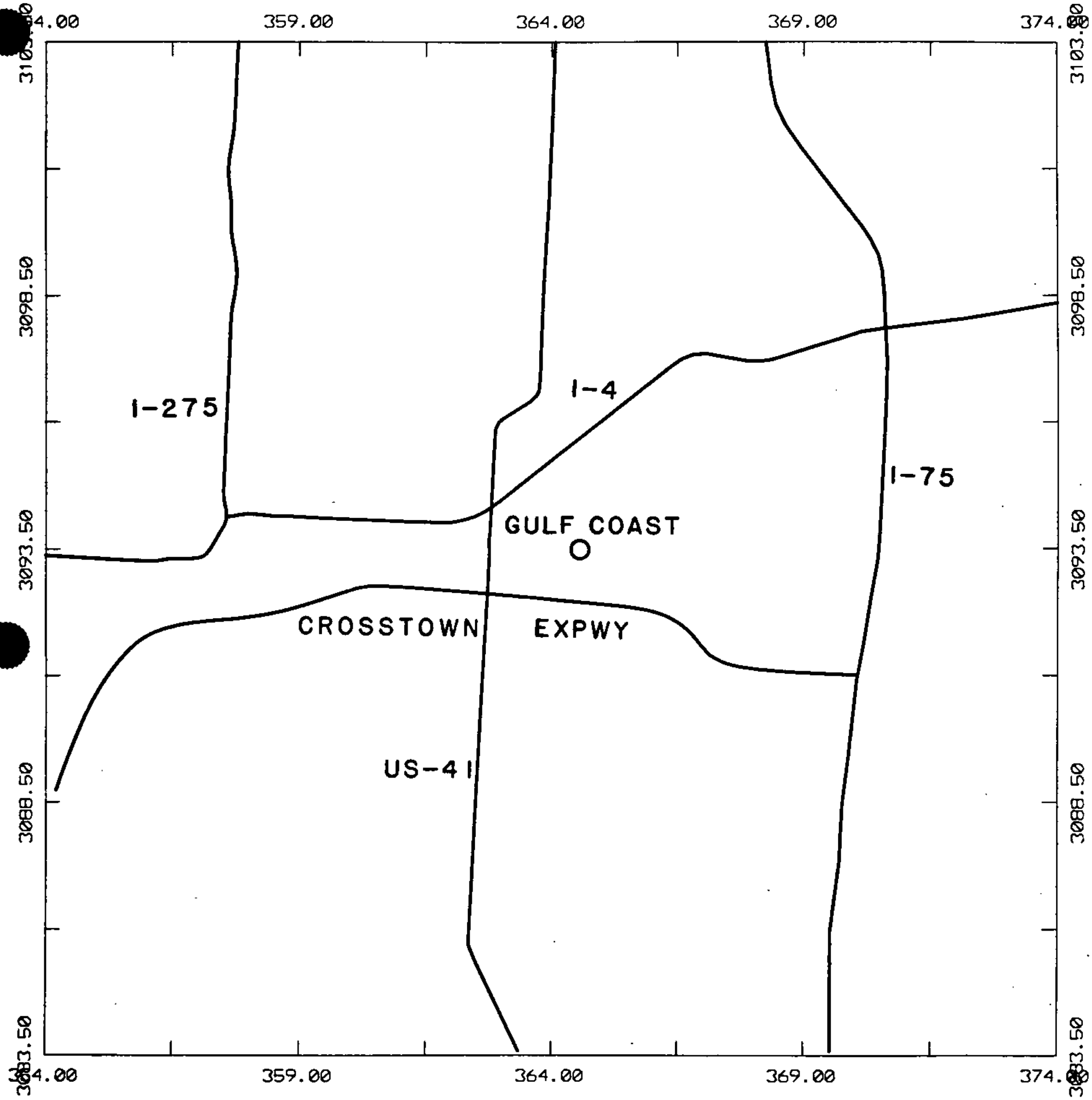
The ISCST2 model was run in the regulatory default mode resulting in conservative impacts. Wet and dry deposition as well as SO_2 conversion were not used which further overestimates the impacts. All modeling assumed the blast furnace operates 8,760 hrs/yr. The Gulf Coast facility is located in a mixed-use area with both industrial facilities and residential areas located within a 50 km radius. The area is assumed to be rural with flat terrain for modeling purposes. The model did not calculate building downwash or wake effects due to the sufficient height of the furnace stack. This resulted in maximum downwind concentrations being calculated.

Three separate cartesian receptor grids were used for the FAAQS and Class II analyses. The first grid placed 441 receptors at 100-meter intervals from Gulf Coast out to 1 kilometer. The second grid placed 441 receptors at 1-kilometer intervals from Gulf Coast out to 10 kilometers. The third grid placed 121 receptors at 10-kilometer intervals from Gulf Coast out to 50 kilometers, for a total of 1,003 receptors. **Figures 4.1 and 4.2** show the boundary file used for the graphics and a map showing the boundary file outline. **Figure 4.3** shows the area covered by the modeling. The DEP identified 13 discrete receptors to be used for the Class I analysis. See **Appendix L** for these receptor locations.

4.1.1 Florida Ambient Air Quality Standards (FAAQS) Analysis

The FAAQS analysis compared the modeled impacts of emissions from Gulf Coast and sixty-eight surrounding sources with the Florida Ambient Air Quality Standards for SO_2. A listing of the 68 sources can be found in **Appendix I**. These sources' locations are shown on **Figure 4.4**. Florida's ambient standards were used for comparison instead of the federal standards because Florida's are more stringent for two of the three averaging periods (24-hour

GRAPHICS BOUNDARY FILE

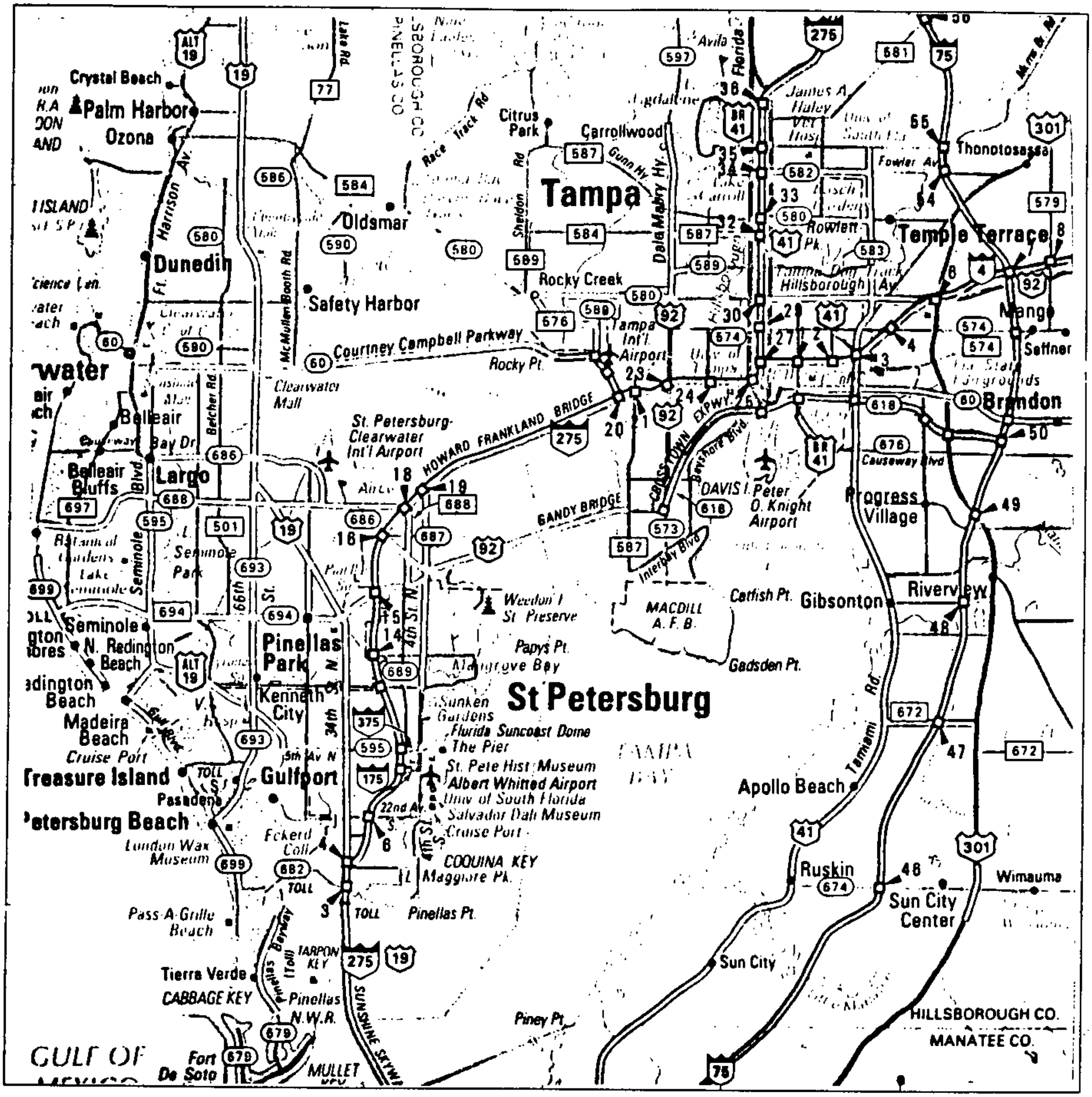


GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

FIGURE 4.1

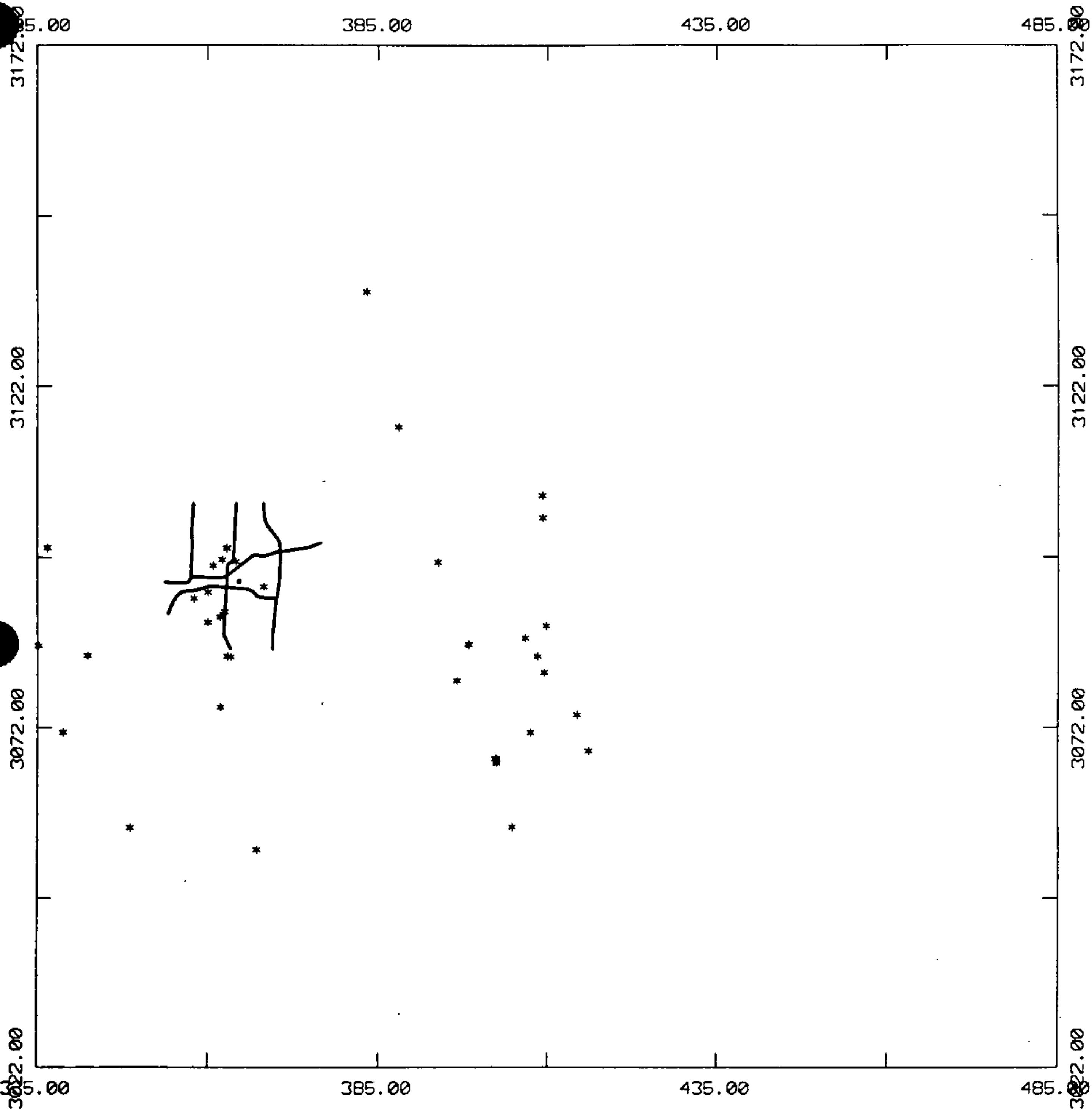
REGIONAL MAP SHOWING BOUNDARY FILE OUTLINE



GULF COAST RECYCLING, INC. TAMPA, FL

FIGURE 4.2

AAQS ANALYSIS SURROUNDING SOURCE INVENTORY



GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 21.429 KM

FIGURE 4.3

and annual). Background values measured at the Davis Island monitor, located approximately 8 kilometers (5 miles) WSW from Gulf Coast, were added to the modeled impacts, then compared to the ambient standards. The results of this exercise are shown in **Table 4.1**. Model outputs can be found in **Volume II**.

TABLE 4.1

PRELIMINARY FAAQS ANALYSIS RESULTS

values are in $\mu g/m^3$

AVG. PERIOD	FED. STND.	FLA. STND.	1982	1983	1984	1985	1986
3-hour [1]	1300	1300	**1575** [3] 1271 [4]	**1369** 1065	**1316** 1012	**1567** 1263	**1702** **1398**
24-hour [1]	365	260	**497** [3] **404** [4]	**374** **281**	**365** **272**	**364** **271**	**386** **293**
annual [2]	80	60	**76** [3] 55 [4]	**71** 50	**76** 55	**81** **60**	**83** **62**

[1] Highest second-high modeled impacts

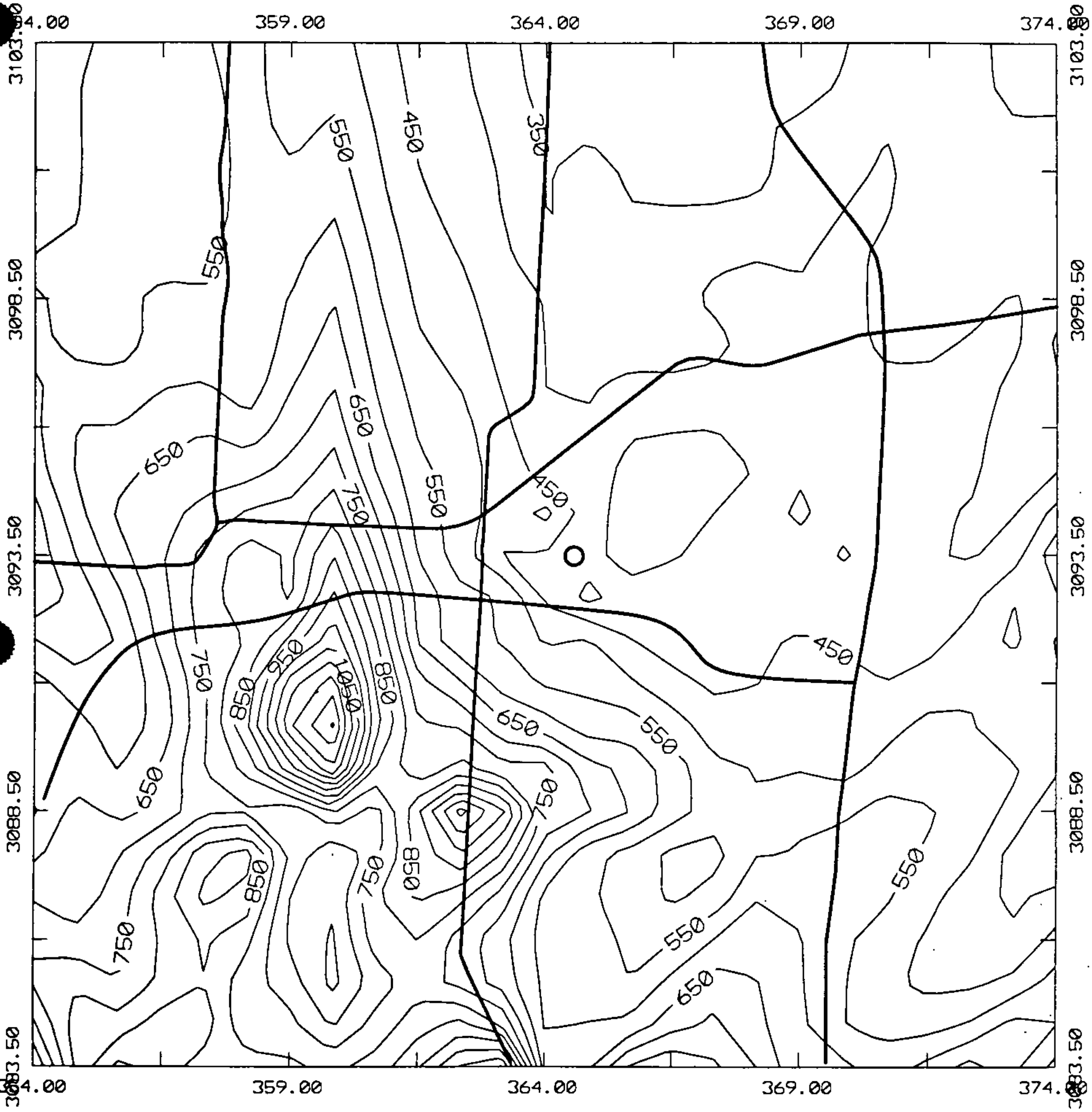
[2] Highest first-high modeled impacts

[3] Results include background values of 304 $\mu g/m^3$, 3-hour average; 93 $\mu g/m^3$, 24-hour average; 21 $\mu g/m^3$, annual average. Values recorded at the Davis Island monitoring station, number 4360-0350-G02.

[4] Results do not include background values

The 3-hr impacts for all five years are depicted in **Figures 4.4-4.8**; the 24-hr impacts are depicted in **Figures 4.9-4.13**; the annual averages are depicted in Figures **4.14-4.18**. These figures do not include any background values. As shown in the above table, there were some predicted exceedances of the standards. Although without the background values added, the exceedances became fewer in number and closer to the standards. Due to the location of the monitor in relation to all sources included in this analysis and the prevailing wind direction (see **Figure 4.19** for a Wind Rose for this area) it appeared as though many of the sources, including Gulf Coast, were already impacting the monitor. Tampa Electric Company's (TECO) Hooker's Point generating station, with a combined SO_2 emission rate for all units of over 3,087 lbs/hr, is located between 1.0 and 2.3 miles upwind (predominant wind direction) of the monitor, depending on the exact location of the monitor on Davis Island.

SO2 3-HR HIGH 2ND HIGH 1982



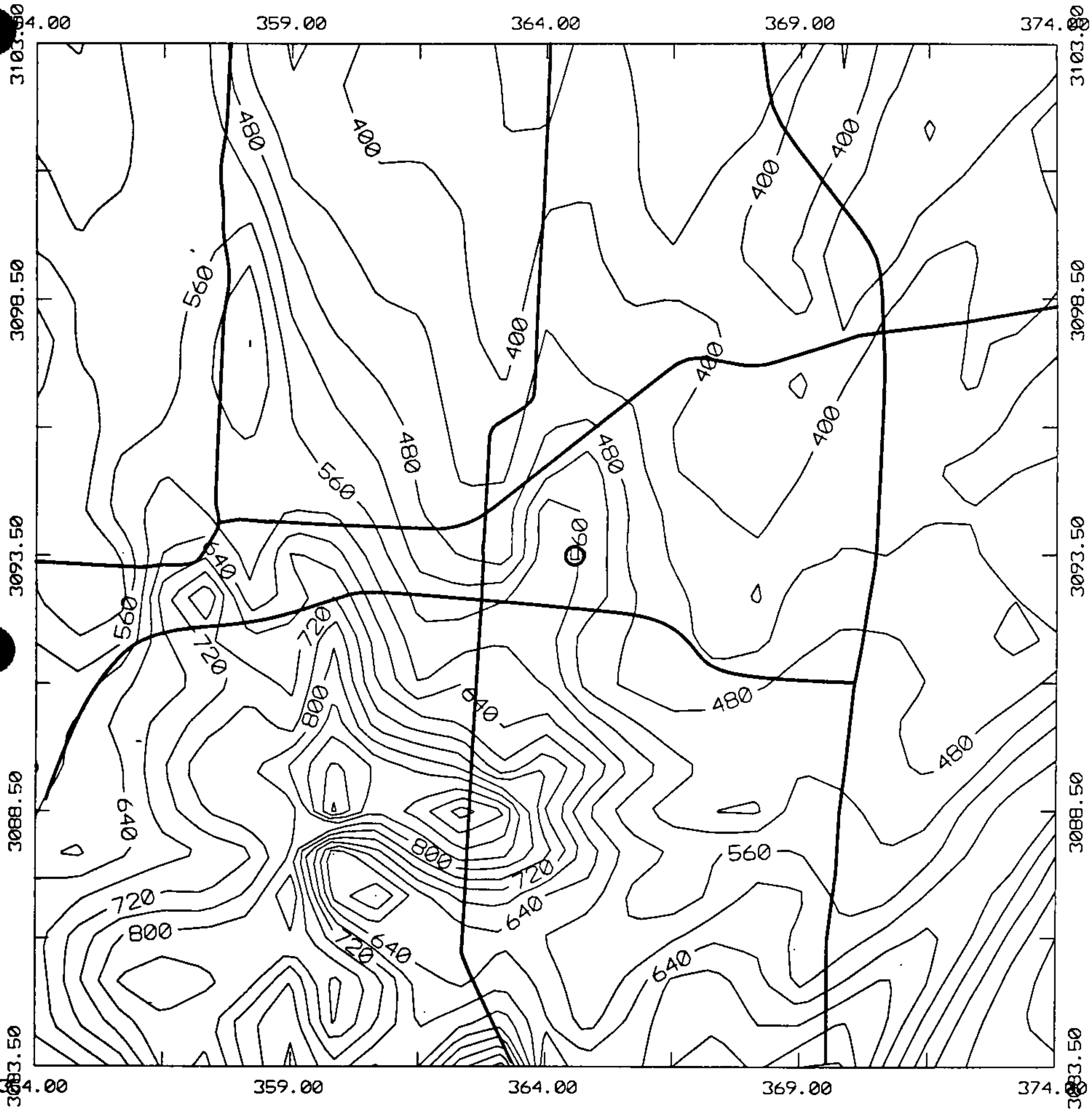
GULF COAST RECYCLING, INC.   TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.4

SO2 3-HR HIGH 2ND HIGH 1983



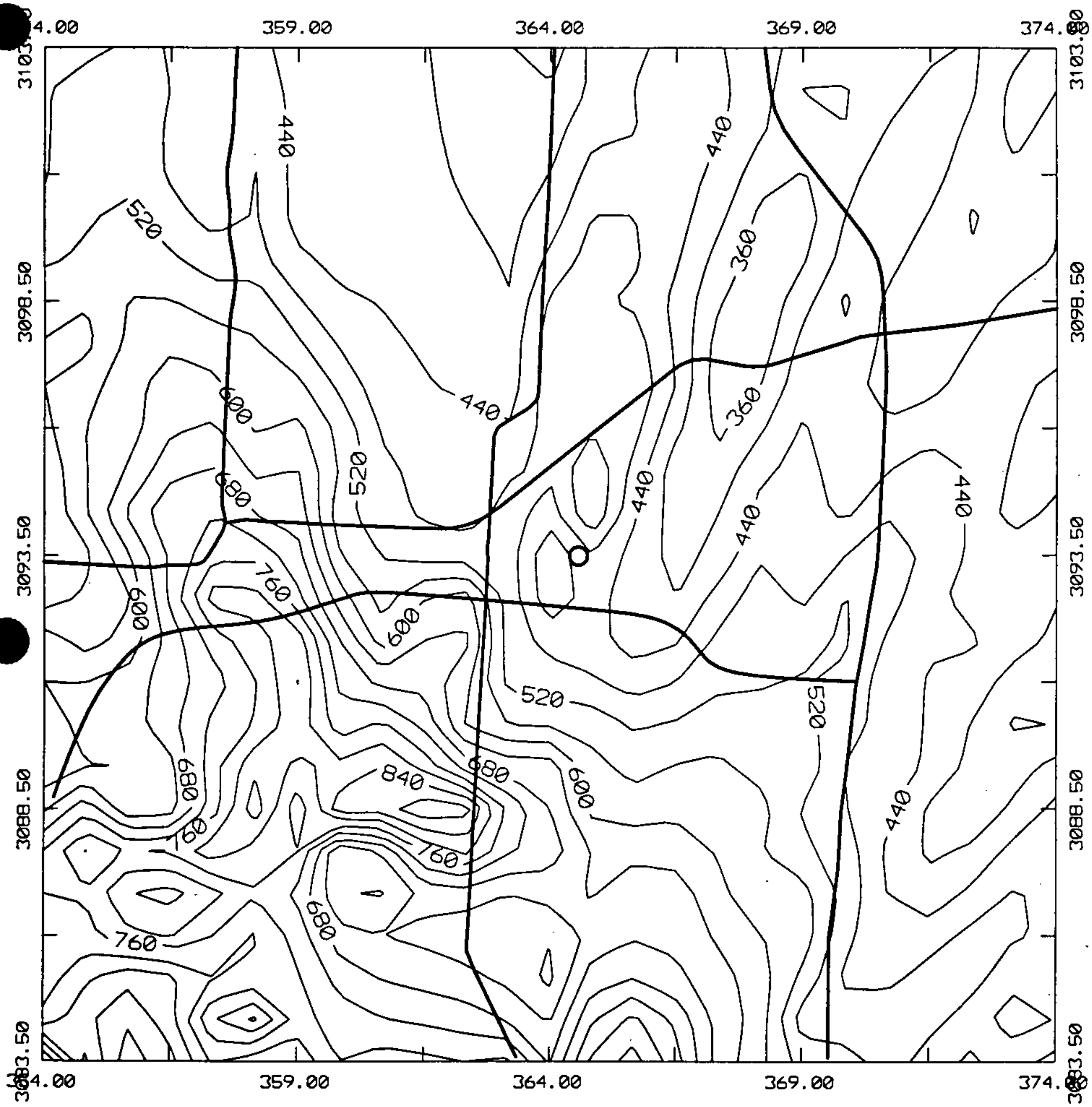
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.5

SO2 3-HR HIGH 2ND HIGH 1984



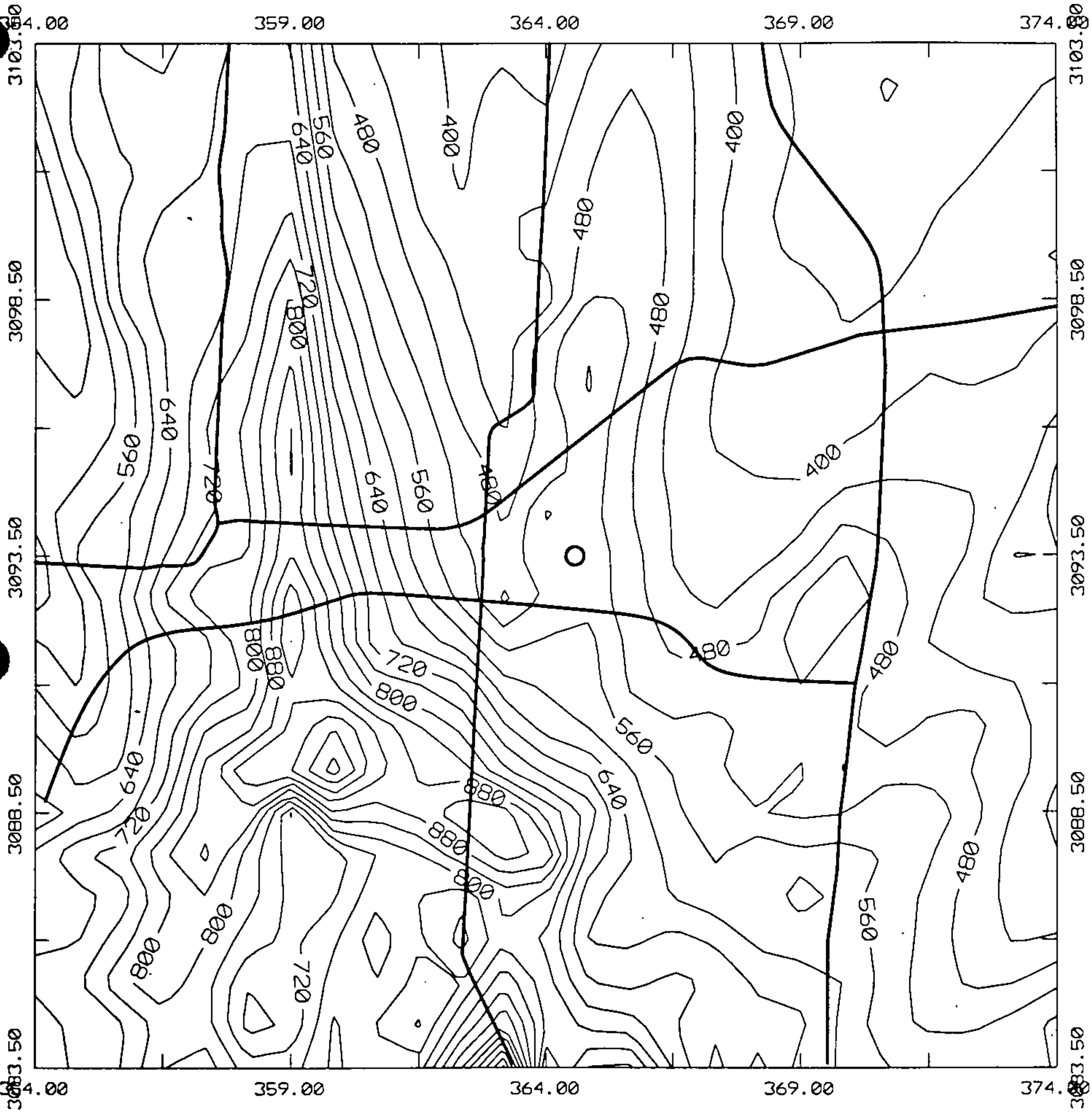
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.6

SO2 3-HR HIGH 2ND HIGH 1985



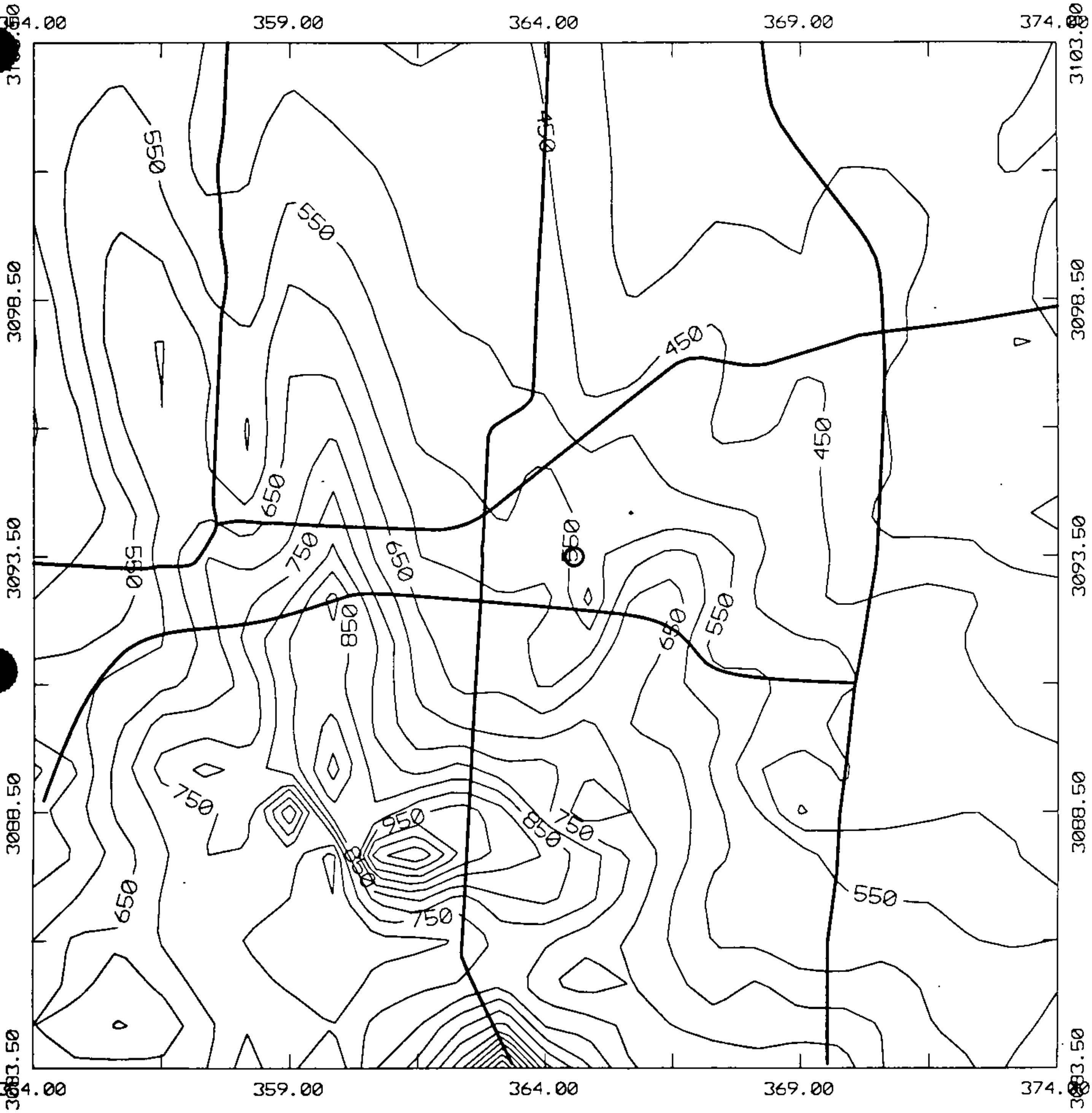
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.7

SO2 3-HR HIGH 2ND HIGH 1986



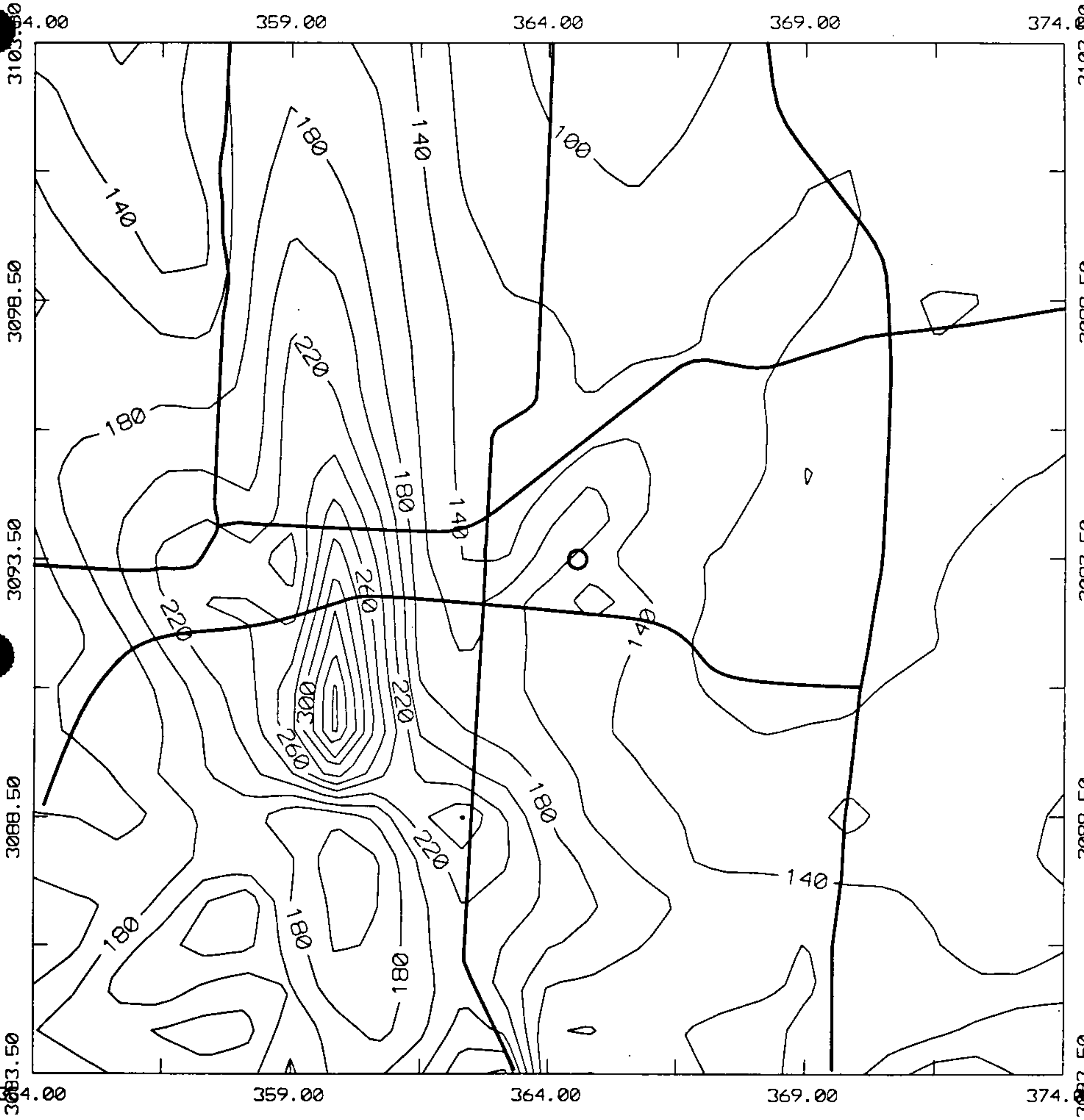
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.8

SO2 24-HR HIGH 2ND HIGH 1982



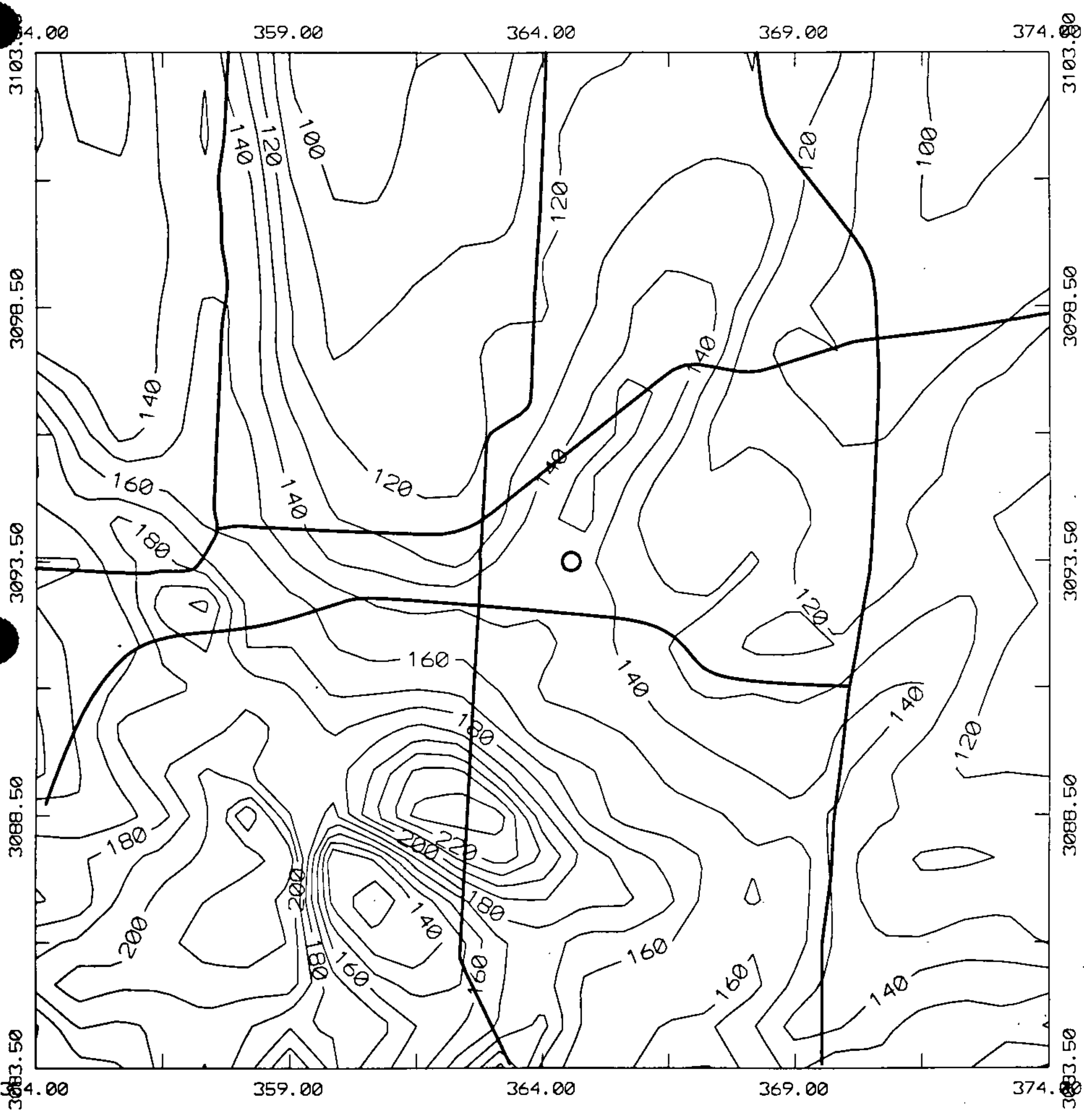
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.9

SO_2 24-HR HIGH 2ND HIGH 1983



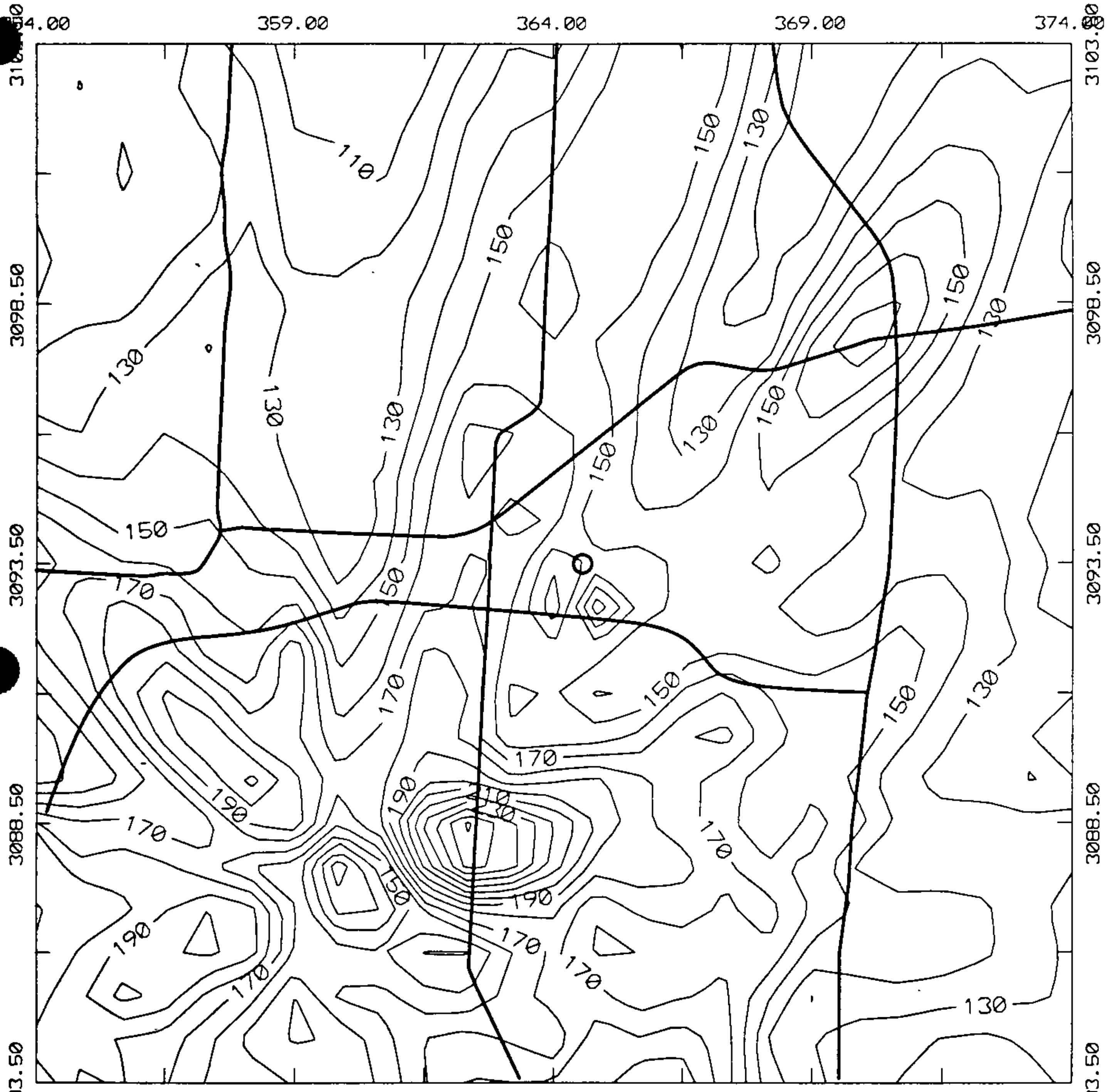
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.10

SO2 24-HR HIGH 2ND HIGH 1984



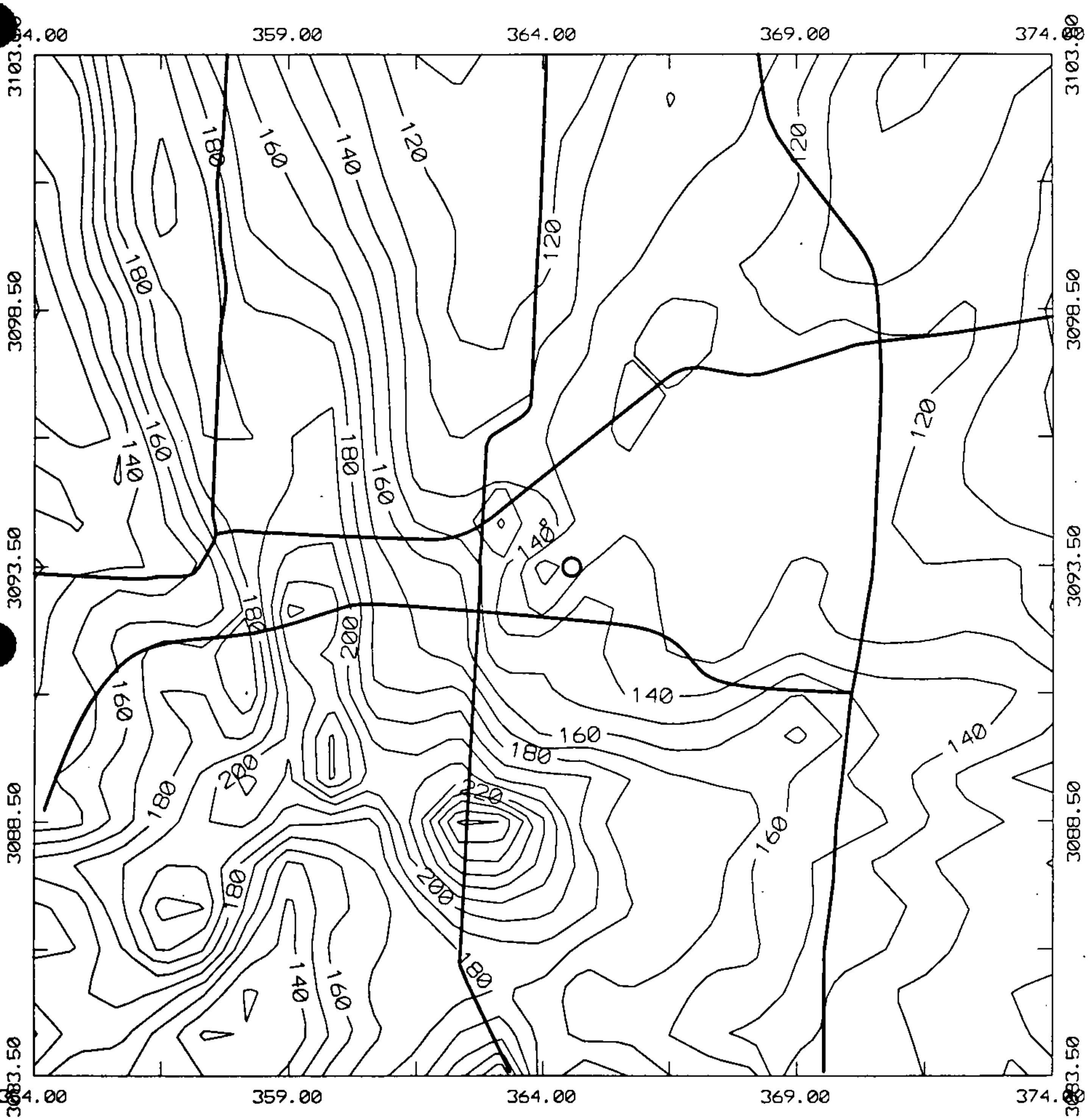
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.11

SO2 24-HR HIGH 2ND HIGH 1985



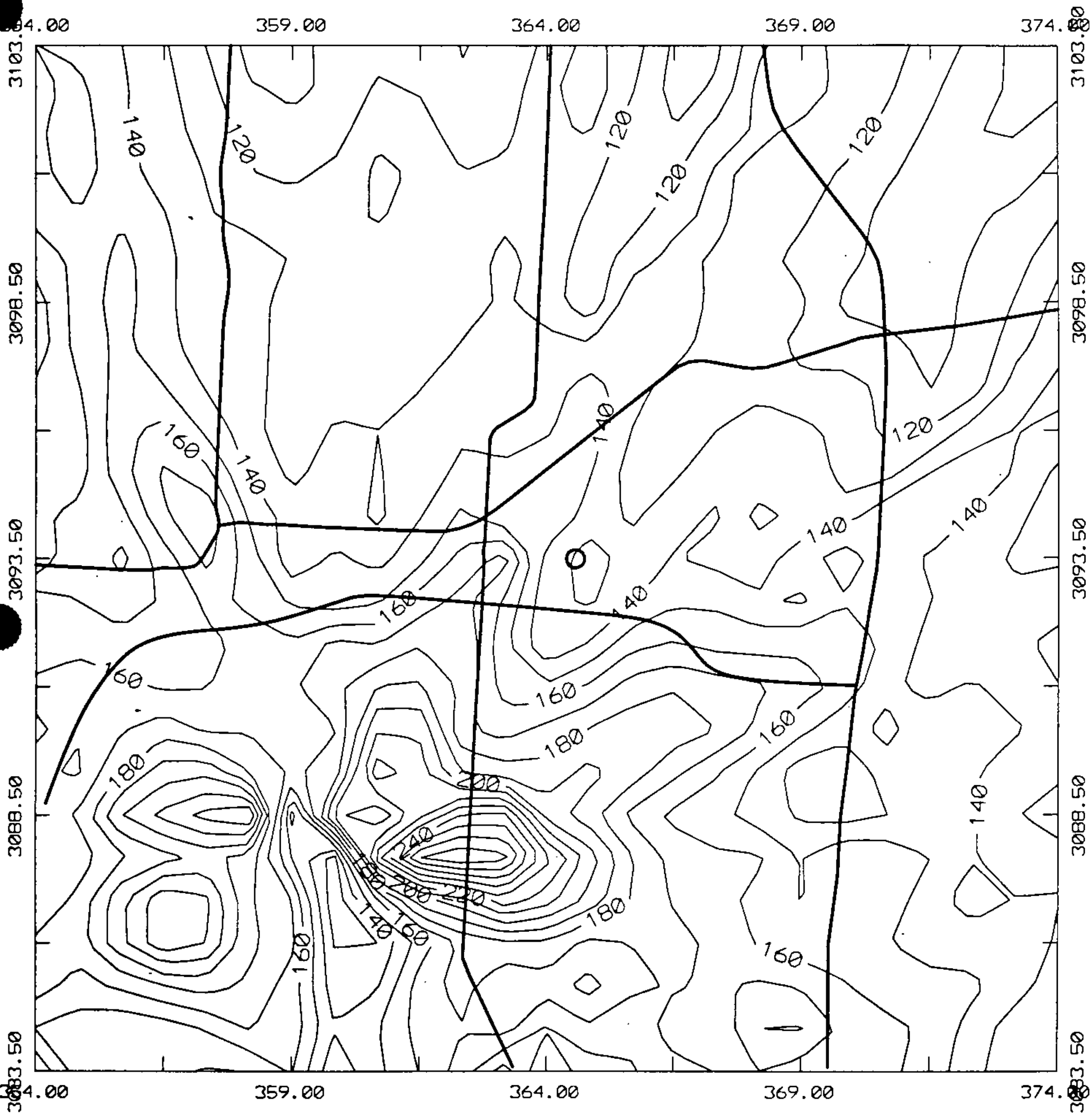
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.12

SO2 24-HR HIGH 2ND HIGH 1986



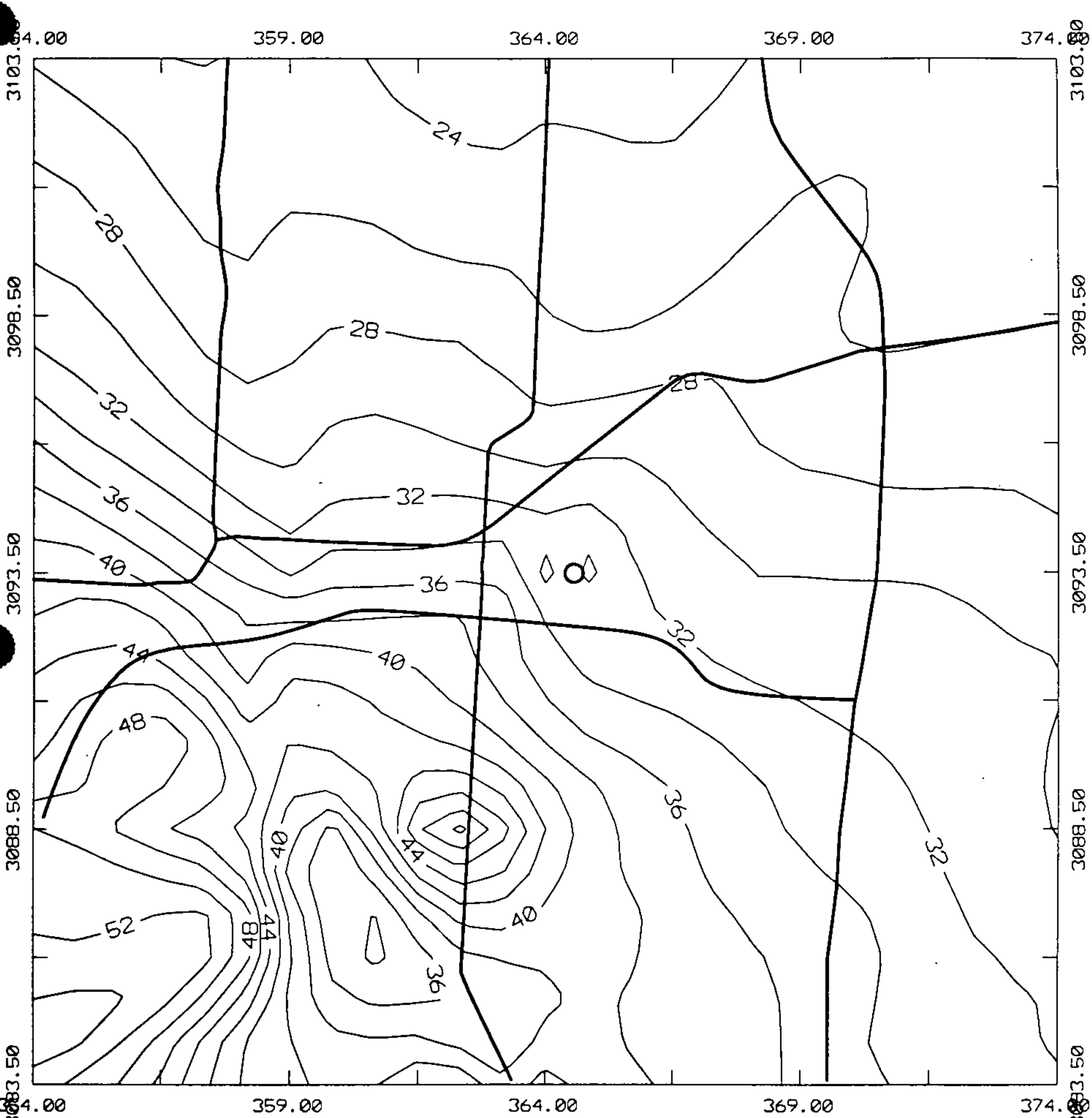
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.13

SO2 ANNUAL HIGH 1ST HIGH 1982



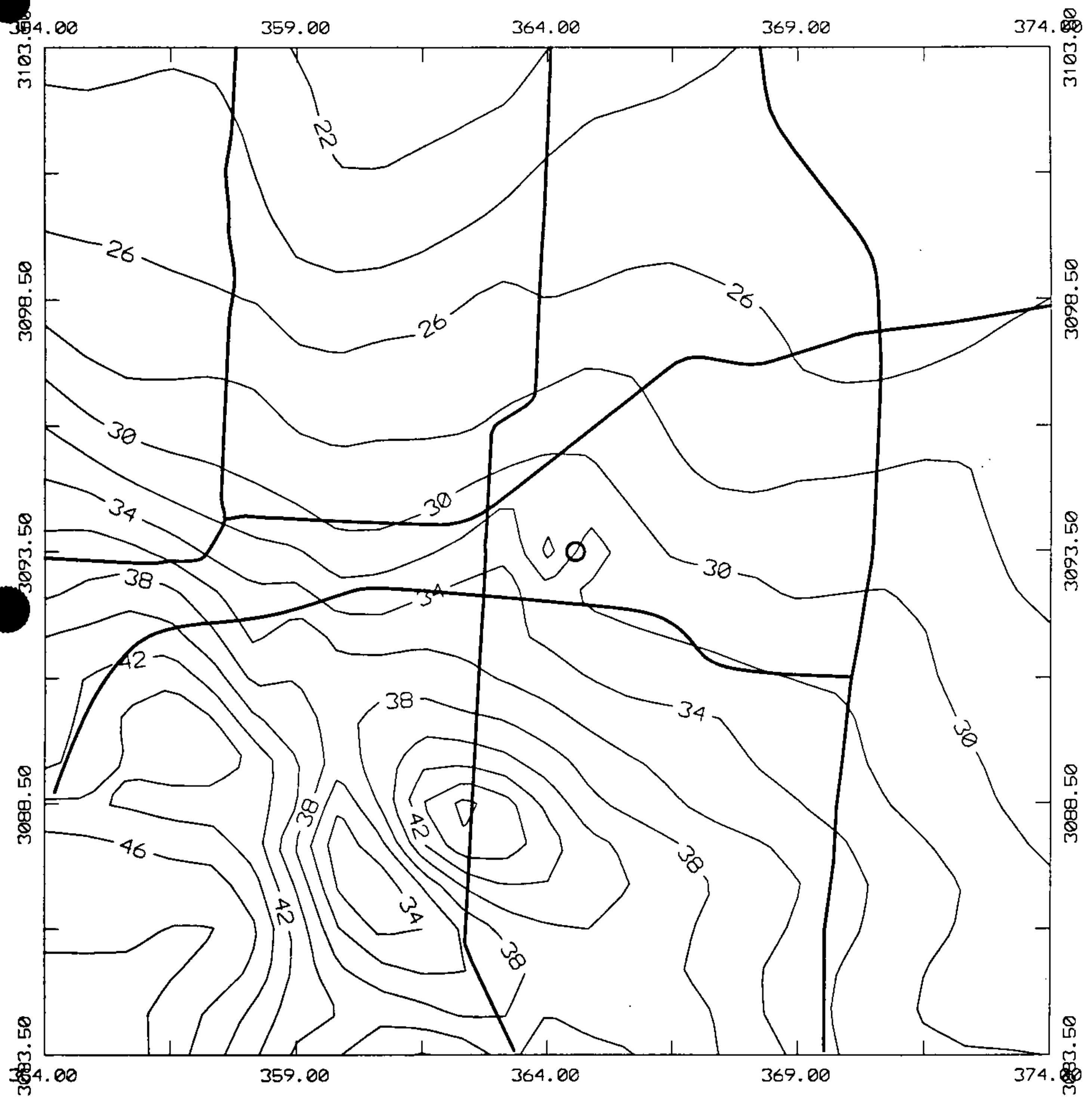
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.14

SO2 ANNUAL HIGH 1ST HIGH 1983



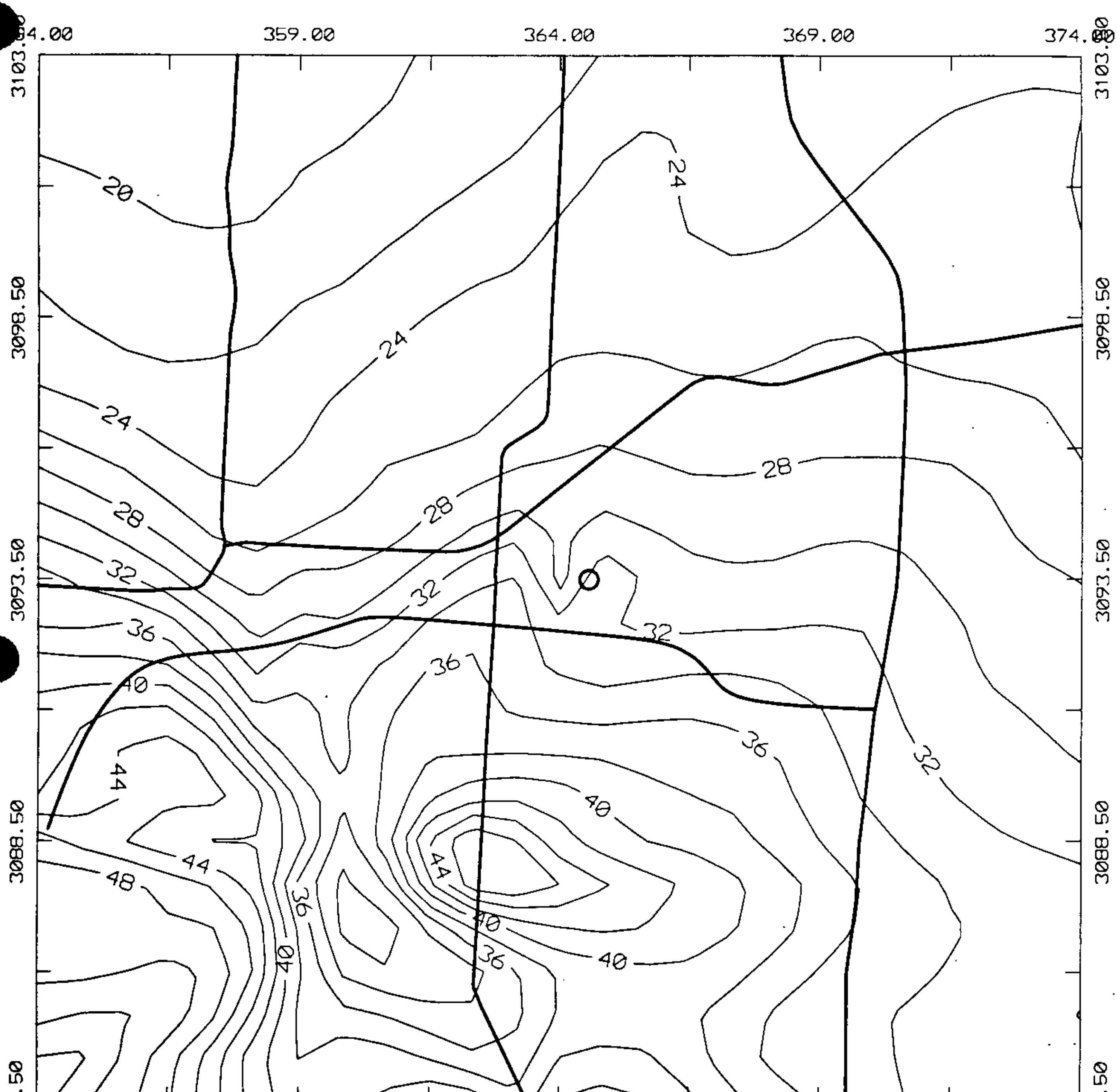
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.15

SO2 ANNUAL HIGH 1ST HIGH 1984



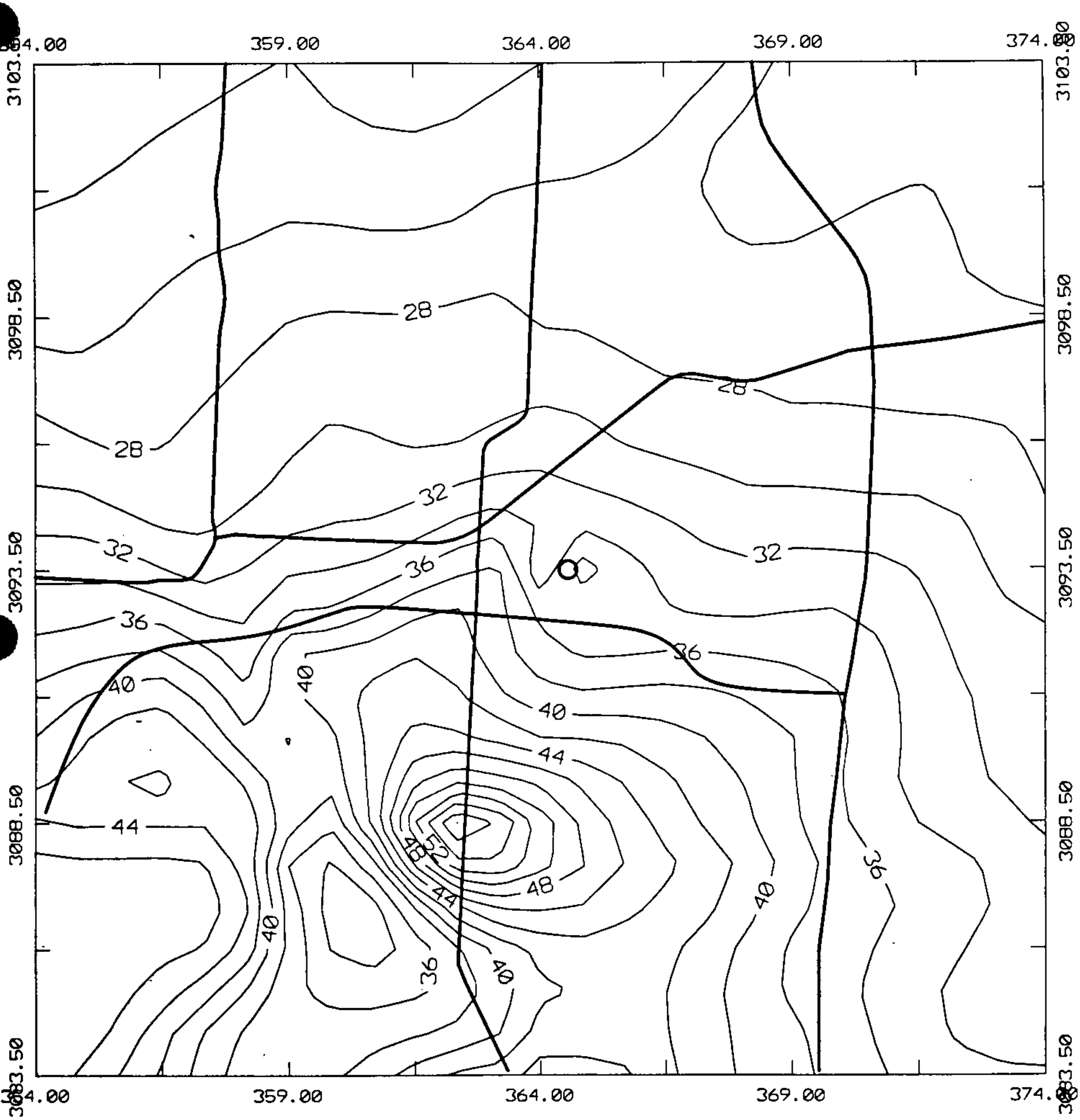
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.16

SO2 ANNUAL HIGH 1ST HIGH 1985



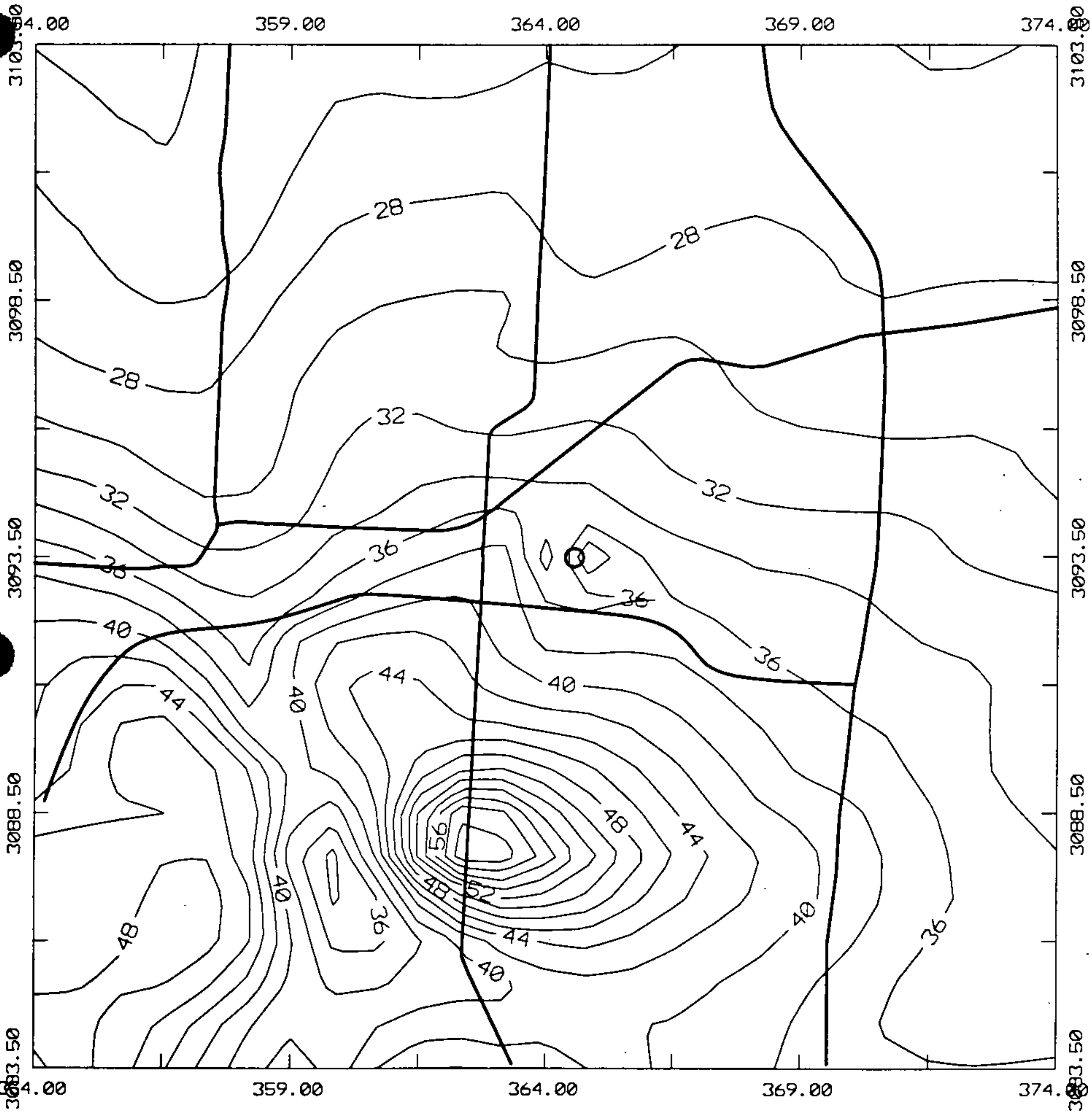
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.17

SO2 ANNUAL HIGH 1ST HIGH 1986

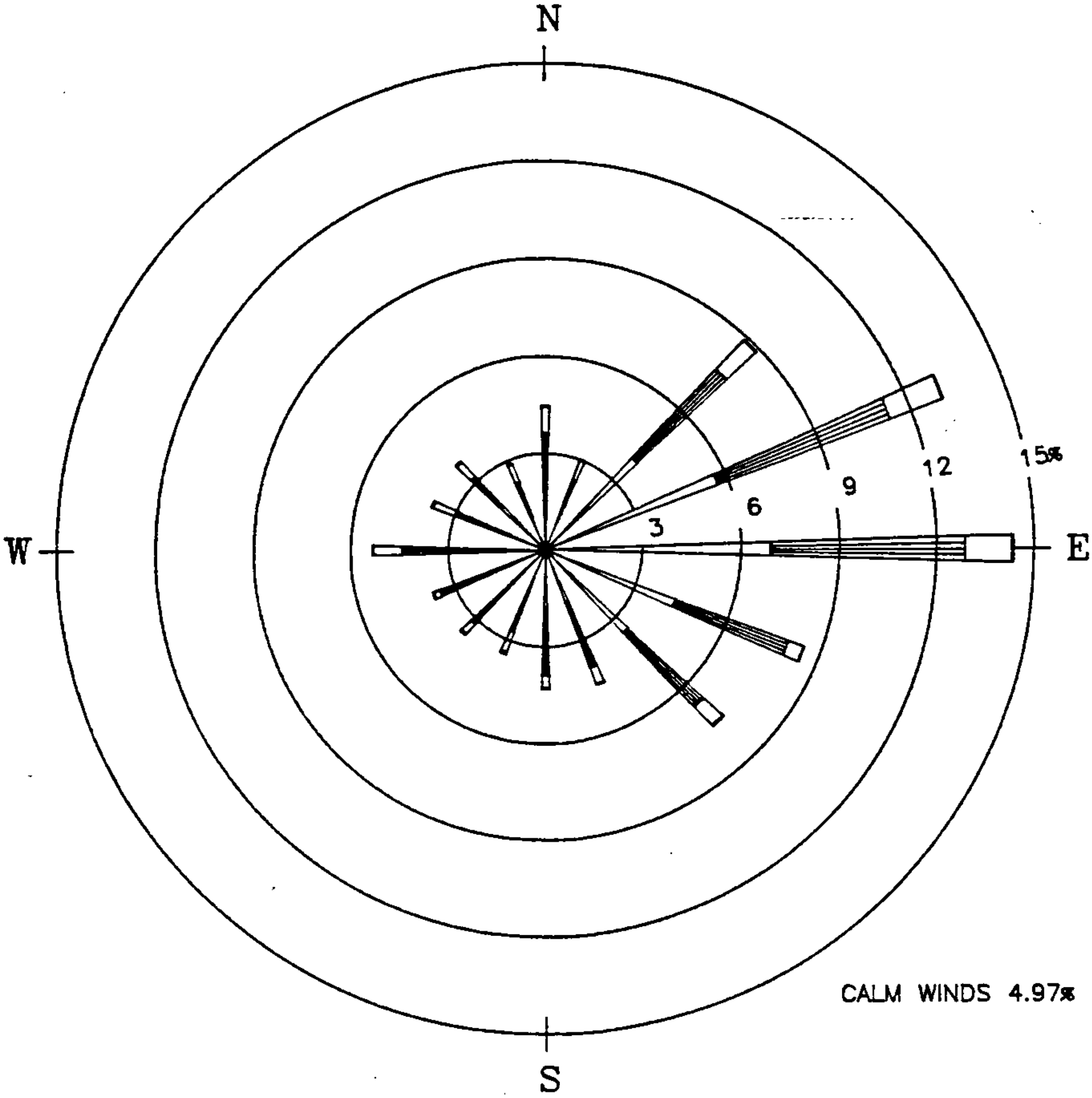


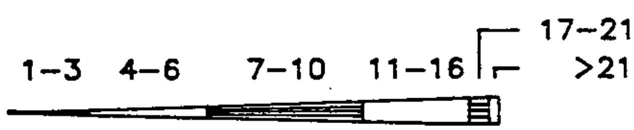
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.18





WIND SPEED CLASSES
(KNOTS)

NOTES:
DIAGRAM OF THE FREQUENCY OF OCCURRENCE FOR EACH WIND DIRECTION. WIND DIRECTION IS THE DIRECTION FROM WHICH THE WIND IS BLOWING. EXAMPLE – WIND IS BLOWING FROM THE NORTH 4.5 PERCENT OF THE TIME.

WINDROSE

STATION NO. 12842
TAMPA, FL
PERIOD: 1982

FIGURE 4.19

This scenario resulted in those sources' emissions apparently being double-counted, once in the model and once in the background values. Since the background values were required to be added, it was thought the requirement to include all of the 68 surrounding sources identified by DEP into the model was overly burdensome. A portion of the receptor grid placed six receptors within 1.2 kilometers of the Davis Island monitor. Due to the overly conservative requirements discussed above, the model was predicting values, as close as 400 meters from the Davis Island monitor, that were twice as high as those actually measured by the monitor.

By letter dated March 7, 1994 (see **Appendix J**) DEP recognized this problem and reconsidered the background values originally chosen. DEP identified another SO_2 monitor less likely to be impacted by sources included in the modeling, the TECO Big Bend Road monitor, number 1800-021-G02. The highest recorded annual value in the last three years at this monitor is 6 $\mu g/m^3$. The EPD stated this value could be used for all three averaging periods. The revised ambient impacts with the updated background values added are shown in **Table 4.2**.

TABLE 4.2

REVISED FAAQS ANALYSIS RESULTS [3]

values are in $\mu g/m^3$

AVG. PERIOD	FED. STND.	FLA. STND.	1982	1983	1984	1985	1986
3-hour [1]	1300	1300	1277	1071	1018	1269	**1404**
24-hour [1]	365	260	**410**	**287**	**278**	**277**	**299**
annual [2]	80	60	**61**	56	**61**	**66**	**68**

[1] Highest second-high modeled impacts

[2] Highest first-high modeled impacts

[3] Results include background value of 6 $\mu g/m^3$ for all averaging periods. Value recorded at the TECO Big Bend Road monitoring station, number 1800-021-G02.

The model was then re-run with two source groups, one with Gulf Coast's emissions only and one with the other 68 sources' emissions, for each year and averaging period that there was a predicted violation of the FAAQS. It was found that, even with Gulf Coast's emissions excluded, the model was showing exceedances of the standards. The model also showed that the maximum impacts with Gulf Coast's emissions excluded were no more than 1 $\mu g/m^3$ lower than with Gulf Coast's emissions included. This tended to show that Gulf Coast was not contributing to the modeled FAAQS violations. These results are shown in **Table 4.3**.

TABLE 4.3
IMPACTS WITH AND WITHOUT GULF COAST [1]

values are in $\mu g/m^3$

AVG. PER.	FED. STND.	FLA. STND.	SOURCE GROUP	1982	1983	1984	1985	1986
3-hr [3]	1300	1300	ALL SOURCES	N/A [2]	N/A	N/A	N/A	1404
			GCR ONLY	N/A	N/A	N/A	N/A	240
			ALL OTHERS	N/A	N/A	N/A	N/A	1404
24-hr [3]	365	260	ALL SOURCES	410	287	278	277	299
			GCR ONLY	63	63	67	63	68
			ALL OTHERS	410	286	278	277	299
ann [4]	80	60	ALL SOURCES	61	N/A	61	66	68
			GCR ONLY	12	N/A	12	12	14
			ALL OTHERS	60	N/A	61	66	68

1 Results include background values of 6 $\mu g/m^3$ for all averaging periods. Value recorded at TECO Big Bend Road monitoring station, number 1800-021-G02.

2 N/A = No additional modeling was done since the AAQS were not exceeded for this year and averaging period

3 Highest second-high modeled impacts

4 Highest first-high modeled impacts

To prove that Gulf Coast was not contributing to the FAAQS violations, a further analysis was performed. A determination was made by DEP's modeling section that each FAAQS exceedance could be disregarded if the model showed Gulf Coast did not "significantly" contribute to the exceedance. An exceedance is a violation of the FAAQS for one averaging period (one year for the annual averaging period, one day for the 24-hour averaging period, and one 3-hour period for the 3-hour averaging period at any one receptor) for any one of the 1,003 receptors . The SO_2 significance levels are 25 $\mu g/m^3$ for the 3-hour averaging period, 5 $\mu g/m^3$ for the 24-hour averaging period, and 1 $\mu g/m^3$ for the annual averaging period.

The "Maxi-file" output option in ISCST2 was used to create files listing all values that exceeded the respective FAAQS (eg. 82-24.ovr; 1982 met data, 24-hour averaging period), for modeling all sources, and files listing the values that exceeded the significance levels, for modeling Gulf Coast only (eg. G82-24.ovr; Gulf Coast, 1982 met data, 24-hour averaging period). The FAAQS-exceeding Maxi-files were set at a threshold 6 $\mu g/m^3$ below the respective FAAQS to account for the background value.

The FAAQS-exceeding files (all sources) for the 3-hour and 24-hour averaging periods were then analyzed to determine which values were first-highs, which were then disregarded (since the FAAQS can be exceeded once per year at each receptor except for the annual averaging period). Copies of the FAAQS-exceeding files (all sources) can be found in **Volume II** with the non-first-highs identified by arrows. Copies of the significance-level-exceeding values (Gulf Coast only) are not included on hard copy due to their volume (approximately 750 pages each). Copies of these files are included on diskette. Maxi-files can not be generated for the annual averaging period; therefore, the respective ".lst" files were used for that averaging period.

The remaining values, indicated by arrows, were then compared to the respective Maxi-file containing the values that exceeded the significance levels (Gulf Coast's emissions only) to determine if there were any duplications of receptors and time periods. In other words, they were compared to see if there were any receptors exceeding the FAAQS (all sources) that were also exceeding the significance levels (Gulf Coast only) on the same day during the same time period. If there were, that would mean that at that receptor on that day (and that time period for the 3-hour averaging period) Gulf Coast was significantly contributing to the FAAQS exceedance. This analysis showed no duplications, meaning Gulf Coast was not significantly contributing to any of the FAAQS violations predicted by the model.

4.1.2 Class I Increment Analysis

The Class I increment analysis predicted the consumption by Gulf Coast and all other surrounding PSD sources of the air quality increments associated with the nearest Class I area. Gulf Coast is located approximately 75 kilometers (47 miles) SSE from the Chassahowitzka National Wilderness Area, and was thus required to perform dispersion modeling to determine the air quality impacts on the area. DEP identified 137 sources to be included in the modeling in addition to Gulf Coast. These additional sources, listed in **Appendix K**, were both *increment consuming*, meaning they were permitted after the baseline date, and *increment expanding*, meaning they had shut down since the baseline date and were thus entered into the model with the appropriate negative emission rate. The baseline date is that date after the implementation of the PSD regulations when the first PSD source was permitted in the respective area for the respective pollutant (December 27, 1977).

Class I modeling using ISCST2 showed slight exceedances of the Class I increments for the 3-hour and 24-hour averaging periods. Since Gulf Coast is located 75 kilometers from the Wildlife Area, exceeding the accepted limit of 50 kilometers for the ISCST2 model, a long-range transport analysis was performed by Jim Clary and Associates using the updated MESOPUFF II model. These results are summarized in **Table 4.4**. The complete protocol and results summary can be found in **Appendix L**. Model outputs can be found in **Volume III**.

TABLE 4.4

CLASS I INCREMENT ANALYSIS RESULTS [1]

values are in $\mu g/m^3$

AVERAGING PERIOD	ALLOWED INCREMENT	PREDICTED IMPACTS
3-hour	25	21.18
24-hour	5	7.32 [2]
annual	2	-0.81

[1] highest modeled impacts, 1986 met data

[2] Gulf Coast not significantly contributing

4.1.3 Class II Increment Analysis

The Class II increment analysis predicted the consumption of the air quality increments for the project impact area, which is classified as a Class II area, by Gulf Coast and all other surrounding PSD sources. DEP identified 106 sources to be included in the modeling in addition to Gulf Coast. These additional sources, listed in **Appendix M**, were both increment consuming, meaning they were permitted after the baseline date, and increment expanding, meaning they had shut down since the baseline date and were thus entered into the model with the appropriate negative emission rate. These sources' locations are shown on **Figure 4.20**. The baseline date is that date after the implementation of the PSD regulations when the first PSD source was permitted in the respective area for the respective pollutant (December 27, 1977). These results are shown in **Table 4.5**. Model outputs can be found in **Volume II**.

TABLE 4.5

CLASS II INCREMENT ANALYSIS RESULTS

values are in μg/m3

AVERAGING PERIOD	ALLOWED INCREMENT	1982	1983	1984	1985	1986
3-hour [1]	512	262	278	262	251	256
24-hour [1]	91	66	73	76	51	61
annual [2]	20	0 [3]	0	0	0	0

[1] Highest second-high modeled impacts

[2] Highest first-high modeled impacts

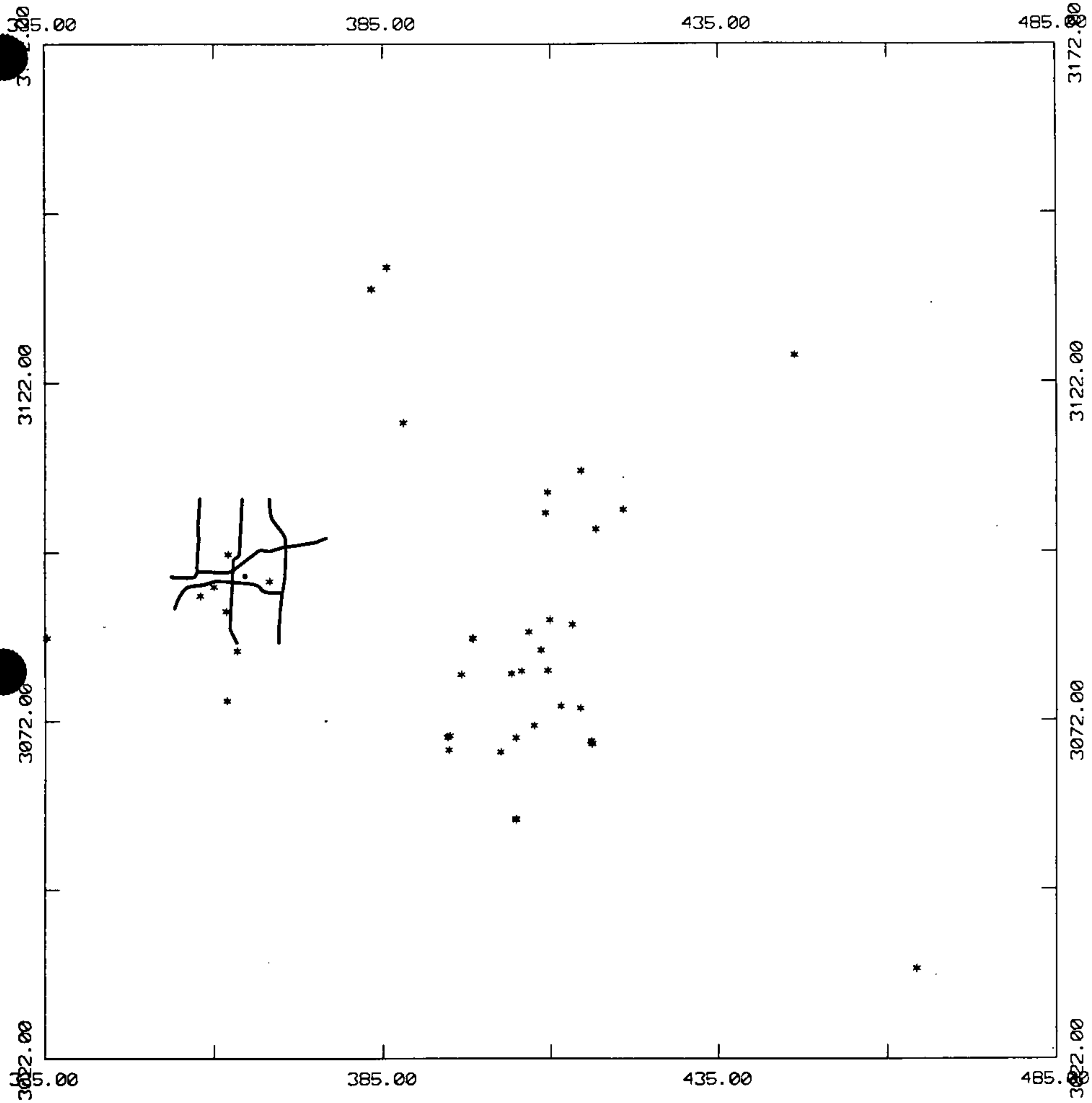
[3] Zero values are actually negative, ISCST2 reports negative values as zero

The 3-hr impacts for all five years are depicted in **Figures 4.21-4.25**; the 24-hr impacts are depicted in **Figures 4.26-4.30**; the annual averages are depicted in Figures **4.31-4.35**.

4.1.4 CO Screening Analysis

A screening model was performed for CO to determine if Gulf Coast exceeded the significance level of 575 $\mu g/m_3$, 8-hour averaging period, as outlined in 40 CFR 51.166 (i)(8)(i)(a). If this significance level was exceeded, a refined analysis would have to be done to include CO emissions from surrounding sources to determine compliance with the FAAQS and the Class I and II increments. The CO screening analysis used ISCST2 using the same default values and receptor grids as the SO_2 modeling. An emission rate of 69.5 lbs/hr was used, which is the emission rate with the afterburner installed. Even though the 8-hr standard may be exceeded once per year, the first-high value must be used in the screening analysis for conservative purposes. The results indicated a predicted maximum impact of 37.2 $\mu g/m^3$, less than seven percent of the 575 $\mu g/m^3$ significance level (see **Table 4.6**). No further analysis is therefore required. Model outputs can be found in **Volume II**.

CLASS II ANAL. SURROUND. SOURCE INVENTORY

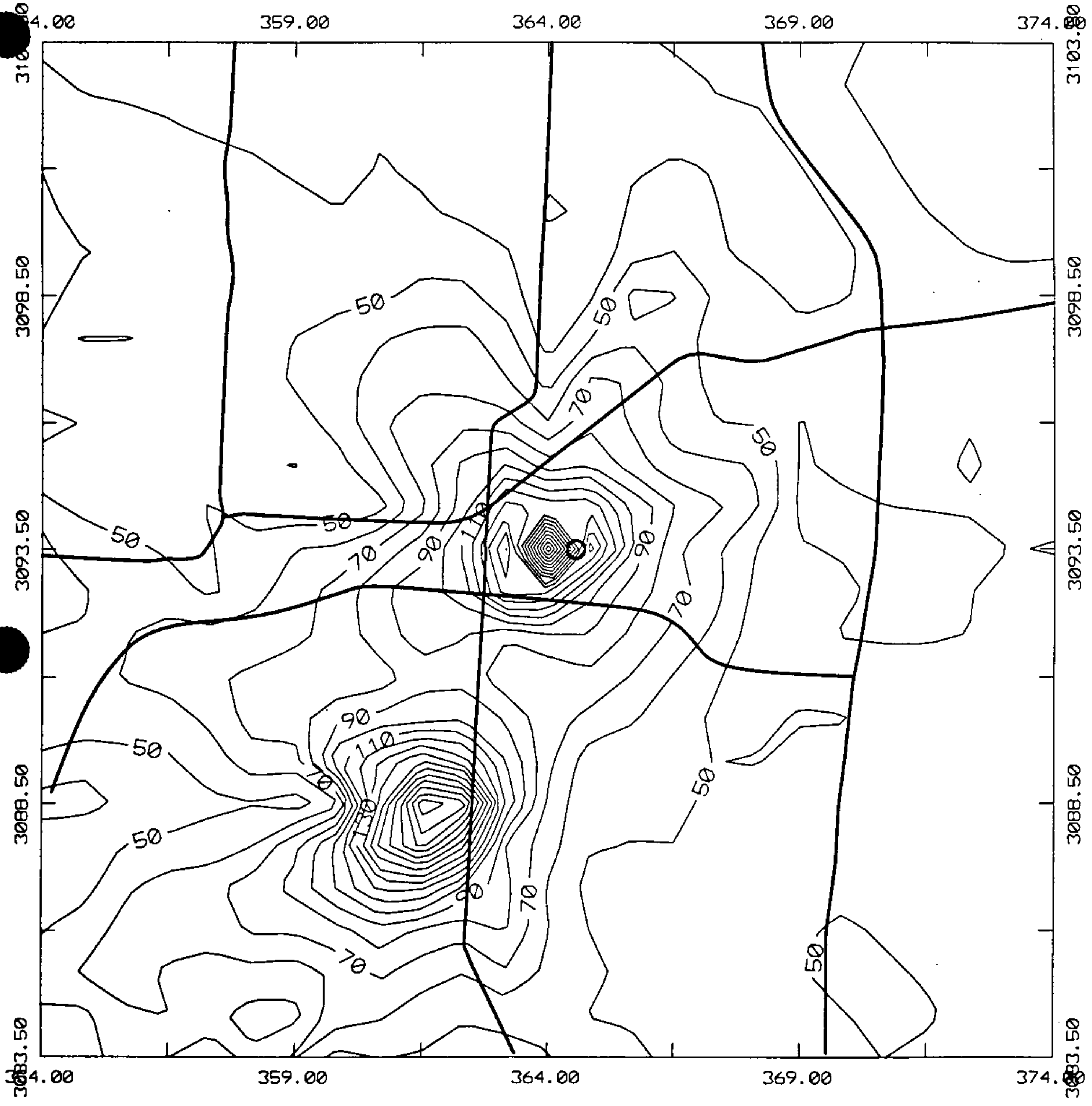


GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 21.429 KM

FIGURE 4.20

SO2 3-HR HIGH 2ND HIGH 1982



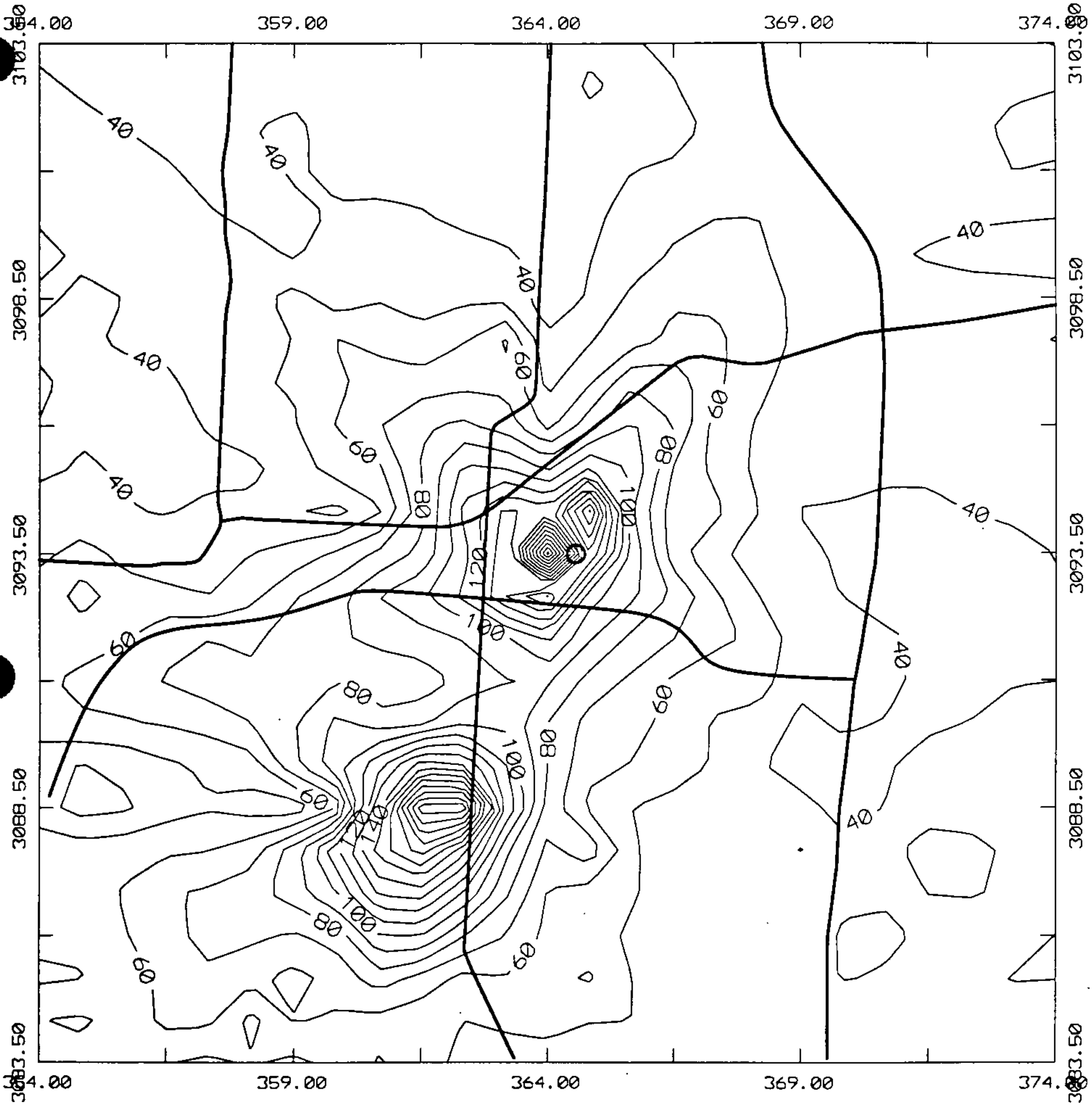
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.21

SO2 3-HR HIGH 2ND HIGH 1983



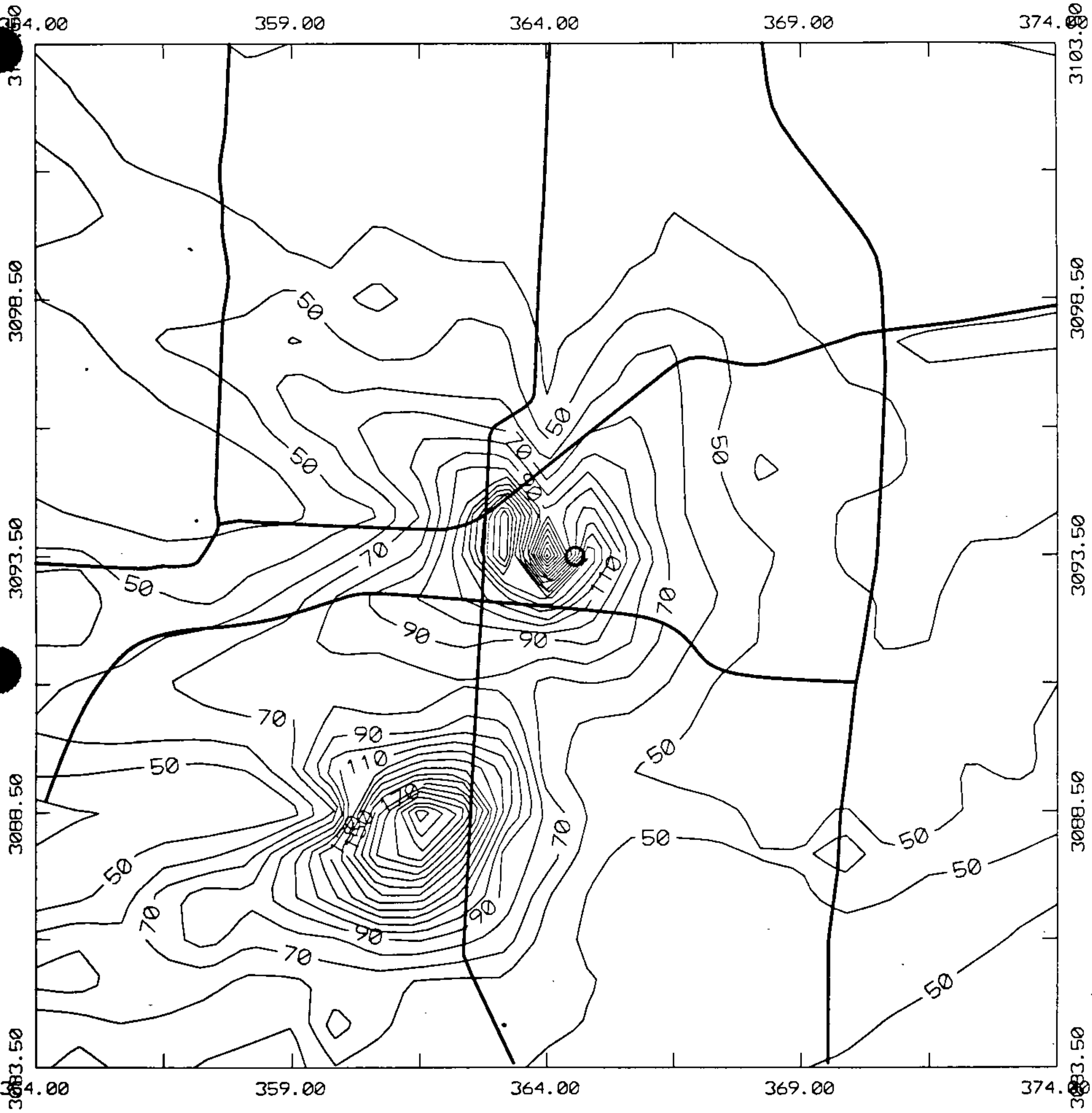
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.22

SO2 3-HR HIGH 2ND HIGH 1984



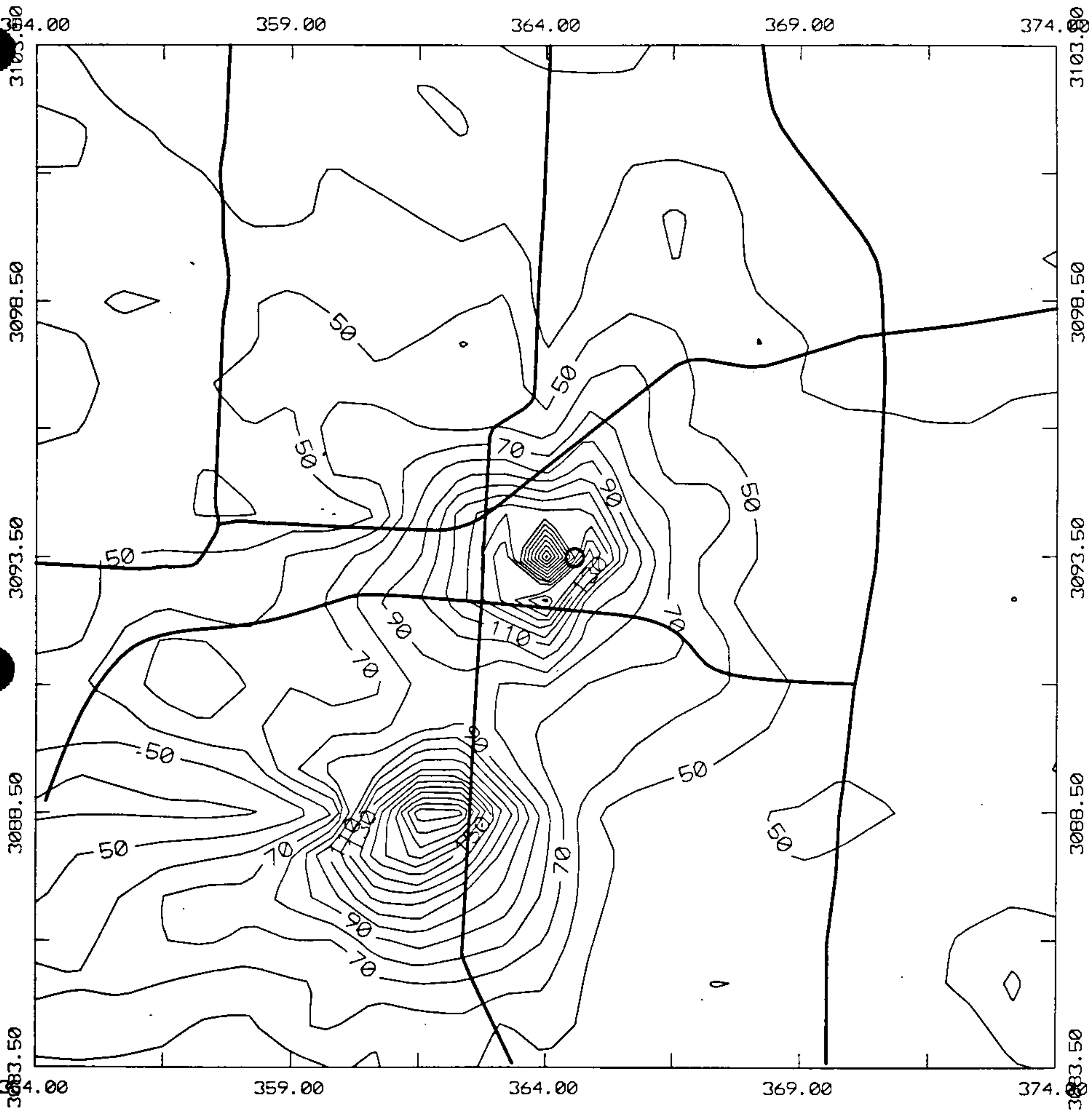
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.23

SO2 3-HR HIGH 2ND HIGH 1985



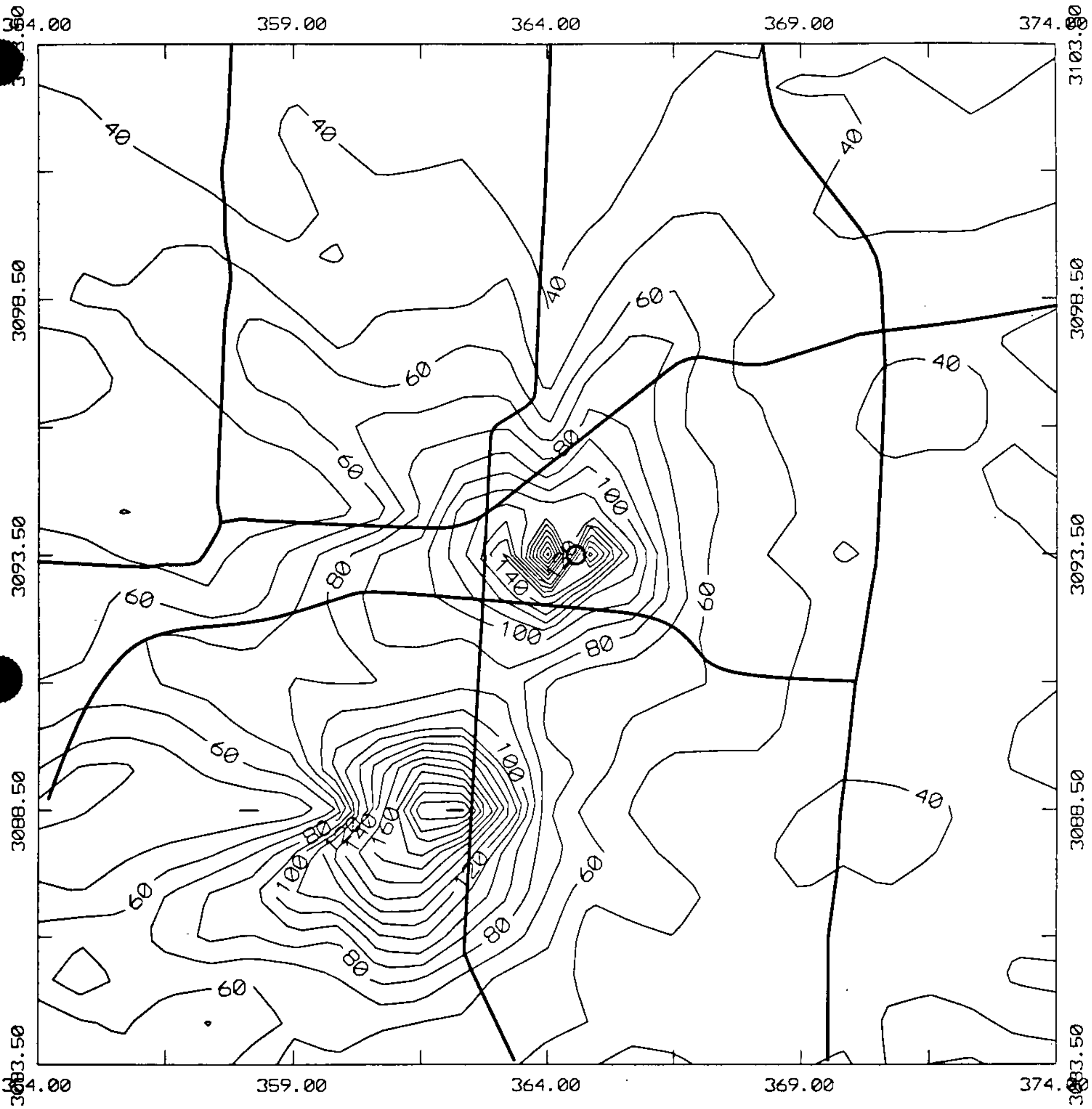
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.24

SO2 3-HR HIGH 2ND HIGH 1986



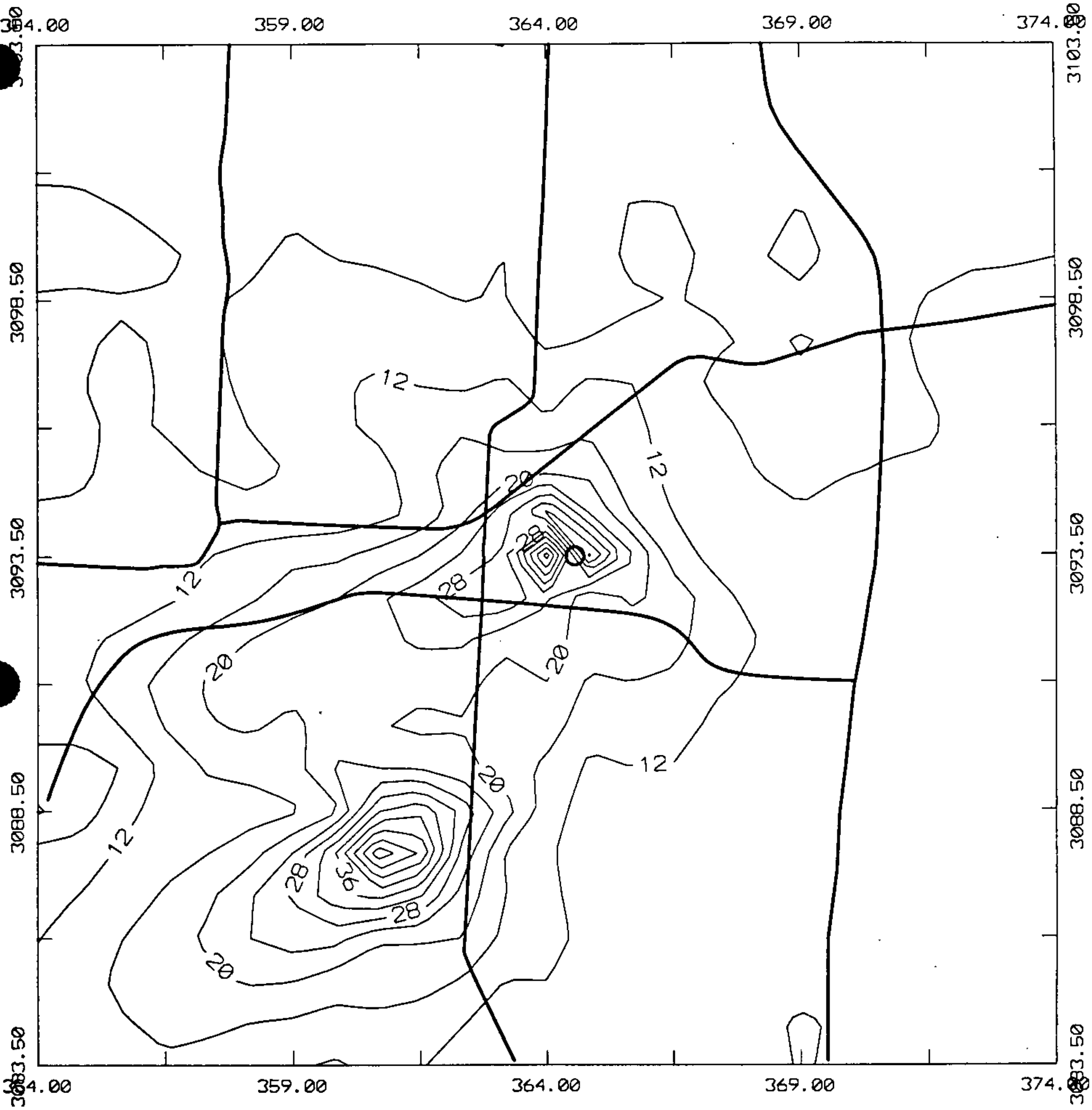
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.25

SO2 24-HR HIGH 2ND HIGH 1982



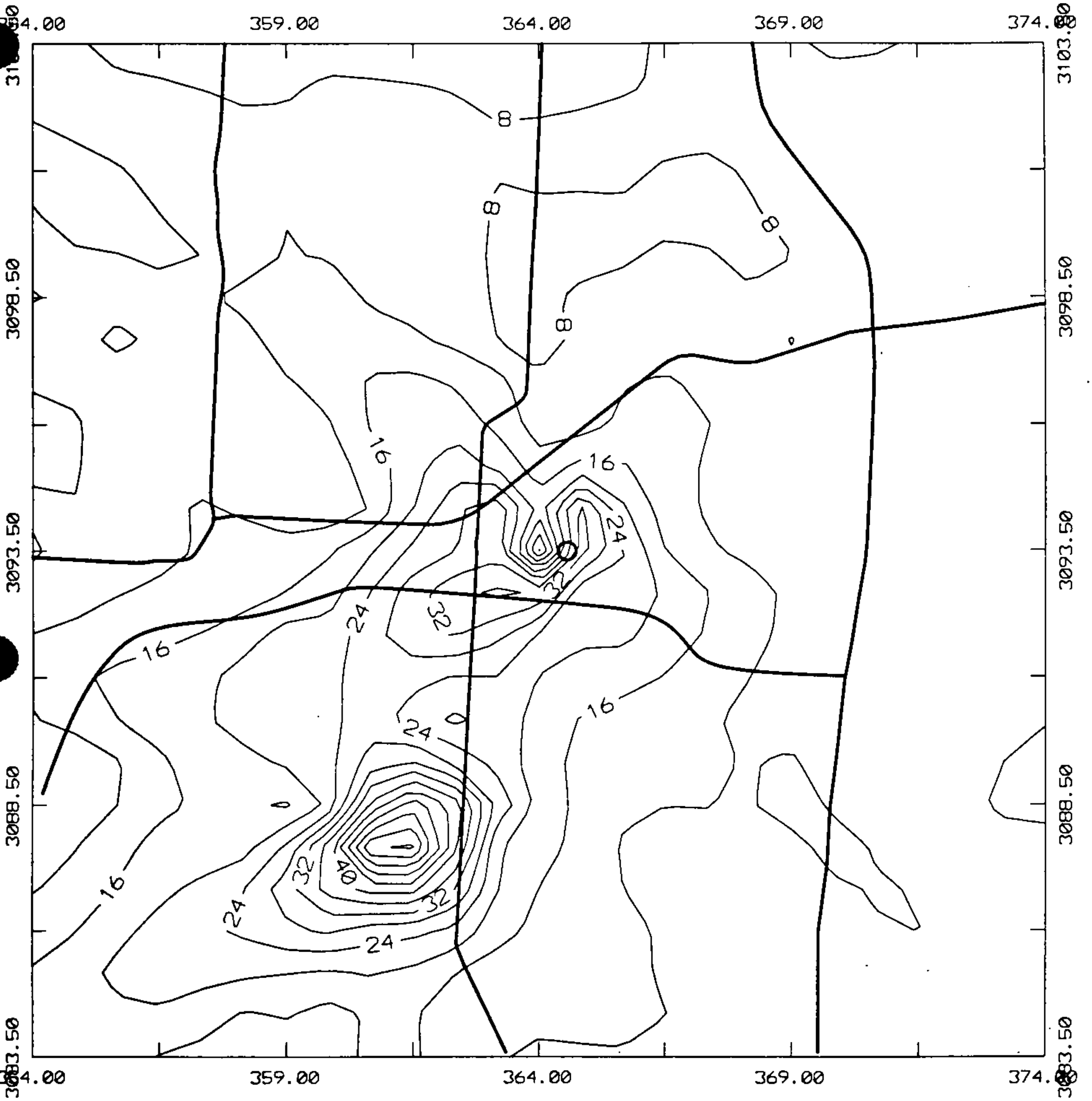
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.26

SO2 24-HR HIGH 2ND HIGH 1983



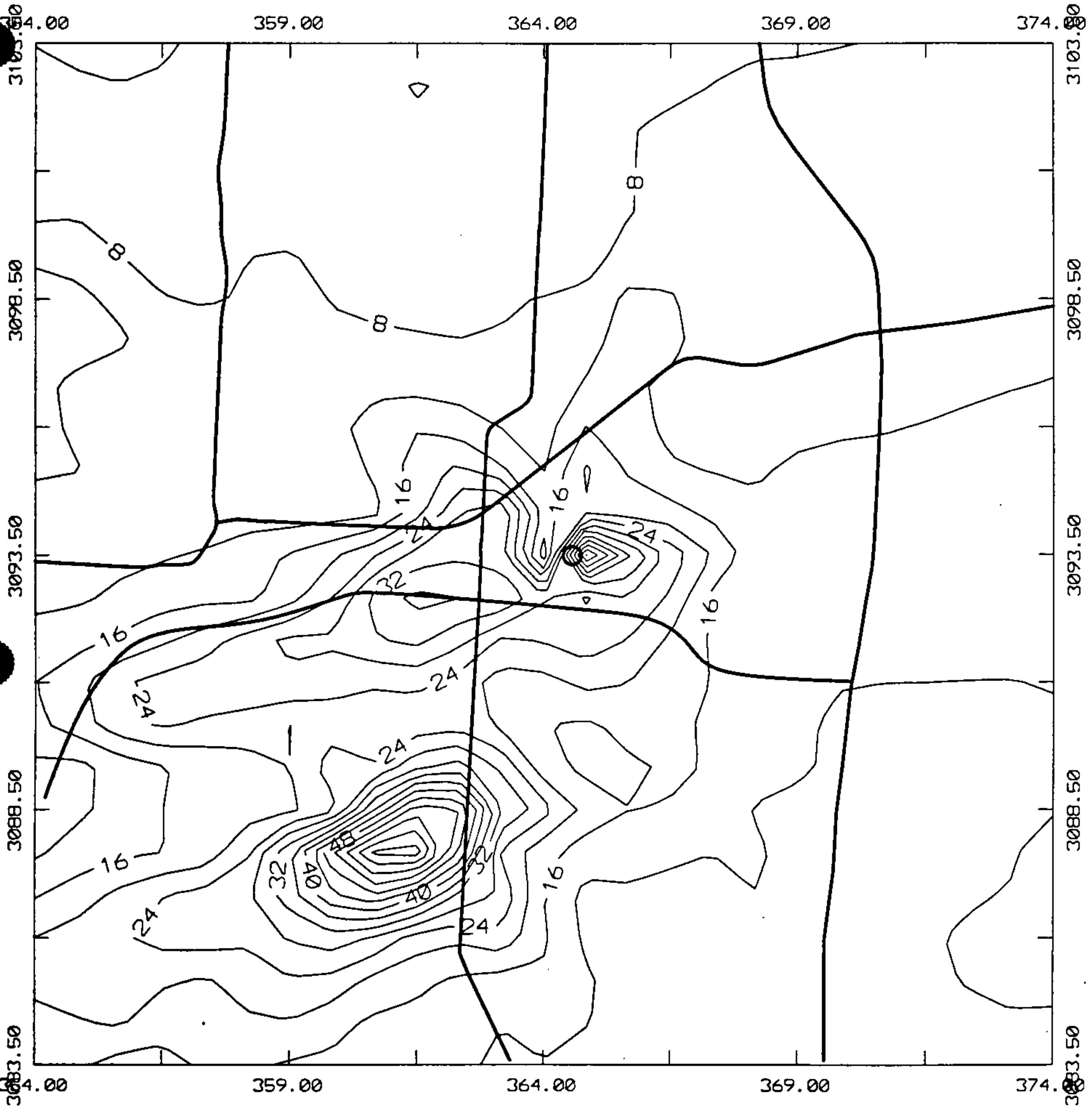
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.27

SO2 24-HR HIGH 2ND HIGH 1984



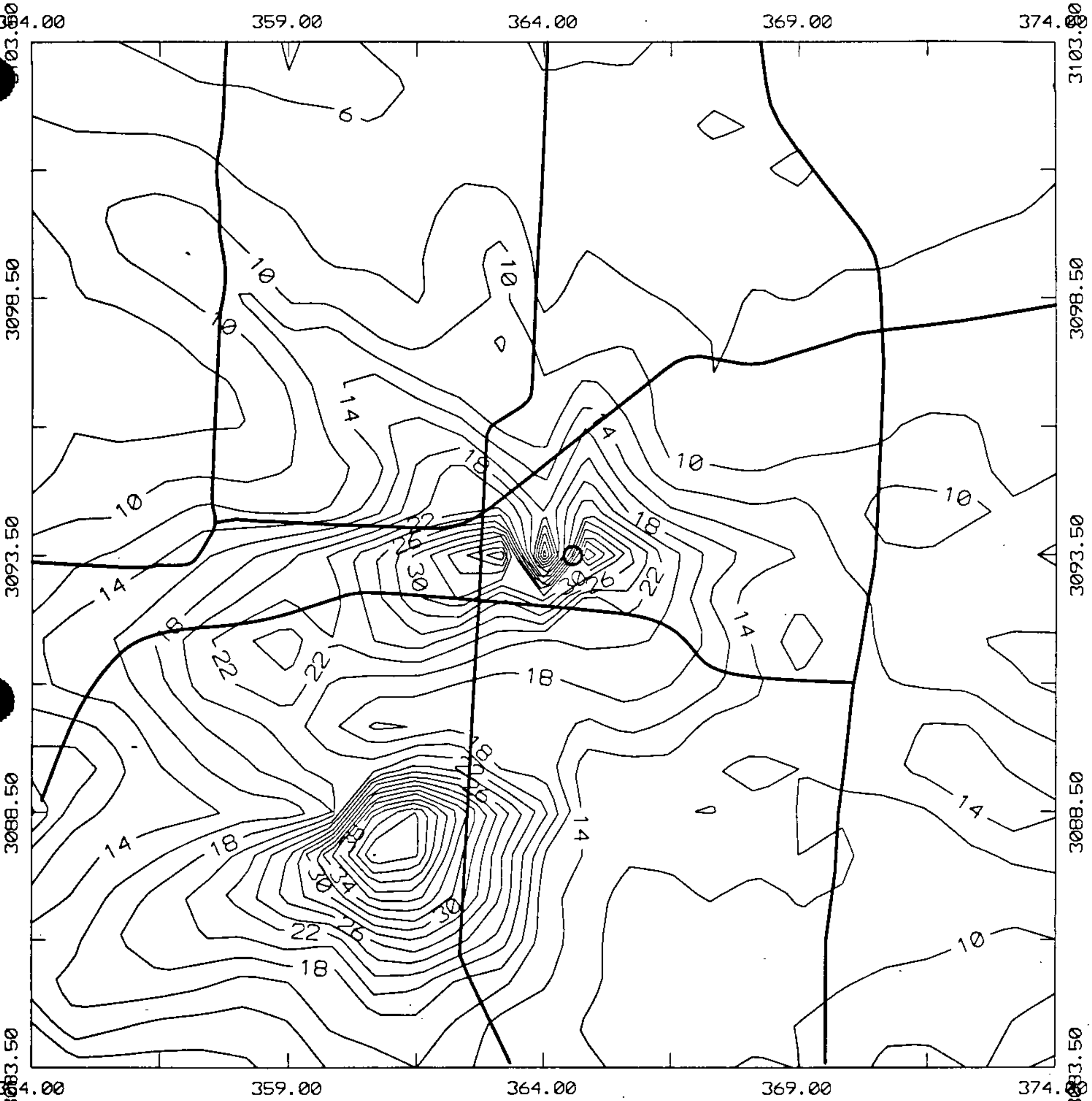
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.28

SO2 24-HR HIGH 2ND HIGH 1985



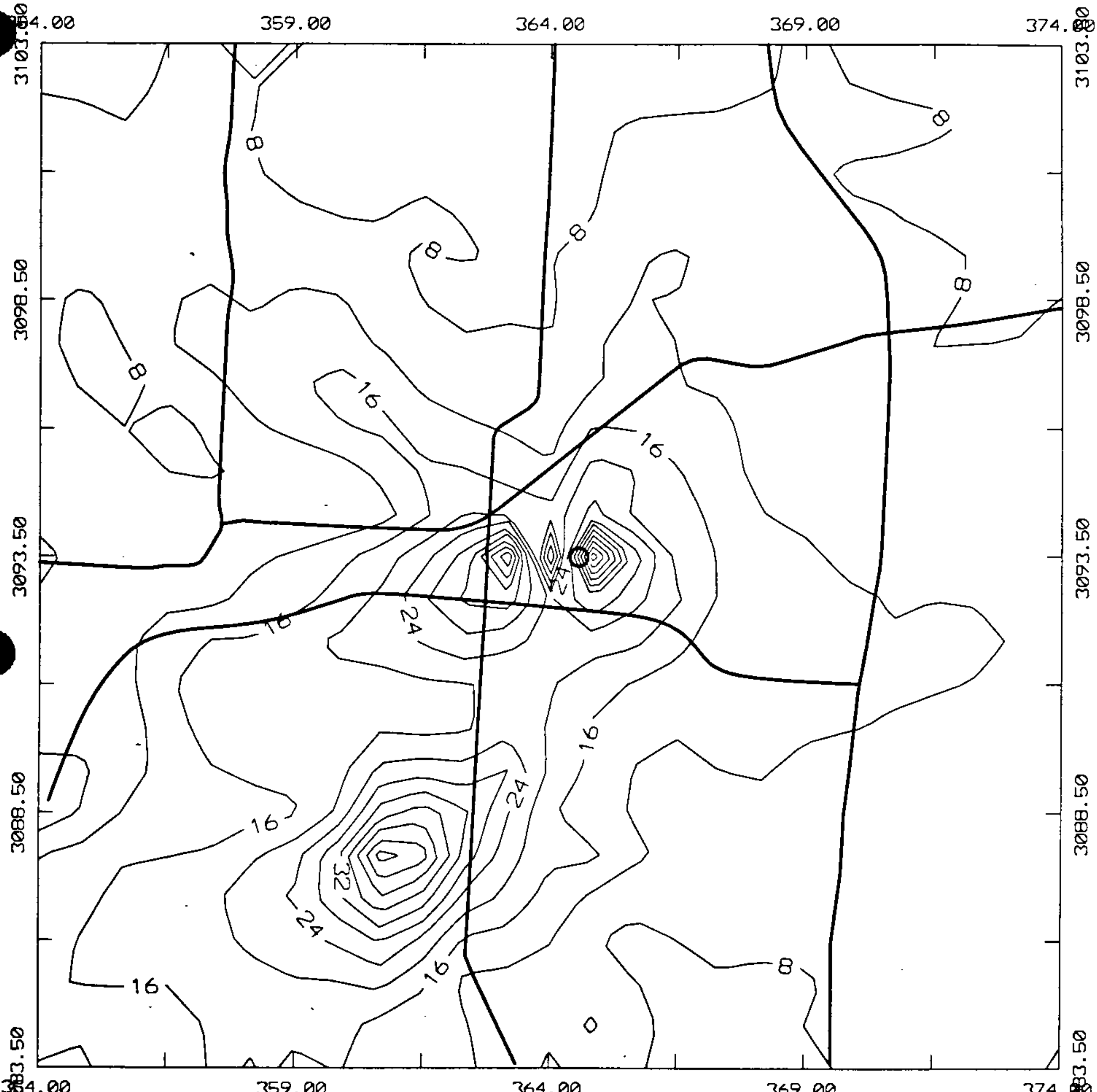
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.29

SO2 24-HR HIGH 2ND HIGH 1986



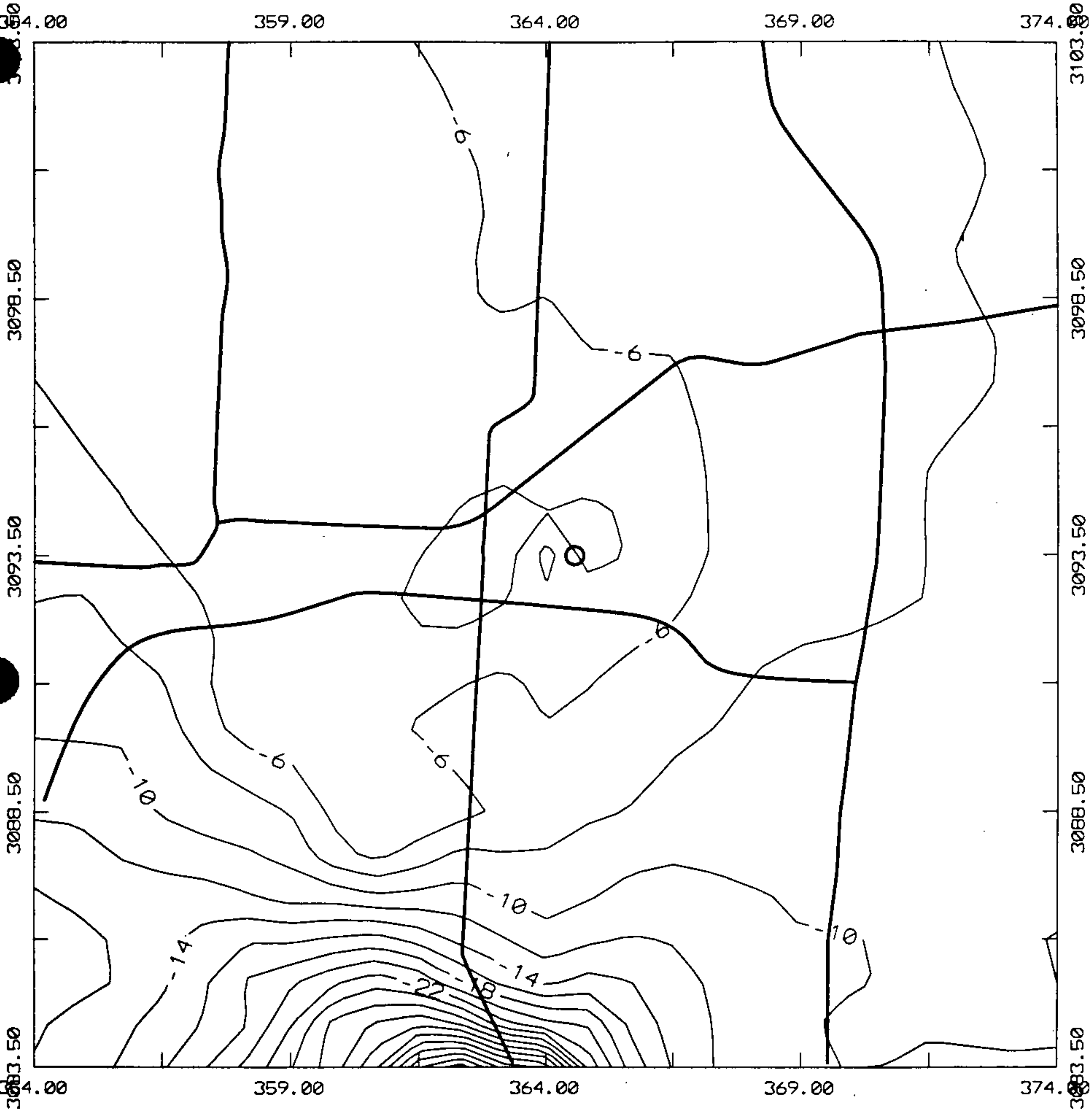
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.30

SO2 ANNUAL HIGH 1ST HIGH 1982



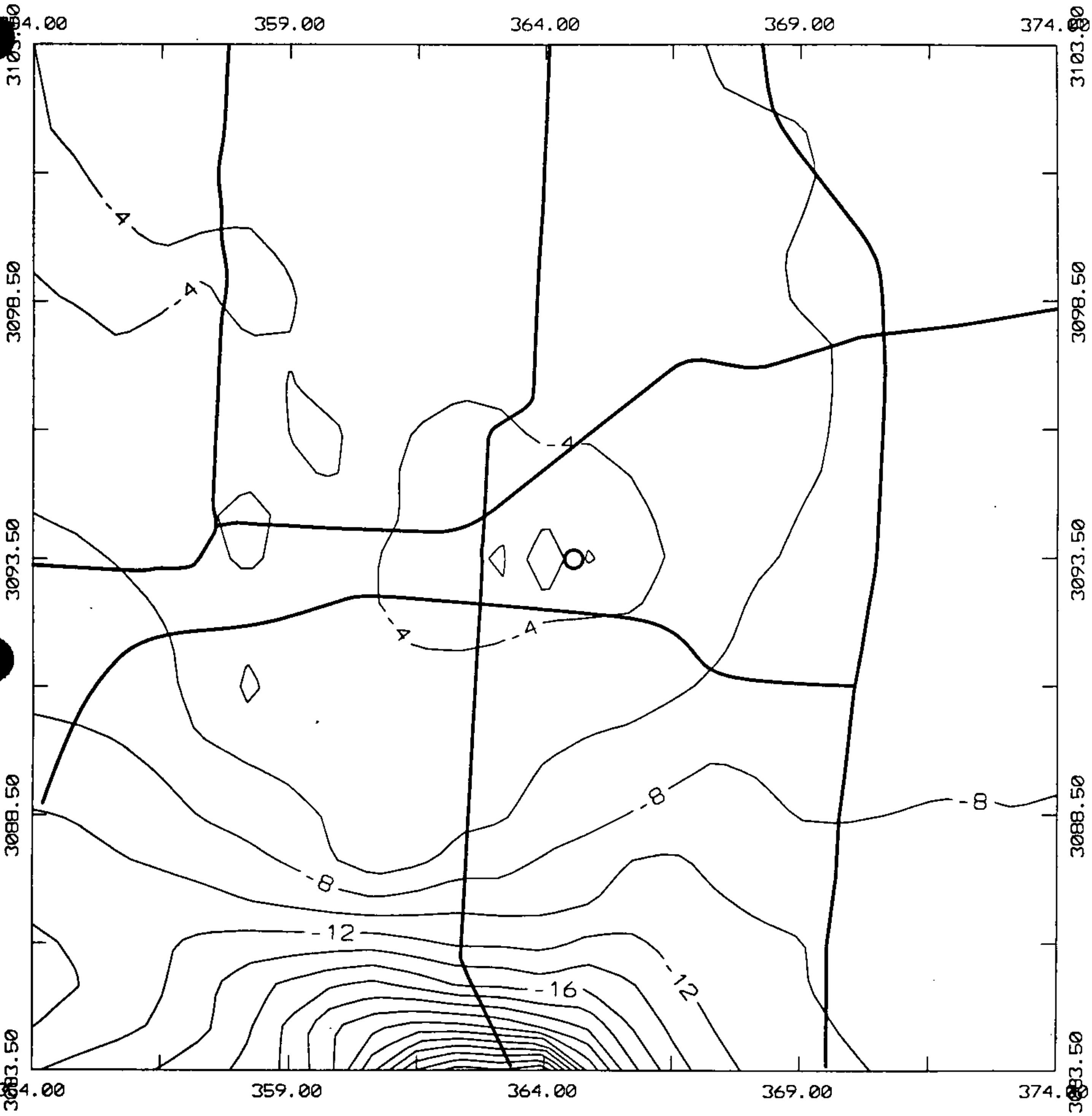
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.31

SO2 ANNUAL HIGH 1ST HIGH 1983



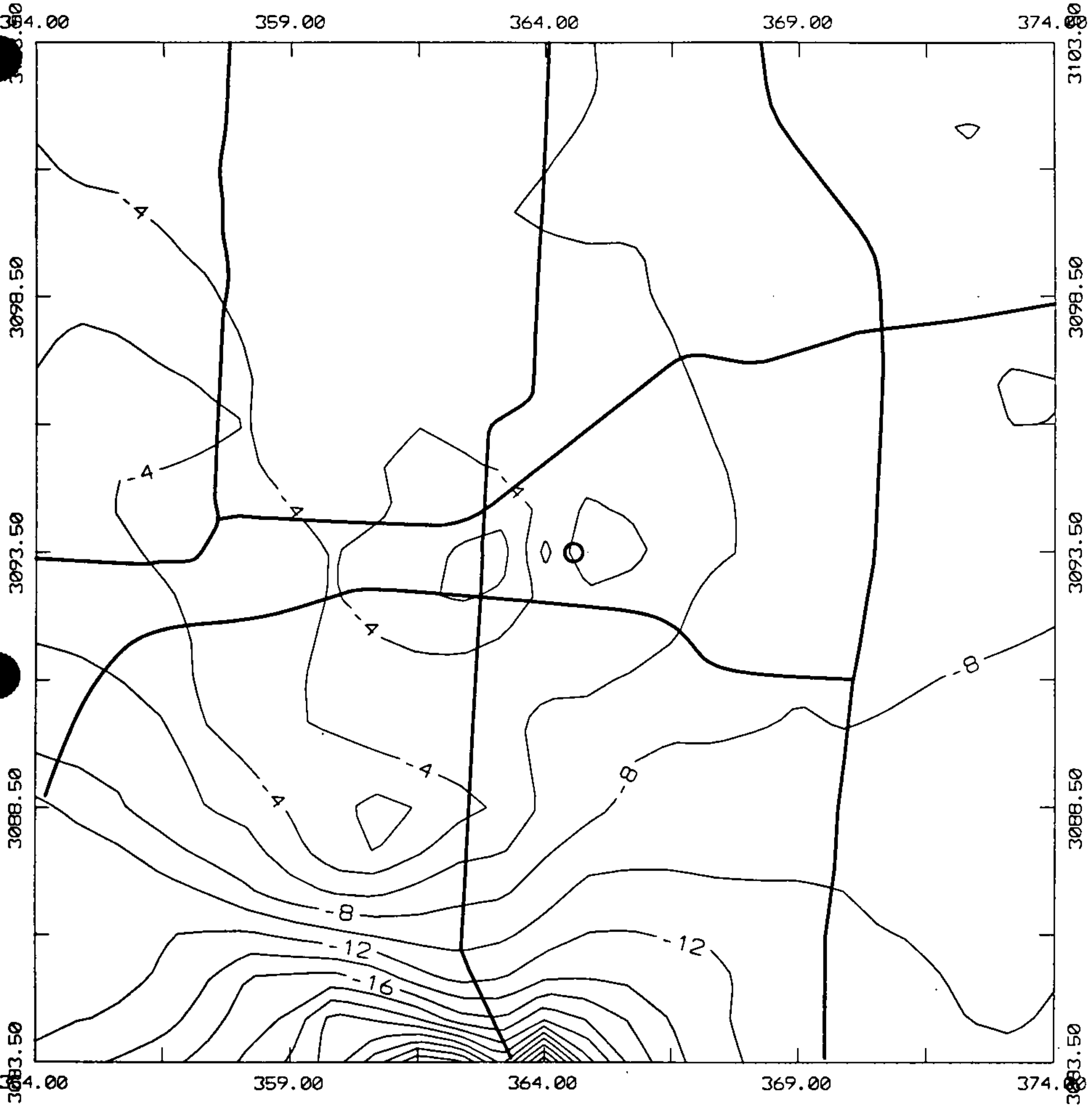
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.32

SO2 ANNUAL HIGH 1ST HIGH 1984



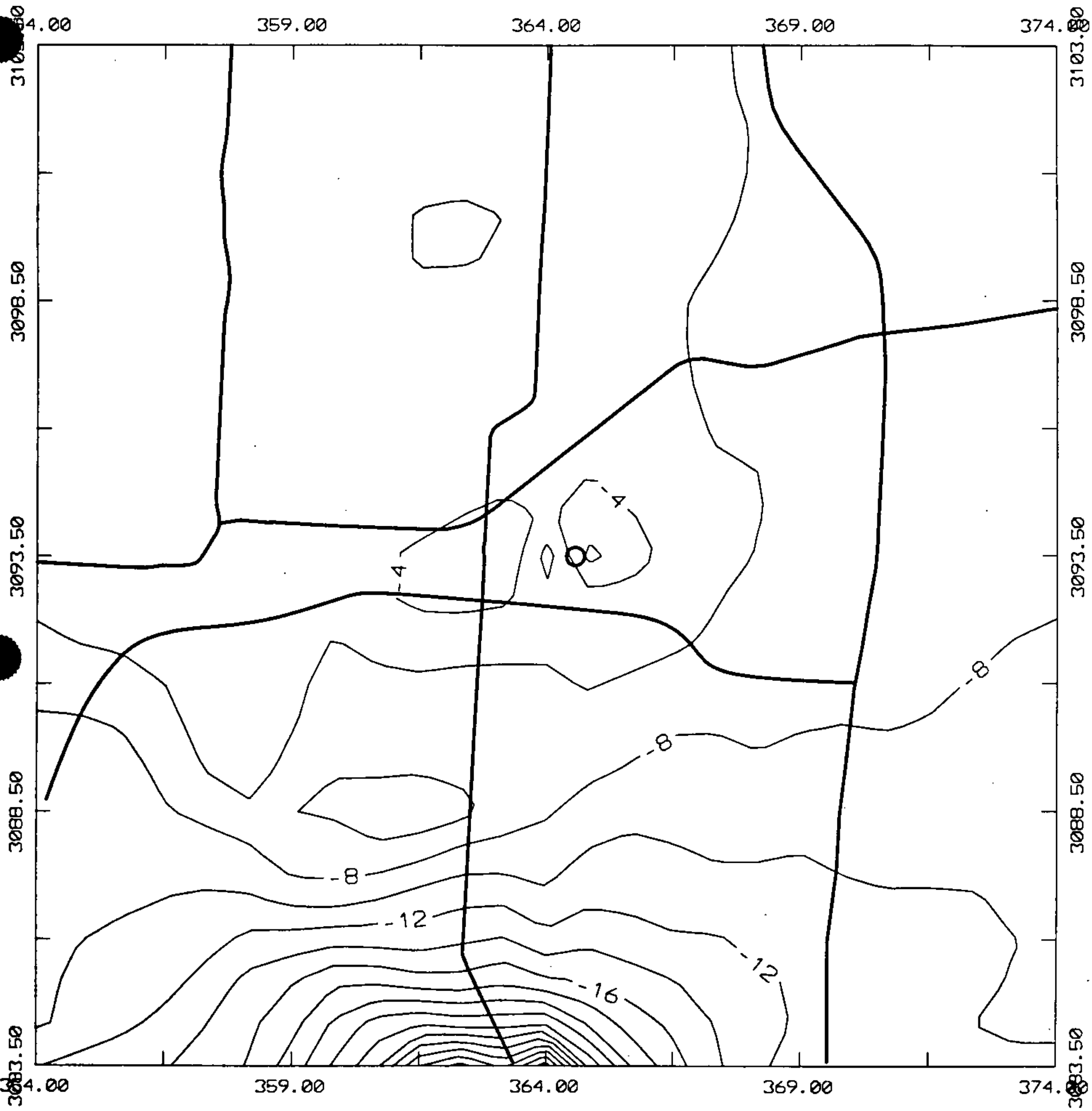
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.33

SO2 ANNUAL HIGH 1ST HIGH 1985



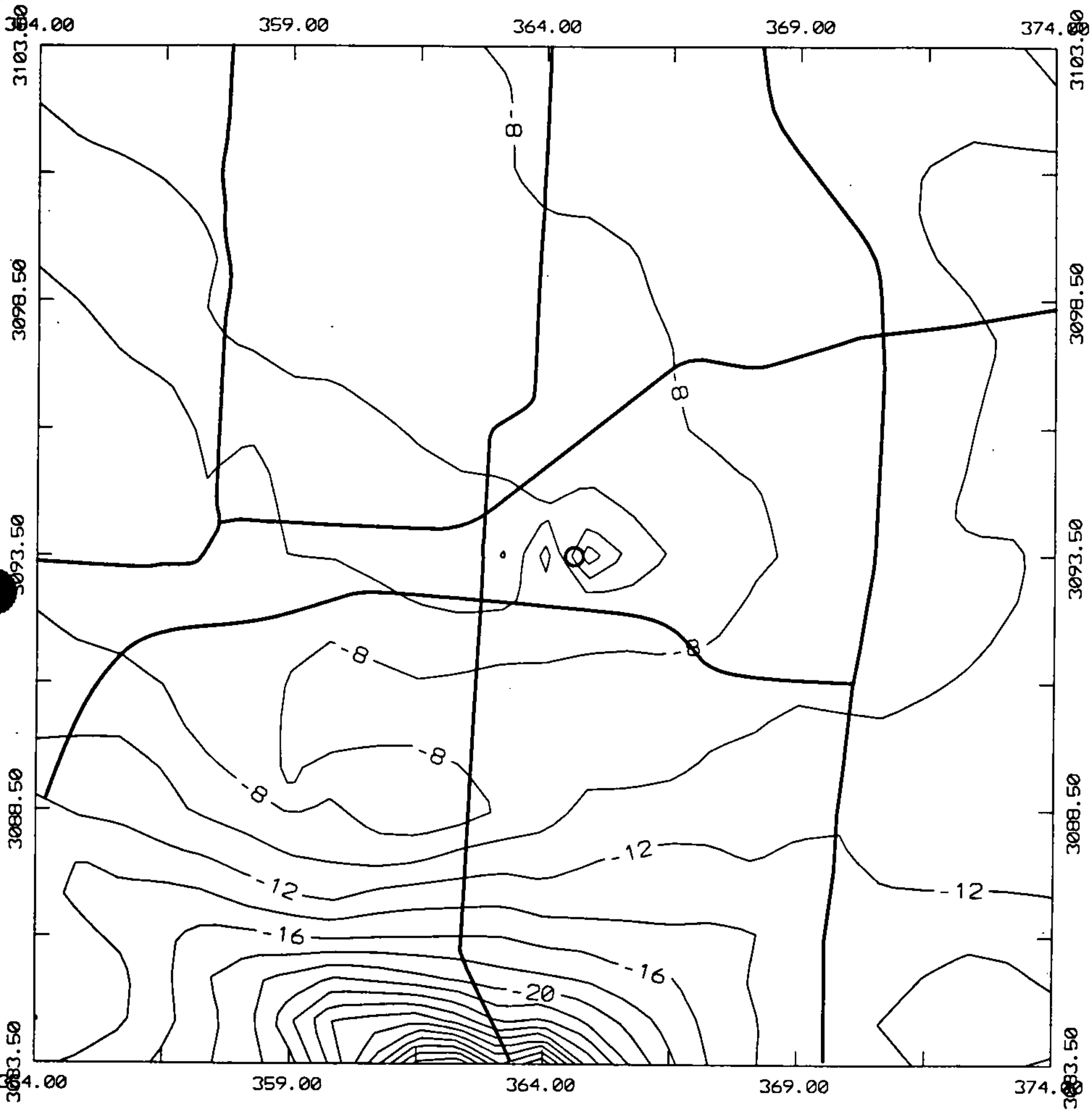
GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.34

S02 ANNUAL HIGH 1ST HIGH 1986



GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.35

TABLE 4.6

CO SCREENING ANALYSIS RESULTS [1]

values are in $\mu g/m3$

AVERAGING PERIOD	FED. & FLA. STANDARD	1986
8-hour	575	37

1 Highest second-high modeled impact, 1986 met data

These results are depicted in **Figure 4.36.**

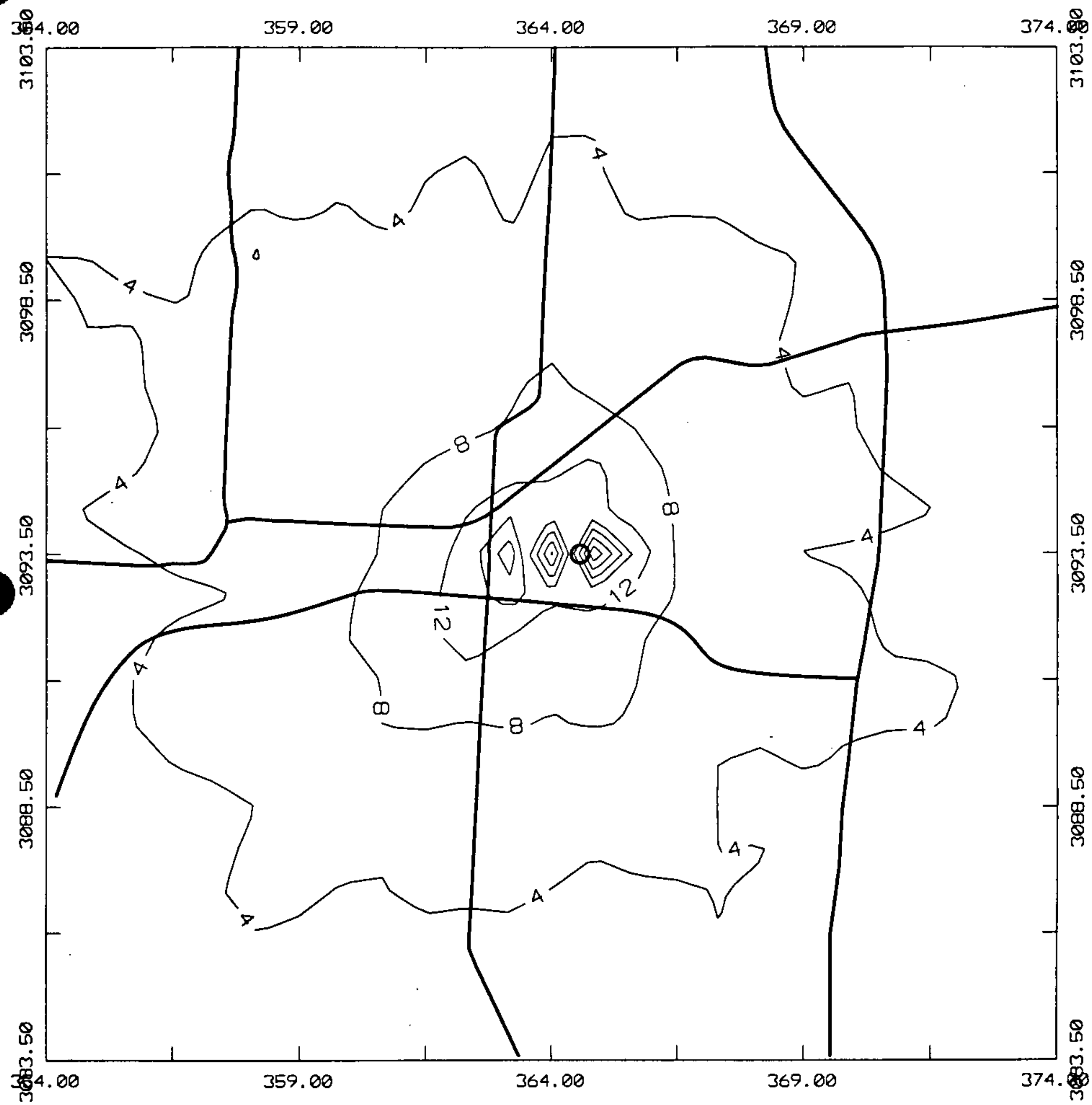
4.2 MODELING SUMMARY

The air dispersion modeling demonstrates that Gulf Coast will not cause or significantly contribute to a violation of the FAAQS or exceed the allowed increment consumption for all applicable areas and pollutants. The FAAQS analysis showed that although the model predicted a few violations of the Florida standards, Gulf Coast did not significantly contribute. The analysis also showed that this modeling protocol was very conservative, in that it predicted violations even with Gulf Coast's emissions excluded. To further show that Gulf Coast will not cause or contribute to a violation of the SO_2 FAAQS, DEP's closest monitor to Gulf Coast shows the area to be "unclassifiable" (cannot be classified as attainment or non-attainment) for SO_2 while Gulf Coast's "new" furnace has been operating for over nine years.

The Class I increment analysis showed that Gulf Coast, along with the applicable surrounding PSD sources, will not exceed the increment consumption allowed for the Chassahowitzka National Wilderness Area. The Class II increment analysis showed that Gulf Coast, along with the applicable surrounding PSD sources, will not exceed the increment consumption allowed for that area. The CO screening model showed that Gulf Coast will not exceed the significant level and therefore will not exceed the FAAQS or Class I or II increments.

The modeling results, which were based on 8,760 hrs/yr, supports Gulf Coast's request to increase the allowable operating hours from 7,800 to 8,760 hrs/yr.

CO 8-HR HIGH 1ST HIGH 1986



GULF COAST RECYCLING, INC. TAMPA, FL

SCALE: 1 INCH = 2.857 KM

(Isopleths in micrograms/cubic meter)

FIGURE 4.36

5.0 EFFECTS ON AIR QUALITY RELATED VALUES (AQRV)

This section discusses the predicted impacts by Gulf Coast on air quality-related aspects other than ambient concentrations of sulfur dioxide. Among these aspects are impacts on soils, vegetation, wildlife, aquatic resources, and visibility. In addition, the economic impact of Gulf Coast is discussed.

5.1 INDUCED GROWTH IMPACT

It is anticipated that no induced growth impacts will occur as a result of this project. This modification was simply a replacement of a piece of equipment with no additional employees needed to operate it or any long-term construction-related employment. Therefore, no additional local or industrial support factors will be needed. Further, no additional air pollution will occur from any permanent residential, commercial, or industrial growth, since none is anticipated.

5.2 IMPACTS ON SOILS AND VEGETATION

The response of plants to SO_2 exposure is a complex process that involves not only the pollutant concentration and duration of exposure, but also the genetic composition of the plant and the environmental factors under which the exposure occurs. This process involves entrance of SO_2 into the plant through leaf openings called stomata, and contact within the leaf with wet cellular membranes and subsequent liquid phase reactions resulting in the formation of sulfite and sulfate compounds. The formation of these compounds can initiate changes within plants' metabolic systems that will produce physiological dysfunctions. If sufficient physiological modifications occur, plant homeostasis or equilibrium is disturbed and visible symptoms of injury may or may not be manifested. Plant repair mechanisms can result in a return to homeostasis and recovery.

In general, plants have an inherent, and apparently species-dependent, capacity to absorb, detoxify, and metabolically incorporate SO_2, and may absorb low concentrations of SO_2 over long time periods without damage. Thomas et al., for example, exposed alfalfa to SO_2 continuously, at 520 $\mu g/m^3$ (0.20 ppm), for eight weeks without adverse effects. It is therefore reasonable to expect that either no effects or beneficial effects may be associated with low-level SO_2 exposures.

Under certain conditions atmospheric SO_2 can have beneficial effects on agronomic vegetation. Sulfur is one of the elements required for plant growth and Coleman reported that crop deficiencies of sulfur have been occurring with increasing frequency throughout the world. Faller conducted a series of experiments to determine effects of varying atmospheric concentrations of SO_2 on sunflower, corn, and tobacco. Yields of leaves and stems increased by 80 percent in tobacco when exposed to atmospheric concentrations of 1490 $\mu g/m^3$ (0.57 ppm), sunflower and corn had their highest biomass at SO_2 concentrations of 1050 $\mu g/m^3$ (0.40 ppm) and 520 $\mu g/m^3$ (0.20 ppm), respectively. Nogales and Jones showed that cotton grown in specifically designed growth containers in the vicinity of certain coal-fired power plants accumulated significant amounts of atmospheric sulfur (as SO_2) and produced significantly more biomass than those grown at a location further from the industrial source of sulfur.

Limitations of space do not permit a listing here of all plants known to be sensitive to various doses of SO_2. Furthermore, in a listing of sensitive plants, the evidence collected should also indicate environmental, genetic, and cultural considerations that may in fact determine such sensitivities. In addition, general descriptions are difficult because plant responses to air pollutants vary at the genus, species, variety, and cultivar levels. **Table 5.1** is based on a 20-year study as conducted by Jones et al. This listing of sensitivity groupings is based on observations of 120 species growing in the vicinity of coal-fired power plants in the Southeast. From this table, it can be seen that the most sensitive vegetation showed visible signs of damage at exposure levels of 1310-2620 $\mu g/m^3$ (1-hour period) and 790-1570 $\mu g/m^3$ (3-hour period). The dispersion modeling results provided in this document revealed maximum ground level impacts of SO_2 in the Chassahowitzka Wilderness Area to be less than 10 $\mu g/m^3$ (3-hour period) which is well below the critical levels for the most sensitive plants.

Extensive efforts have been made to identify and develop certain sensitive plant species as potential bioindicators of ambient air SO_2 effects. Perhaps the most extensively examined plants for this use are the eastern white pine. **Table 5.2** indicates the degree of injury of the white pine at various distances from the Sudbury Smelters over a ten year period. As the distance from the smelters increases, the annual exposure concentrations decrease and the degree of foliable injury also decreases. It was observed that at an annual concentration of 21 $\mu g/m^3$ very little chronic injury resulted from the exposure. It should be noted here that the maximum allowable increase for SO_2 in a Class II area under the PSD regulations is 20 $\mu g/m^3$. The

SENSITIVITY GROUPINGS OF VEGETATION BASED ON VISIBLE INJURY AT DIFFERENT SO_2 EXPOSURES[a]

Sensitivity Grouping	SO_2 concentration, $\mu g/m^3$ (ppm), and duration time, hr: Peak[b]	1-hr	3-hr	Plants
Sensitive:	2620-3930 $\mu g/m^3$ (1.0 - 1.5 ppm)	1310-2620 $\mu g/m^3$ (0.5 - 1.0 ppm)	790-1570 $\mu g/m^3$ (0.3 - 0.6 ppm)	Ragweeds Legumes Blackberry Southern pines Red and black oaks White ash Sumacs
Intermediate:	3930-5240 $\mu g/m^3$ (1.5 - 2.0 ppm)	2620-5240 $\mu g/m^3$ (1.0 - 2.0 ppm)	1570-2100 $\mu g/m^3$ (0.6 - 0.8 ppm)	Maples Locust Sweetgum Cherry Elms Tuliptree Many crop and garden species
Resistant:	>5240 $\mu g/m^3$ (> 2.0 ppm)	>5240 $\mu g/m^3$ (> 2.0 ppm)	>2100 $\mu g/m^3$ (> 0.8 ppm)	White oaks Potato Upland cotton Corn Dogwood Peach

[a]Based on observations over a 20-year period of visible injury occurring on over 120 species growing in the vicinities of coal-fired power plants in the southeastern United States.

[b]Maximum 5 minute concentration.

Source: After Jones et al., 1974.

TABLE 5.1

THE DEGREE OF INJURY OF EASTERN WHITE PINE OBSERVED AT VARIOUS DISTANCES FROM THE SUDBURY SMELTERS FOR 1953-63

Forest Sampling Station[a] (Distance and Direction from Sudbury)	Trees with Current Year's Foliage Injured in August 1963 (%)	Trees with 1-Year-Old (1962) Foliage Injured: June 1963 (%)	Trees with 1-Year-Old (1962) Foliage Injured: August 1963 (%)	Trees with 2-Year Old Foliage: Injured in June 1963 (%)	Trees with 2-Year Old Foliage: Lacking in August 1963 (%)	Net Annual Average Gain or Loss in Total Volume, 1953-1963 (%)	Annual Average Mortality 1953-1963 (%)	Degree of SO_2 Damage	Average SO_2 Concentration[b] for Total Measurement Period 1954-1963 $\mu g/m^3$ (ppm)
West Bay (19 miles NE)	2.0	38.0	77.9	96.0	20.6	-1.3	2.6	Acute and chronic injury	115 (0.045)
Portage Bay (25 miles NE)	1.1	21.5	55.6	77.0	15.2	-0.5	2.5	Mostly chronic and little acute injury	45 (0.017)
Grassy to Emerald Lake (40-43 miles NE)	0.4	2.5	16.7	37.5	9.1	+1.0	1.4	Very little chronic injury	21 (0.008)
Lake Matinenda (93 miles W)	0.6	0.3	2.1	10.1	3.9	+2.1	0.5	Control: no SO_2 injury	3 (0.001)[c] (Sturgeon Falls)
Correlation Coefficient (r)	0.96	0.96	0.93**	0.90**	0.94**	0.90**	0.81		

[a]Linzon (1971) (Pollutants other than SO_2 were not measured and the monitoring was done several miles from the pine stands.)

[b]Dreisinger (1965)

[c]Data for 5-month growing season-1971

*$p < 0.05$

**$p < 0.10$

Derived from Linzon, 1980.

TABLE 5.2

dispersion modeling results provided in this document show the annual impacts for both the Class I and Class II areas to be negative.

5.3 IMPACTS ON VISIBILITY

"Atmospheric visibility" is a term often used by airport weather observers to connote visual range, which refers to the farthest distance at which a large, black object can be seen against the horizon sky in the daytime. Visibility relates to atmospheric clarity and the perceived characteristics of viewed surroundings, including the contrast and the color of objects and sky. Pollution affects visibility in two primary ways:

1) as coherent plumes or haze layers visible because of their contrast with background;
2) as widespread, relatively homogeneous haze that reduces contrast of viewed targets and reduces visual range.

The kind and degree of effects are determined largely by the distribution and characteristics of atmospheric particulate matter, which scatters and absorbs light.

Figure 5.1 places the typical visual range in the Tampa area at between 9 and 10 miles. This relatively poor visual range is attributable not only to air pollutants but largely to the predominant regional meteorological patterns that result in high relative humidity in the Tampa area for much of the year. Humidity plays such a key role in visibility that the method to measure visual range for air quality planning purposes is not valid when the relative humidity exceeds 70 percent.

Gulf Coast's emissions of particulate matter, the primary visibility-reducing pollutant, are below the significance level for PSD at 13.2 tons per year. This emission rate is below that which would significantly contribute to the deterioration of visibility. Another source of particulates which could reduce visibility is sulfur trioxide (SO_3), the anhydride of sulfuric acid. The factors governing formation of SO_3 are not fully understood but are recognized to occur principally in large combustion installations operated at high firebox temperatures, i.e., utility-size power boilers. In the firing chamber, most of the sulfur present is converted to sulfur dioxide on combustion. In some combustion processes, a small portion of the sulfur, usually no more than five percent of the total, is converted to SO_3. SO_3 is highly reactive and extremely hygroscopic as compared to SO_2.

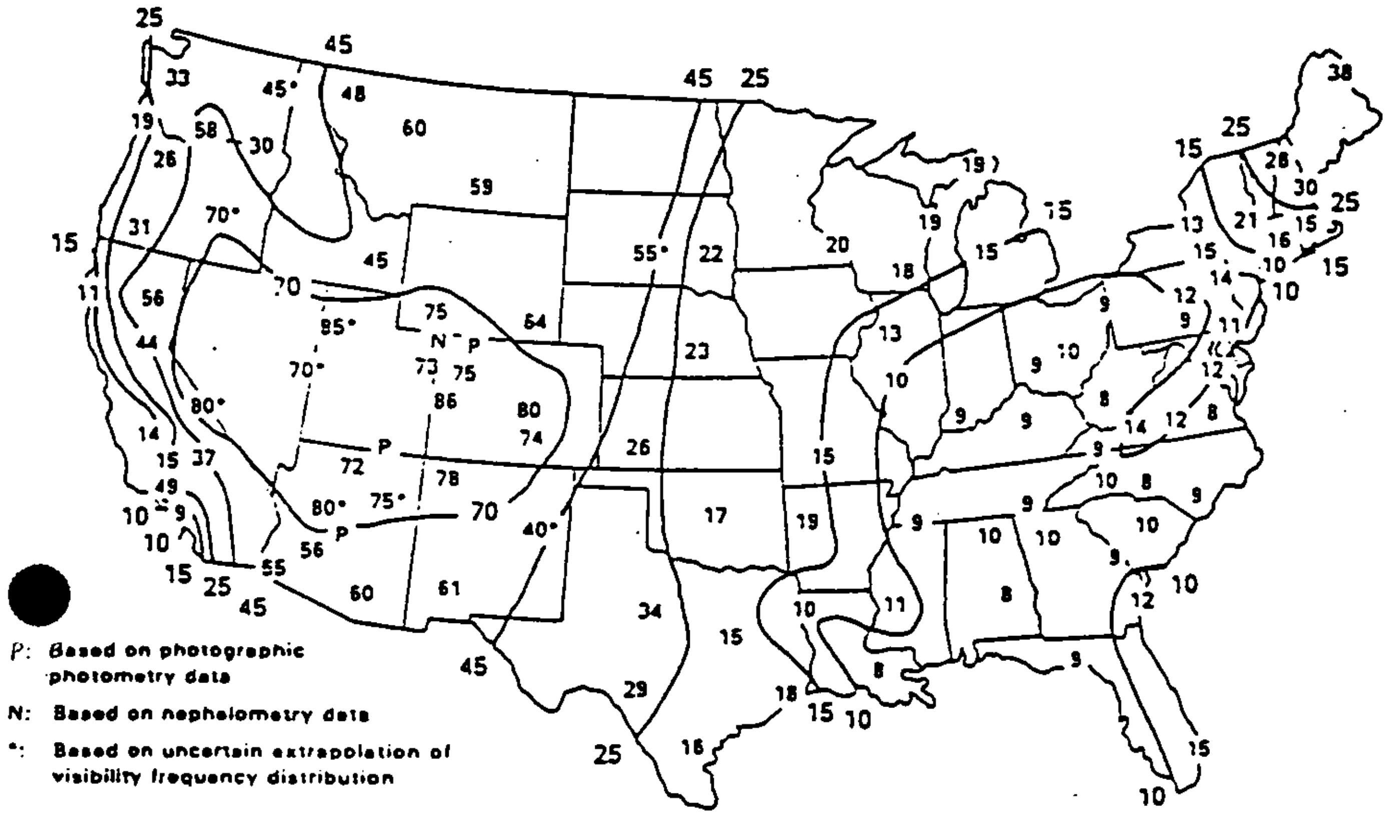


Figure .8.1Median summer visual range (miles) and isopleths for suburban/nonurban areas, 1974-76.

Source: Trijonis and Shapland (1979).

FIGURE 5.1

The volume of SO_3 found in gases from power plant steam generators typically can range from 5 to 50 parts per million (ppm). As might be expected, the degree of sulfur trioxide formation in combustion equipment varies widely. Concentrations are negligible in small equipment. As sizes and firebox temperatures increase, SO_3 concentrations increase appreciably, though seldom exceeding 35 ppm. Due to the relatively low smelting zone temperature and size of the blast furnace compared to a utility-size boiler, it is believed that any emissions of SO_3 from Gulf Coast will be at a rate that will not contribute to visibility degradation.

Taking into account all of the factors outlined above and the area in which Gulf Coast is located (highly industrialized with many high-emitting utilities), it seems clear that Gulf Coast will not significantly affect visibility in the area, which is already reported in the summer as low as nine miles.

REFERENCES

Thomas et el., Coleman, Faller, Nogales and Jones, Jones et al. "Air Quality Criteria for Particulate Matter and Sulfur Oxides, Volume III." United States Environmental Protection Agency, EPA-600/8 - 82/029 c, December 1982

6.0
APPLICATION FORMS

The next 12 pages consist of the completed DEP application forms.

Florida Department of Environmental Regulation

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

Lawton Chiles, Governor AC29-209018 PSD-FL-215 Carol M. Browner, Secretary $7500 pd. 5-31-94 Recpt.#224232

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Secondary Lead Smelter [ ] New[1] [x] Existing[1]

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

COMPANY NAME: Gulf Coast Recycling, Inc. COUNTY: Hillsborough

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Blast Furnace

SOURCE LOCATION: Street 1901 N. 66th Street City Tampa

UTM: East 364048 North 3093548

Latitude 27 ° 57 ' 43 "N Longitude 82 ° 22 ' 49 "W

APPLICANT NAME AND TITLE: Willis M. Kitchen

APPLICANT ADDRESS: 1901 N. 66th Street, Tampa, Florida 33619

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Gulf Coast Recycling

I certify that the statements made in this application for a PSD permit are true, correct and complete to the best of my knowledge and belief. Furt I agree to maintain and operate the pollution control source and pollution con facilities in such a manner as to comply with the provision of Chapter 403, Flo Statutes, and all the rules and regulations of the department and revisions thereof also understand that a permit, if granted by the department, will be non-transfer and I will promptly notify the department upon sale or legal transfer of the permi establishment.

*Attach letter of authorization

Signed: Willis M. Kitchen

Willis M. Kitchen, President
Name and Title (Please Type)

Date: 5/23/94 Telephone No. (813) 626-6151

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

This is to certify that the engineering features of this pollution control project been designed/examined by me and found to be in conformity with modern enginee principles applicable to the treatment and disposal of pollutants characterized in permit application. There is reasonable assurance, in my professional judgment,

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

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signed ______________________

Michael L. Sappington
Name (Please Type)

Lake Engineering, Inc.
Company Name (Please Type)

35 Glenlake Pkwy., Suite 500, Atlanta, GA 30328
Mailing Address (Please Type)

Florida Registration No. 44212 Date: 5/27/94 Telephone No. 404-395-0464

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

Replacement of two blast furnaces with one larger furnace equipped with baghouses and a proposed afterburner. This replacement occurred in 1984. This project will be in full compliance with F.A.C. Chapter 17-2.

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

Start of Construction November 1984 Completion of Construction December 1984

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

N/A

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

Refer to "After-the-Fact Construction Permit Application" submitted February 10, 1992 for permitting history. Current permit number A029-173310 issued 11/19/90, expires 11/15/95

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;
if power plant, hrs/yr _____ ; if seasonal, describe: ____________________

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? Yes
   a. If yes, has "offset" been applied? Yes
   b. If yes, has "Lowest Achievable Emission Rate" been applied? No
   c. If yes, list non-attainment pollutants. Ozone, TSP
2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. Yes
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? Yes
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? Yes
   a. If yes, for what pollutants? Total Particulates
   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

F. 1. See Section 2.6
   2. See Sections 2.1 and 2.4
   3. See text
   4. See Section 2.3
   5. None emitted

H. See Section 2.3

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants Type	Contaminants % Wt	Utilization Rate - lbs/hr	Relate to Flow Diagram
Lead Scrap	Pb, PM, Sulfur	5,45,55	8,550	
Coke	PM	100	1,145	
Limestone	PM	100	280	
Cast Iron	PM	100	400	
Rerun Slag	PM	100	1,600	

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): 11,975

2. Product Weight (lbs/hr): 6,000

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

See Table 2.1

Name of Contaminant	Emission[1] Maximum lbs/hr	Emission[1] Actual T/yr	Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission lbs/yr	Potential[4] Emission T/yr	Relate to Flow Diagram
SO_2	374.00	1,638.1	N/A	N/A	N/A		
Pb	0.13	0.6	2.09 lb/hr[5]	2.09	120,000	60	
PM	3.20	14.0	0.022 gr/dscf[6]	3.82	2,800,000	1,400	
CO	68.33	299.3	N/A	N/A	5,986,000	2,993	
NO_x	1.98	8.7	N/A	N/A	N/A		
VOC	1.7	7.25	N/A	N/A	290,000	145	

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

[5] 40 CFR 52.535 (c)(1)(i)

[6] NSPS Subpart L (40 CFR 60.120)

D. Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
* Baghouse-Wheelabrator	Particulate	99+%	1 micron	manuf. specs.
Frye Model 126 or				
Equivalent (patterened				
after model 126 but				
fabricated by GCR)				
** Afterburner	CO/VOC	90-99%	N/A	vendor specs.

* Existing, ** To be applied for later

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Coke	1,145	1,500	19.5

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

Fuel Analysis:

Percent Sulfur: 0.58 Percent Ash: 5.4

Density: N/A lbs/gal Typical Percent Nitrogen: N/A

Heat Capacity: 13,000 BTU/lb N/A BTU/gal

Other Fuel Contaminants (which may cause air pollution): ______

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average ______ Maximum ______

G. Indicate liquid or solid wastes generated and method of disposal.

Slag is disposed of in an approved and permitted landfill.

K069 - Returned to blast furnace.

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

Stack Height: 213 ft. Stack Diameter: 3 ft.

Gas Flow Rate: 24,354 ACFM 20,246 DSCFM Gas Exit Temperature: 154 °F.

Water Vapor Content: 3.5 % Velocity: 57 FPS

SECTION IV: INCINERATOR INFORMATION

TO BE APPLIED FOR LATER

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Patholog-ical)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Inciner-ated							
Uncon-trolled (lbs/hr)							

Description of Waste

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

Approximate Number of Hours of Operation per day 24 day/wk 7 wks/yr. 52

Manufacturer to be determined

Date Constructed ____ Model No. ____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel Type	Fuel BTU/hr	Temperature (°F)
Primary Chamber			Nat. Gas		1400
Secondary Chamber					

Stack Height: ____ ft. Stack Diamter: ____ Stack Temp. ____

Gas Flow Rate: ____ ACFM ____ DSCFM* Velocity: ____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [X] Afterburner

[ ] Other (specify) ____

Brief description of operating characteristics of control devices:

90% destruction of CO, 95% for VOCs, at 1,400°F and 0.5-2.0 seconds. Final design yet to be determined.

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

N/A

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).
6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY

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

[X] Yes [ ] No

Contaminant	Rate or Concentration
Particulates	0.022 gr/dscf, 20% opacity

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

[ ] Yes [X] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration

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

1. Control Device/System: Baghouse
2. Operating Principles:
3. Efficiency: 99+%
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: 213 ft.

b. Diameter: 3 ft.

c. Flow Rate: 24,354 ACFM

d. Temperature: 154 °F.

e. Velocity: 57 FPS

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

1. See Sections 2.1 and 2.4

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

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

j. Applicability to manufacturing processes:

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

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. Reason for selection and description of systems:

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. ____________ no. sites ____________ TSP ____________ ( ) SO^{2}* ____________ Wind spd/dir

Period of Monitoring ______/______/______ to ______/______/______
month day year month day year

Other data recorded ____

Attach all data or statistical summaries to this application.

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

2. Instrumentation, Field and Laboratory

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

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 5 Year(s) of data from 01 / 01 / 82 (month day year) to 12 / 31 / 86 (month day year)

2. Surface data obtained from (location) Tampa #12842, Gainesville, Orlando

3. Upper air (mixing height) data obtained from (location) Tampa, Station #12842

4. Stability wind rose (STAR) data obtained from (location) N/A

C. Computer Models Used

1. ISCST2 Modified? No If yes, attach description.

2. MESOPUFF II Modified? No If yes, attach description.

3. ______ Modified? If yes, attach description.

4. ______ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate	
TSP	0.403	grams/sec
SO^2	47.124	grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time. See Appendices I, K, M

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources. See Sections 2.1 and 2.4.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

7.0 SUMMARY AND CONCLUSIONS

The information contained in this document supports the issuance of the Prevention of Significant Deterioration construction and operating permit for Gulf Coast Recycling, Inc. located in Tampa, Florida. Air dispersion modeling, along with current operating permits and ambient monitoring data, have shown that Gulf Coast currently is and will continue to be in compliance with all applicable local, state, and federal air quality regulations. The BACT analysis showed that further control of SO_2 emissions is not cost-effective and not necessary to protect the health and welfare of all flora and fauna possibly affected. The control technology currently in place at Gulf Coast is considered to be state-of-the-art for most facilities of comparable type, size, and age.

Gulf Coast has committed to installing an afterburner to control VOC and CO emissions that will also reduce SO_2 formation. However, requiring additional SO_2 controls at this point will not only have severe economic consequences but also raises environmental concerns that would offset any benefit obtained from additional controls. As mentioned earlier, Gulf Coast is the only lead-acid battery recycler in the state of Florida. A shutdown of this facility will require the transport of approximately 1.1 million batteries per year 425 miles to the nearest recycling facility in Columbus, Georgia, thus increasing mobile-source air emissions to the region.

APPENDIX A

CURRENT OPERATING PERMIT
NO. AO29-173310

Florida Department of Environmental Regulation
Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347 • 813-623-5561
Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary
Dr. Richard Garrity, Deputy Assistant Secretary

PERMITTEE:
Gulf Coast Recycling, Inc.
1901 North 66th Street
Tampa, FL 33619

PERMIT/CERTIFICATION
Permit No: A029-173310
County: Hillsborough
Amendment Date: 11/19/90
Expiration Date: 11/15/95
Project: Blast Furnace and Agglomeration Furnace

This amended permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 & 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans and other documents, attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the operation of a secondary lead blast furnace and a flue dust agglomeration furnace. At the facility leadbearing scrap materials (LSM's), coke, lime rock, cast iron and slag are loaded into a skip-hoist and charged into the blast furnace (60 ton capacity). Lead in the liquid form collects at the base of the blast furnace. In this process lime rock is added to displace the lead in any lead silicate which might have been formed, while cast iron (iron oxide) binds with any sulfur to produce iron sulfide thus reducing sulfur dioxide emissions. The lead is tapped from the blast furnace and cast into buttons. Emissions generated by the charging (Point 06), the blast furnace exhaust (Point 01) and the tapping (Point 04) are controlled by three (3) sets of baghouses which vent separately. Flue dust collected by the baghouses is conveyed to an agglomeration furnace fired on natural gas. The blast furnace is subject to the New Source Performance Standards of 40 CFR 60, Subpart L, Standards of Performance for Secondary Lead Smelters and the Federal Implementation Plan contained in 40 CFR 52.535.

Location: 1901 North 66th Street, Tampa

UTM: 17-364.0 E 3093.6 N NEDS NO: 0057 Point ID: 01 - Furnace Exhaust
04 - Tapping
06 - Charging

Replaces Permit No.: A029-95366

PERMITTEE:
Gulf Coast Recycling, Inc.

PERMIT/CERTIFICATION NO.: A029-173310
PROJECT: Blast Furnace and Agglomeration Furnace

SPECIFIC CONDITIONS:

1. A part of this permit is the attached 15 General Conditions.

2. Pursuant to Rule 17-2.650(2)(b)1., F.A.C., this facility qualifies for an exemption of the Reasonably Available Control Technology (RACT) requirements since, at the request of the permittee, the total allowable emissions of the facility shall not exceed 4.4 pounds per hour and 14.9 tons per year. (PM)

3. Pursuant to 40 CFR 60.122(a)(1), the permittee shall not discharge from the baghouses particulate emissions greater than 0.022 grains per dry standard cubic foot. METHOD 5

4. In order to ensure compliance with Specific Condition No. 2, the maximum allowable particulate matter emissions* and hours of operation of the sources authorized to operate under this permit shall be:

Source	Emission Limitations	Hours of Operation
Blast Furnace Charging	0.65 lbs./hr. (2.54 TPY)	7800
Blast Furnace	2.15 lbs./hr. (8.38 TPY)	7800
Blast Furnace Tapping	0.40 lbs./hr. (1.56 TPY)	7800
	3.20 12.48	

* Prior to initiating any actions to increase the capture efficiency of the system, the permittee shall request written authorization from the Environmental Protection Commission of Hillsborough County.

5. Pursuant to 40 CFR 52.535(c)(1)(i), the maximum allowable lead emissions from the sources authorized to operate under this permit shall be:

Source	Emissions Limitations
Blast Furnace Charging	0.22 lbs./hr. (0.86 TPY)
Blast Furnace	1.81 lbs./hr. (7.06 TPY)
Blast Furnace Tapping	0.06 lbs./hr. (0.23 TPY)
	2.09 8.15

6. Pursuant to 40 CFR 52.535(c)(1)(ii), visible emissions from the closed charge doors on the blast furnace shall not exceed five (5) percent opacity during furnace operation.

7. Pursuant to 40 CFR 52.535(c)(1)(iii), visible emissions from the charge doors on the blast furnace shall not exceed ten (10) percent opacity during charging operations.

PERMITTEE:
Gulf Coast Recycling, Inc.

PERMIT/CERTIFICATION NO.: A029-173310
PROJECT: Blast Furnace and Agglomeration Furnace

SPECIFIC CONDITIONS: (continued)

8. Pursuant to 40 CFR 52.535(c)(1)(iv), visible emissions from all other sources authorized to operate under this permit shall not exceed five (5) percent opacity.

9. Sulfur dioxide (SO_2) emissions shall not exceed 384.2 pounds per hour. If testing indicates that SO_2 emissions exceed 384.2 (374 lbs./hr. base line + 40 tons/yr., 12/83) then the permittee shall immediately reapply for a new permit under the provisions of Section 17-2.500, F.A.C.

10. Test emissions from the blast furnace charging, blast furnace, and blast furnace tapping operations for the following pollutants at intervals of twelve (12) months from February 14, 1990 and submit 2 copies of test data to the Environmental Protection Commission of Hillsborough County within forty-five (45) days of such testing pursuant to Section 17-2.700, F.A.C.:

(X) Particulates
(X) Opacity
(X) Sulfur Oxides*
(X) Lead

* Applies only to the blast furnace emissions.

11. Compliance with the emission limitations of Specific Conditions Nos. 3, 4, 5, 6, 7 and 8 shall be determined using EPA Methods 1, 2, 3, 4, 6, 9 and 12 contained in 40 CFR 60, Appendix A and adopted by reference in Section 17-2.700, F.A.C. In the case of the Method 9, Section 2.5 shall be excluded, pursuant to 40 CFR 52.535(b)(5).; thus waiving the six minute averaging period and establishing an instantaneous standard. The annual sulfur oxide test will be conducted by the same method used in the December, 1983 test. The minimum requirements for stack sampling facilities, source sampling and reporting, shall be in accordance with Section 17-2.700, F.A.C. and 40 CFR 60, Appendix A.

12. The visible emission test on the blast furnace shall be sixty (60) minutes in duration pursuant to Section 17-2.700, F.A.C., and shall be conducted concurrent with one of the Method 12 runs.

13. The visible emission tests on the blast furnace charging operation shall each be sixty (60) minutes in duration, pursuant to Rule 17-2.700(1)(d)1.b.i., F.A.C. Readings shall be taken on the :

A) Charge doors on the blast furnace during charging (closest potential emission point).
B) Closed charge doors on the blast furnace during furnace operation (closest potential emission point).
C) Baghouse exhaust during blast furnace operation.

PERMITTEE:
Gulf Coast Recycling, Inc.

PERMIT/CERTIFICATION NO.: A029-173310
PROJECT: Blast Furnace and Agglomeration Furnace

SPECIFIC CONDITIONS: (continued)

14. The visible emission test on the blast furnace tapping shall be sixty (60) minutes in duration pursuant to Rule 17-2.700(1)(d)1.b.i., F.A.C. Readings shall be taken only during product tapping.

15. The maximum process input rate shall be 4.58 tons per hour of raw materials. Raw material charging rates on a daily basis shall be consistent with the following percentages based on the February, 1990 test.

Raw Material	Percentage
Lead Scrap and Re-Run Slag	88% - 4.03
Coke	7% · 0.32
Lime Rock	2.5% - 0.115
Cast Iron	2.5% - 0.115

16. Testing of emissions must be accomplished at approximately the maximum process weight rate of 4.58 tons per hour of raw materials. The actual charging rate and type of materials charged during the test shall be specified in each test result. Failure to include the actual process or production rate in the results may invalidate the test [Rule 17-4.070(3), F.A.C.].

17. Pursuant to 40 CFR 52.535(b)(2), non-process fugitive emissions (road dust, stockpiles, plant grounds, etc.) shall be minimized. Minimization efforts shall include such fugitive dust suppression activities as chemical stabilization, water spraying with appropriate runoff collection, resurfacing, sweeping, revegetation, and other EPA approved methods.

18. Pursuant to 40 CFR 52.535(b)(4), the permittee shall maintain continuous records of plant process and emission control operations as necessary to determine continuous compliance. Such records shall include reports of all process operations and control equipment operating parameters. Such records shall also include reports of all types of process upsets and emission control equipment malfunction, detailing the nature and duration of the upset or malfunction, the expected effects on emissions, and the corrective actions taken or planned to avoid recurrences. Such records shall be available at the plant site for inspection for a period of at least two (2) years.

PERMITTEE:
Gulf Coast Recycling, Inc.

PERMIT/CERTIFICATION NO.: A029-173310
PROJECT: Blast Furnace and Agglomeration Furnace

SPECIFIC CONDITIONS: (continued)

19. Pursuant to Rule 1-1.04.1 of the Rules of the Environmental Protection Commission of Hillsborough County and consistent with Specific Condition No. 15, the permittee shall maintain daily records on the number of charges to the blast furnace and the make-up of each charge (i.e., groups, coke, limerock, etc.). The permittee shall also maintain monthly inventory records showing types and quantities of materials charged to the furnace during the month.

20. Pursuant to Chapter 1-3.22(3) of the Rules of the Environmental Protection Commission of Hillsborough County, the permittee shall not allow the discharge of air pollutants which contribute to an objectionable odor.

21. The Environmental Protection Commission of Hillsborough County shall be notified in writing 15 days in advance of any compliance test to be conducted on this source.

22. Submit for this facility, each calendar year, on or before March 1, an emission report for the preceding calendar year containing the following information pursuant to Subsection 403.061(13), Florida Statutes:

(A) Annual amount of materials and/or fuels utilized.
(B) Annual emissions (note calculation basis).
(C) Any changes in the information contained in the permit application.

Duplicate copies of all reports shall be submitted to the Environmental Protection Commission of Hillsborough County.

23. Pursuant to Section 17-4.090, F.A.C., an application for renewal of permit to operate this source, completed in quadruplicate, shall be submitted to the Environmental Protection Commission of Hillsborough County at least 60 days prior to its expiration date.

Originally Issued: July 17, 1990
Amended this 19 day of 19[illegible].

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL REGULATION

TTACHMENT - GENERAL CONDITIONS:

he terms, conditions, requirements, limitations and restrictions set o.ch in this permit, are "permit conditions" and are binding and enforceable ursuant to Sections 403.141, 403.161, 403.727, or 403.859 through 403.861, lorida Statutes. The permittee is placed on notice that the Department will eview this permit periodically and may initiate enforcement action for any iolation of these conditions.

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

3. As provided in subsections 403.087(6) and 403.722(5), F.S., the issuance f this permit does not convey any vested rights or any exclusive privileges. either does it authorize any injury to public or private property or any nvasion of personal rights, nor any infringement of federal, State, or local aws or regulations. This permit is not a waiver of or approval of any other epartment permit that may be required for other aspects of the total project hich are not addressed in this permit.

4. This permit conveys no title to land or water, does not constitute State ecognition or acknowledgement of title, and does not constitute authority for he use of submerged lands unless herein provided and the necessary title or e hold interests have been obtained from the State. Only the Trustees of h nternal Improvement Trust Fund may express State opinion as to title.

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

6. The permittee shall properly operate and maintain the facility and systems f treatment and control (and related appurtenances) that are installed and sed by the permittee to achieve compliance with the conditions of this ermit, are required by Department rules. This provision includes the peration of backup or auxiliary facilities or similar systems when necessary o achieve compliance with the conditions of the permit and when required by epartment rules.

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

(a) Have access to and copy any records that must be kept under conditions of the permit;

b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

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

(a) A description of and cause of noncompliance; and

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

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

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

11. This permit is transferable only upon Department approval in accordance with Rule 17-4.120 and 17-730.300, Florida Administrative Code, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)

( ) Determination of Prevention of Significant Deterioration (PSD)

( ) Certification of compliance with State Water Quality Standards (Section 401, PL 92-500)

( ) Compliance with New Source Performance Standards

The permittee shall comply with the following:

(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

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

(c) Records of monitoring information shall include:

1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used;
6. the results of such analyses.

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

APPENDIX B

EPA MEMO REGARDING PSD APPLICABILITY

Vernda

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

MEMORANDUM

JUN 19 1991

DATE:

SUBJECT: PSD Determination of Gulf Coast Recycling, Inc.

FROM: Brian L. Beals, Chief
Source Evaluation Unit

TO: Mark A. Armentrout, Chief
Northern Compliance Unit

This determination concerns the operations at Gulf Coast Recycling, Inc. and is in response to your memorandum dated April 26, 1991. Our determinations with respect to PSD are as follows:

(1) Gulf Coast Recycling is classified as a major stationary source, as defined in CFR 51.166, therefore, when notification was made of impending construction of a new 60 ton blast furnace, the PSD application process should have been initiated. This furnace qualified as a major modification as defined in CFR 51.166, due to the fact that construction would result in a significant net emissions increase and potential to emit increase in pollutants. Based on the emissions sampling data from 1979-90, there was a 43.7% increase in actual SO2 emissions from the pre-construction to post-construction periods. From 1979-84, actual SO2 emissions averaged 208.7 pounds per hour. After completion of the 60 ton blast furnace, actual SO2 emissions from 1985-90 averaged 300.0 pounds per hour. Based on Gulf Coast's annual operating level of 7800 hours per year, the actual emissions increase for SO2 rose from 814 tons per year in 1979-84 to 1170 tons per year in 1985-90. The significant rate of emissions for SO2 is defined as being 40 tons per year or more of that pollutant.

PSD for SO2

(2) The preconstruction requirements as outlined in Section 165 of the Clean Air Act should have been met. This would have included obtaining a construction permit for the 60 ton blast furnace prior to its fabrication, instead of obtaining one 6 years after the fact.

(3) The source is classified as a secondary lead smelter and due to the expected increases in pollutants, PSD review would subject all pollutants in the category to review. This would broaden the scope to include PM, Pb, CO, SO2, NOx, sulfuric acid mist, and hydrogen sulfide.

(4) Best Available Control Technology (BACT) analysis would be applicable for any pollutants subject to PSD review (from determination (3) above) which exceed their respective significant emissions rate.

(5) Further investigation is warranted into whether VOC emissions from the 60 ton blast furnace exceeds the 40 tons per year limit for NSR. If NSR is applicable, then LAER and emissions offsets would have to be taken into consideration.

(6) A final concern with respect to the operations at Gulf Coast pertains to the 50-ton refining kettle built and operated with no construction permit, designated as kettle #3. A valid construction permit should have addressed the operating limitations of kettle #3, specifically with reference to the simultaneous operation of more than two 50-ton kettles. Federally enforceable permit limits should have been incorporated into the construction permit, as they were in the eventual operating permit. According to Gulf Coast, kettle #1 operates independently; kettle #2 (calcium lead formation) is dependent upon the operations of kettle #3 (lead softening). The only impediment to simultaneous operation of all three kettles is manpower constraints, not design features; therefore, it is physically possible for all three 50-ton refining kettles to be operating simultaneously. The potential lead emissions for kettle #3 were 0.874 tons per year - an amount above the significance level of 0.6 tons per year; consequently, a PSD application was required for refining kettle #3.

Should you have any questions, please contact either Dennis Beauregard or Scott Davis at x5014.

APPENDIX C

LETTER FROM CITY OF TAMPA TO GULF COAST REGARDING SEWER CAPACITY

CITY OF TAMPA

Sandra W. Freedman, Mayor

Department of Sanitary Sewers

Ralph L. Metcalf, II, P.E.
Director

August 3, 1993

Joyce Morales-Caramela
Gulf Coast Recycling, Inc.
1901 North 66th Street
Tampa, Florida 33619

Re: Allocation of capacity for additional wastewater streams at Gulf Coast Recycling Plant.

Dear Joyce:

Due to other service commitment allocations and capacity limitations in our downstream gravity collection system, capacity is not presently available in our manifold force main system in 62nd Street to accept all the additional flows specified in your May 14, 1993 letter.

We have no plans to upgrade the collection system prior to calendar year 1998; however, some limited capacity should become available in approximately two (2) years because one of our prior service commitment allocations is only temporary.

Your letter mentioned the need to resume operation of the groundwater recovery system. Please be advised that any flows from this source will need to be controlled so that our present 20 GPM restriction on the total flow from your plant is not exceeded.

In addition, prior to your resuming operation of the groundwater recovery system, we will need groundwater samples from your monitoring wells analyzed to determine the level of Molybdenum. EPA Test Method 246.2 is to be used. Certified test results should be submitted for our review at your earliest convenience.

Permission to resume pumping of groundwater will be contingent on the determination of the Molybdenum concentration and the installation of pretreatment facilities if deemed necessary.

In addition, we request that the analysis of the effluent samples from your existing pretreatment facilities be expanded to include Molybdenum.

If possible, the test results should be included in the next report to John Daily of our Industrial Waste Division. This will assist us in the review of your plant's annual Industrial Wastewater Discharge Permit Application.

We trust this letter will meet your present needs. Please contact Bill Schafer at 223-8053 or me at 223-8040 if you have any question regarding this matter.

Sincerely,

DEPARTMENT OF SANITARY SEWERS

Michael A. Salgado, Engineer
Planning Division

MAS/pa

xc: John Daily
Executive
Planning
Engineering

APPENDIX D

1991 LEAD SOURCE TEST

STACK SAMPLING EMISSION REPORT
and
VISIBLE EMISSION TESTS

GULF COAST RECYCLING
Tampa, Florida
October 21 - 25, 1991

STEVENSON & ASSOCIATES
333 Falkenburg Road, Suite B-214
Tampa, Florida 33619

TABLE OF CONTENTS

1.0 INTRODUCTION

1.0 INTRODUCTION

On October 21, 22, 23, 24 & 25, 1991, Stevenson & Associates, represented by Lynne Stevenson, Ron Oliver and Tim Capelle, conducted emission sampling (EPA Methods 1, 2, 4, 5, 6, and 12) and visible emission (EPA Method 9) tests for Gulf Coast Recycling, 1901 North 66th Street, Tampa, Florida.

These tests were performed to meet compliance test specifications of Permits Nos.: AO29-130736/Keel Cast Baghouse; AO29-173310/Furnace Tapping, Furnace Charging and Blast Furnace; and, AC29-184883/Refining Baghouse; and, to determine if these sources were operating within the limits of said permits as per requirements of the Hillsborough County Environmental Protection Commission and the State of Florida Department of Environmental Regulation.

2.0 SOURCE DESCRIPTION

2.0 SOURCE DESCRIPTION

Gulf Coast Recycling recovers lead from damaged or spent lead-acid batteries. Battery groups and posts are removed from the batteries and resmelted in a blast furnace. The blast lead is cast into 3,700 pound "buttons". These buttons are then remelted and cast into boat keels or the lead is refined or alloyed to customer specifications. These operations are controlled with five (5) separate collection and discharge systems.

Dust and fumes from the blast furnace and the slagging furnace are collected, routed through a series of cooling loops and forced through a fabric baghouse collector system (10 modules) prior to discharge through a stack. The stack is 36 inches in diameter, 150 feet high with two (2) sample ports located at 45 feet. The sampling ports are located 8 stack diameters upstream and 28 diameters downstream of any flow disturbances. The sulfur dioxide sampling port is located at the same sampling ports.

The blast furnace charging operation is vented through a double module baghouse.

Exhaust hoods covering the blast furnace, lead and slag taps and the slag tap from the slag furnace are vented through a single module baghouse collector and exhausted through a 13-inch square stack that is 45 feet tall. This process is called blast furnace tapping.

The refining kettle ventilation system consists of exhaust hoods enclosing each of three (3) melting kettles and lead drossing bins. The exhaust from these hoods is routed through a two module baghouse and vented through a 22-inch diameter stack that is 25 feet tall.

The keel cast melt kettle is enclosed with a hood that is exhausted to a single module baghouse and vented through a 14.5 inch diameter stack that is 25 feet tall.

3.0 SUMMARY OF RESULTS

3.0 SUMMARY OF RESULTS

The results of the emission testing are presented in the following Tables. The average emission rates for all parameters for all sources were below the allowable rates as specified in the current operating permits. Therefore, these sources wer oeprating within the limits of compliance during the testing on October 21 through October 25, 1991.

The visible emission highest six minute average for all sources was 0%.

No problems were encountered in accomplishing this assignment.

TABLE II

TEST SUMMARY - LEAD

GULF COAST RECYCLING - BLAST FURNACE

October 24, 1991

RUN NO.	LEAD (LBS/HR)	CONCNTRTN (GR/DSCF)	GAS FLOW (ACFM)	GAS FLOW (DSCFM)	VOLM. AIR (VMSTD)	ISOKENET. (%)
1	0.007	0.000039	24,335	20,308	40.06	100.41%
2	0.005	0.000031	24,485	20,321	39.57	99.14%
3	0.007	0.000039	24,243	20,108	39.17	99.17%
AVG.	0.006	0.000036	24,354	20,246	39.60	99.57%

APPENDIX E

1991 NO_x, VOC, AND CO SOURCE TEST

SOURCE TEST REPORT
for
OXIDES OF NITROGEN, VOLATILE ORGANIC COMPOUNDS AND CARBON MONOXIDE

BLAST FURNACE OUTLET
GULF COAST RECYCLING
TAMPA, FLORIDA

OCTOBER 21 & NOVEMBER 4, 1991

Prepared for:

STEVENSON & ASSOCIATES
333 FALKENBURG ROAD N, UNIT A-115
TAMPA, FLORIDA 33619

Prepared by:

AIR CONSULTING AND ENGINEERING, INC.
2106 N.W. 67TH PLACE, SUITE 4
GAINESVILLE, FLORIDA 32606
(904) 335-1889

289-91-07

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ACE
AIR CONSULTING
& ENGINEERING, INC.
2106 N.W. 67th Place • Suite 4 • Gainesville, Florida • 32606
(904) 335-1889 FAX (904) 335-1891

REPORT CERTIFICATION

To the best of my knowledge, all applicable field and analytical procedures comply with Florida Department of Environmental Regulation requirements and all test data and plant operating data are true and correct.

Dagmar Neck
Dagmar Neck

Date 11/22/91

1.0 INTRODUCTION

On October 21, 1991, Air Consulting and Engineering, Inc. (ACE), conducted oxides of nitrogen (NO_X), Carbon Monoxide (CO), and Volatile Organic Compound (VOC) testing on the Blast Furnace Outlet at Gulf Coast Recycling in Tampa, Florida.

Testing was performed using United States Environmental Protection Agency (EPA) Method 7E for NO_X emission determination, EPA Method 10 for CO and EPA Method 25A for VOC. The CO, CO2, and O2 tests were repeated by orsat analysis (EPA Method 3) on November 4, 1991.

This work was done as a subcontract to Stevenson & Associates of Tampa, Florida.

2.0 SUMMARY AND DISCUSSION OF RESULTS

The emission results are summarized in Table 1.

Oxides of nitrogen and VOC emissions averaged 1.98 and 33.10 pounds per hour (lbs/Hr), respectively.

Carbon monoxide testing was repeated by orsat on November 4, 1991, since the CO analyzer results were off scale during the scheduled testing. CO emission averaged 8440 ppm or 683.32 lbs/Hr.

Flow calculations, emission summary with strip chart copies and orsat results are presented in Appendices A, B, and C, respectively.

Table 1 Emission Summary
Blast Furnace Outlet
Gulf Coast Recycling
Tampa, Florida
October 21, 1991 & November 4, 1991

Run Number	Flow Rate SCFMD	NOx Emissions		VOC Emissions as propane		CO Emissions		
		ppm	lbs/Hr	ppm	lbs/Hr	%	ppm	lbs/Hr
1	18676	17.5	2.34	303	38.77	--	---	-----
2	17974	14.3	1.84	237	29.18	--	---	-----
3	19062	12.8	1.75	240	31.34	--	---	-----
AVERAGE	18571	14.9	1.98	260	33.10	0.844	8440	683.32

lbs/Hr = ppm (2.595×10^{-9}) MW (SCFMD) 60

MW NO_x = 46

MW C_3H_8 = 44

MW CO = 28

10^6 ppm = 100%

APPENDIX F

SCAQMD CO BACT DETERMINATION

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Best Available Control Technology (BACT) Guideline

Equipment or Process: Lead Melting Furnace - Cupola, Secondary Melting Operations

Equipment Rating: All

Revision:
Date: 10/07/88

	ROG	NOx	SOx	CO	PART.
BACT Technologically Feasible[1]				Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400 °F)	
BACT Achieved in Practice or Contained in EPA Approved SIP[2]			Scrubber and ≤ 1% Sulfur in Coke	Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1200 °F)	Baghouse
BACT For Small Business[1,3]			1. Scrubber and ≤ 1% Sulfur in Coke 2. Scrubber 3. ≤ 1% Sulfur in Coke	1. Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1400 °F) 2. Afterburner (≥ 0.3 Sec. Retention Time at ≥ 1200 °F)	1. Baghouse 2. Venturi Scrubber
Alternate Basic Equipment or Process[1]					

1. Requires Economic Analysis
2. No Economic Analysis
3. Control technologies are in descending order of efficiency. The most efficient control technology must be considered first when conducting an economic analysis.

APPENDIX G

MODELING PROTOCOL

LAKE
ENGINEERING, INC.

August 17, 1993

Mr. Cleve Holiday
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32399-2400

VIA TELEFAX

RE: Modeling Protocol for Gulf Coast Recycling
Permit Number AO29-173310

Dear Mr. Holiday:

Gulf Coast Recycling, Inc., located in Tampa (Hillsborough County), is a lead-acid battery recycler that operates a blast furnace which was installed and brought on line in late 1984. It was determined in June 1991 that this furnace installation should have been subject to the Federal Prevention of Significant Deterioration (PSD) regulations. By letter dated April 22, 1993 the Florida Department of Environmental Regulation (FDER) notified Gulf Coast that a PSD application needs to be submitted. In addition to the application, the PSD regulations require computer modeling to be performed to determine the anticipated ambient air quality impacts resulting from the proposed project. On behalf of Gulf Coast Recycling, Inc., Lake Engineering, Inc. is submitting the following proposed air dispersion modeling protocol for this project.

The Gulf Coast facility is located at 1901 North 66th Street, UTM coordinates 364048 East, 3093548 North. The facility is located in a mixed-use area that is considered rural for modeling purposes. The topography within 50 km of the site is predominantly flat with no extreme terrain features. Sulfur dioxide has been established as the only pollutant that is required to be modeled. The SO_2 emissions will be emitted from one source, one stack with dimensions of 150 ft. tall and 3 ft. diameter.

SUITE 500, 35 GLENLAKE PARKWAY
ATLANTA, GEORGIA 30328
(404) 395-0464 FAX: (404) 395-0474

The latest ISCST2 model, currently approved by the EPA, will be used to determine impacts during 3-hr, 24-hr, and annual averaging periods. The five years of met data selected are 1982-1986 from surface and upper air station number 12842 located in Tampa. The regulatory default option will be used with no decay coefficient allowed, resulting in conservative concentrations. Building downwash will not be calculated due to the sufficient height of the stack as determined by Good Engineering Practice (GEP).

Two model runs will be used to determine ambient impacts attributable to Gulf Coast alone. An overall 10 km receptor grid will be used, one run with 100 m spacing out to 1 km and the other run with 1000 m spacing out to 10 km. These concentrations, when added to the ambient background concentration, will be compared to the Florida Ambient Air Quality Standards (FAAQS) of 1300 ug/m^3, 3-hr; 260 ug/m^3, 24-hr; and 60 ug/m^3, annual. The background concentration for the subject area and the last full year of monitoring data, including the location/number of the monitor at which it was measured, is hereby being requested to assist us in our dispersion modeling analysis.

Two additional model runs, utilizing the same receptor grids as above, will be used to determine the increment consumption of Gulf Coast and all major increment consuming SO_2 sources within 30 km. Emissions from Gulf Coast and the appropriate surrounding sources will be modeled together to determine the cumulative ambient concentration for the three averaging periods. These concentrations will then be compared to the Class II increment amounts of 512 ug/m^3, 3-hr; 91 ug/m^3, 24-hr; and 20 ug/m^3, annual.

Attached is a list of 23 surrounding major sources and their respective emission and stack data. This list was taken from a 361-page APIS report obtained from the FDER that listed a total of 325 facilities and 990 sources within a 30 km radius of Gulf Coast. On guidance from you, the "20 by D" rule, developed in North Carolina, was used to determine which sources were required to be used in the modeling:

sources located 0 to 5 km from Gulf Coast: all are to be modeled
sources located 05 to 10 km: ignore those <100 tons/yr
sources located 10 to 15 km: ignore those <200 tons/yr
sources located 15 to 20 km: ignore those <300 tons/yr
sources located 20 to 25 km: ignore those <400 tons/yr
sources located 25 to 30 km: ignore those <500 tons/yr

This list is being submitted for verification of accuracy and completeness. Please identify which sources are increment consuming and which are not. Also, please advise if any listed sources may be omitted from modeling and/or if any sources need to be added. Particularly, many of the smaller sources have an emission rate listed in tons/year but not pounds/hr. It is hereby being requested that the smaller sources be omitted from the modeling, due to their very low emission rate (< 1 ton/yr). Their cumulative emissions are insignificant compared to that of the major sources. If they are required to be modeled, guidance is being sought on how many hours/year are to be assumed to determine an emission rate in pounds/hour.

An additional analysis will be performed to determine impacts on the Chassahowitzka National Wildlife Refuge. The significance levels for this area are 0.48 ug/m^3, 0.07 ug/m^3, and 0.025 ug/m^3 for the 3-hr, 24-hr, and annual averaging periods, respectively. Discrete receptors will be placed on a line from Gulf Coast to the closest boundary of the refuge indicating the concentration trend along the line and the concentration at the boundary of the refuge. The distance from Gulf Coast to the refuge is approximately 75 km, exceeding the accepted limit of the ISC models of 50 km. Please advise if a different modeling method should be utilized.

We would appreciate an expeditious review of this protocol due to the time commitments Gulf Coast has with the FDER permitting section. If you have any questions or require any additional information please contact me at (404) 395-0464.

Sincerely,

LAKE ENGINEERING, INC.

Larry G. Carlson

Larry G. Carlson
Air Pollution Compliance Specialist

LGC:cml
Enclosures

cc: Joyce Morales-Caramella, GCR

460.2

460-93\0817HOLL23F

APPENDIX H

APPROVED MODELING PROTOCOL

Florida Department of
Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

September 24, 1993

Mr. Larry Carlson
Lake Engineering, Inc.
Suite 500, 35 Glenlake Parkway
Atlanta, Georgia 30328

Re: Department's Review of Modeling Protocol for Gulf Coast Recycling Permit Number AO29-173310

Dear Mr. Carlson:

The Department has reviewed your modeling protocol and we have the following comments:

1. The "Guideline on Air Quality Models" (EPA, 1986a) including Supplements A (1987) and B (1993), the New Source Workshop Manual (Draft, EPA, 1990), and Chapters 17-212.400 and 17-210.500, F.A.C., provide EPA and FDEP modeling guidance. In addition, for determining impacts on PSD Class I areas, the department follows the recommendations of the Interagency Workgroup on Air Quality Modeling (IWAQM). These recommendations are contained in the "Interagency Workgroup on Air Quality Modeling (IWAQM) Phase I Report: Interim Recommendation for Modeling Long Range Transport and Impacts on Regional Visibility (EPA-454/R-93-015). This document can be downloaded from the EPA's Support Center for Regulatory Air Models Bulletin Board System (SCRAM BBS). The SCRAM BBS phone number is (919)-541-5742. The applicant must also evaluate the impacts of all toxic emissions due to the project for comparison with the Florida Air Toxics Reference Concentrations (formerly called "No Threat Levels" or "NTL's"). We have attached a copy of the "Florida Air Toxics Permitting Strategy" along with the most recent table of Florida Air Reference Concentrations for various toxic chemicals to aid you in this evaluation.

2. Based on guidance contained in the above mentioned documents, the required air quality analyses for the national ambient air quality standards (AAQS) and prevention of significant (PSD) increments are carried out in the proposed project's significant impact area (SIA). The SIA is a circular area with a radius extending from the source to (1) the most distant point where approved dispersion modeling predicts a significant impact from the project will occur, or (2) a modeling receptor distance of 50 km,

whichever is less. The highest modeled pollutant concentration for each averaging time is used to determine whether the source will have a significant ambient impact for that pollutant. The SIA used for the air quality analysis of a particular pollutant is the largest of these averaging time areas determined for that pollutant.

The model runs to determine ambient impacts and PSD increment consumption will be based on the size of the SIA. Your suggested receptor network is satisfictory out to 10 km for the screening phase. However, if your SIA is greater than 10 km, the network should be expanded beyond 10 km to fill in the SIA. Refined modeling should be performed using a finer mesh receptor grid centered over any critical receptors identified in the screening phase and using a full year's meteorological data for the year containing the meteorological conditions which impacted the critical receptors. Because the dimensions of the Class I areas are fixed, the Department has established the use of specified receptor networks in the Class I areas. The receptor network for the Chassahowitzka Wilderness Area is attached.

3. The Department has identified the SO2 sources that need to be modeled for this application. These sources are included in the attachment. There are three inventories of sources: one for the AAQS analysis, one for the PSD Class II increment analysis, and one for the PSD Class I increment analysis. The PSD increment inventories include both increment consuming PSD sources and increment expanding PSD sources.

4. Since the Department is following the IWAQM guidelines for evaluating air quality impacts on PSD Class I areas, the applicant must evaluate the project's impact on the Chassahowitzka Wilderness Area even though this project is greater than 50 km from the Class I area. This evaluation includes a cumulative PSD Class I increment impact analysis, if necessary, and an air quality related values (AQRV) analysis.

Because of the IWAQM guidelines, the Class I source inventory is more extensive than the Class II inventory. In addressing the Class I increment impacts, the applicant must first model the project's impact on the Class I receptors provided in the attachment. The highest impacts are compared to the National Park Service's (NPS) recommended significance levels of 0.48 ug/m3, 0.07 ug/m3, and 0.025ug/m3 for the 3-hour, 24-hour and annual averaging times, respectively. If the project's impacts are less than the NPS significance levels, then the increment analysis is concluded. If the impacts are greater, then a cumulative PSD Class I increment impact analysis is done using the inventory provided and inputting it into ISCST2. If exceedances of the PSD Class I increments are modeled using this method, then the project impacts alone may be modeled with ISCST2 at the exceedance receptors during the periods which the exceedances occurred. If the project's impact on the exceedance receptors are all less than the NPS significant levels, then the analysis is concluded. If not, then modeling must be performed using the long-range transport model MESOPUFF II. The impacts from this modeling are then compared with the PSD Class I increments. If exceedances of the PSD Class I increments are modeled using MESOPUFF II, the project's impacts alone may again be modeled for comparison with the NPS significance levels at the execeedance receptors during the periods when the exceedances occurred. If the project's impact are greater than the significance levels, then projected emissions from the project must be reduced.

The AQRV analysis evaluates potential effects of the project on vegetation, wildlife, soils, aquatic resources, and visibility. This analysis must be performed regardless of whether the project's impacts are less than the NPS significance levels. Depending upon the project's predicted impacts, the analysis may, however, require at the simplest level only a literature review or at the most complex level a deposition analysis using MESOPUFF II in addition to the literature review.

5. The Davis Island SO2 monitor (4360-0350-G02) is the closest monitor to this project. The data collected from this monitor can be used to establish background SO2 concentrations to be used with the modeling results to determine compliance with the AAQS. Based on 1992 data from this monitor, the Department has recommended that the SO2 background concentrations to be used in the AAQS analysis are the following: 21 ug/m3, annual average; 93 ug/m3, 24-hour average (second highest 24-hour monitored value in 1992); 304 ug/m3, 3-hour average (second highest 3-hour monitored value in 1992). These concentrations should be added to the modeled impacts for the appropriate averaging times.

The remainder of the modeling protocol as outlined in your letter is satisfactory. If you have any further modeling questions, please call Cleve Holladay at 904-488-1344.

Sincerely,

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

Attachments

CHF/cgh

cc: Jerry Kissel, HCEPC
Bill Thomas, DEP/SWD
Doug Beason, DEP/OGC
John Bunyak, NPS
Jewell Harper, USEPA

APPENDIX I

AAQS SO_2 MODELING SOURCE INVENTORY

Gulf Coast SO2 AAQS Inventory

Model source no.	Owner	Co	Dist from GCR (km)	UTME (km)	UTMW (km)	SO2 (g/s)	Height (m)	Temp (K)	Velocity (m/s)	Diam (m)
	Gulf Coast Recycling	HI	0.0	364.0	3093.5	47.12	45.72	344.1	37.49	0.61
1	Griffin	HI	2.6	364.1	3096.4	0.06	15.24	505.2	6.71	0.85
2	Couch Construction	HI	3.4	362.1	3096.7	2.14	12.50	449.7	20.12	1.25
3	Cargill/Nutrena	HI	3.6	360.8	3095.8	0.05	4.88	483.0	8.84	0.30
4	Hills Co RRF	HI	4.3	368.2	3092.7	21.40	50.00	491.0	18.30	1.80
5	Tampa McKay Bay	HI	4.3	360.0	3091.9	21.42	45.70	449.7	21.30	1.34
6	Weyerhauser	HI	4.6	362.8	3098.3	0.55	7.62	463.6	5.49	0.61
7	Royster	HI	4.7	362.8	3098.4	0.55	7.62	533.0	8.53	0.76
8	Nitram	HI	4.9	362.5	3089.0	3.11	27.43	399.7	10.67	1.37
9	CLM Chloride Metals	HI	5.7	361.8	3088.3	21.02	30.00	375.0	20.00	0.61
10	TECO Hooker's Pt	HI	6.5	358.0	3091.0	41.33	85.34	419.1	6.10	3.44
11	TECO Hooker's Pt	HI	6.5	358.0	3091.0	41.33	85.34	438.0	5.49	3.44
12	TECO Hooker's Pt	HI	6.5	358.0	3091.0	57.04	85.34	434.1	7.92	3.66
13	TECO Hooker's Pt	HI	6.5	358.0	3091.0	56.95	85.34	421.9	7.32	3.66
14	TECO Hooker's Pt	HI	6.5	358.0	3091.0	84.55	85.34	448.0	10.97	1.42
15	TECO Hooker's Pt	HI	6.5	358.0	3091.0	107.86	85.34	434.1	22.25	2.87
16	TECO Gannon	HI	7.4	360.0	3087.5	760.28	93.27	415.8	28.65	3.05
17	TECO Gannon	HI	7.4	360.0	3087.5	483.59	93.27	419.6	38.40	3.23
18	TECO Gannon	HI	7.4	360.0	3087.5	567.25	93.27	426.9	22.86	3.05
19	TECO Gannon	HI	7.4	360.0	3087.5	690.73	93.27	423.6	23.16	4.45
20	TECO Gannon	HI	7.4	360.0	3087.5	1148.49	93.27	433.0	24.69	5.36
21	TECO Gannon	HI	7.4	360.0	3087.5	1.38	10.67	816.3	136.55	1.52
22	Cargill/Gardinier	HI	11.3	363.4	3082.4	9.60	38.40	328.0	11.56	2.44
23	Cargill Fertilizer	HI	11.3	362.9	3082.5	98.70	45.72	339.7	9.20	2.44
24	Cargill Fertilizer	HI	11.3	362.9	3082.5	54.61	21.34	344.1	11.28	2.74
25	Cargill Fertilizer	HI	11.3	362.9	3082.5	4.01	40.54	315.2	15.24	2.13
26	TECO Big Bend	HI	18.9	361.9	3075.0	9949.35	149.35	404.7	12.80	7.32
27	TECO Big Bend	HI	18.9	361.9	3075.0	654.00	149.35	341.9	17.98	7.32
28	TECO Big Bend	HI	18.9	361.9	3075.0	79.18	22.86	770.8	18.59	4.27
29	TECO Big Bend	HI	18.9	361.9	3075.0	11.30	10.67	816.3	136.20	1.50
30	FPL Bartow	PI	24.2	342.4	3082.6	882.44	91.44	424.7	31.09	2.74
31	FPL Bartow	PI	24.2	342.4	3082.6	729.04	91.44	408.0	34.44	3.35
32	FPL Bartow	PI	24.2	342.4	3082.6	1.81	9.14	541.3	5.18	0.91
33	FPL Bartow	PI	24.2	342.4	3082.6	196.55	13.72	771.9	22.25	5.27
34	FPL Higgins	PI	27.7	336.5	3098.4	322.30	53.00	423.0	7.30	3.80
35	FPL Higgins	PI	27.7	336.5	3098.4	25.20	16.76	727.4	7.47	3.80
36	Cons. Minerals	HI	29.9	393.8	3096.3	27.00	46.33	298.0	12.14	1.77
37	Pinellas RRF	PI	30.3	335.2	3084.1	94.40	49.07	504.7	26.82	2.38
38	CF Ind-Plant City	HI	32.9	388.0	3116.0	19.98	7.62	560.8	17.74	1.07
39	CF Ind-Plant City	HI	32.9	388.0	3116.0	88.28	33.53	316.3	19.69	1.52
40	CF Ind-Plant City	HI	32.9	388.0	3116.0	109.20	60.35	353.0	16.40	2.44
41	CF Ind-Plant City	HI	32.9	388.0	3116.0	2.97	28.65	326.3	7.93	3.05
42	CF Ind-Plant City	HI	32.9	388.0	3116.0	39.57	54.86	313.6	8.18	2.80
43	FPL Bayboro	PI	33.6	338.8	3071.3	197.80	12.20	755.0	6.40	7.00
44	Mobil Nichols	PO	35.5	398.3	3084.3	27.90	25.90	342.0	14.10	2.29
45	IMC New Wales	PO	35.6	396.6	3078.9	315.00	60.70	350.0	15.31	2.60
46	Conserve Nichols	PO	35.6	398.4	3084.2	52.50	45.70	352.0	12.00	2.30
47	Royster, Piney Point	MA	39.4	348.7	3057.3	49.40	60.98	328.0	8.08	2.36
48	FPL Manatee	MA	39.7	367.2	3054.1	1587.60	152.10	425.8	23.61	7.92

49	Royster Mulberry	PO	43.6	406.7	3085.2	36.82	61.00	360.0	12.20	2.13
50	CF Ind-Bartow	PO	45.8	408.5	3082.5	11.90	36.40	339.0	16.11	2.13
51	CF Ind-Bartow	PO	45.8	408.5	3082.5	142.80	63.41	361.0	7.28	2.13
52	Lakeland Larsen	PO	46.2	409.3	3102.8	112.08	50.29	444.1	6.86	3.05
53	Lakeland Larsen	PO	46.2	409.3	3102.8	29.11	30.48	783.2	28.22	5.79
54	W.R. Grace-Seminole	PO	46.4	409.8	3087.0	143.77	60.96	347.0	34.00	1.52
55	Evans Boiler	PA	46.5	383.3	3135.8	28.70	12.20	505.0	11.90	1.00
56	Evans Dryer	PA	46.5	383.3	3135.8	34.00	25.90	346.0	17.30	1.00
57	TECO Polk	PO	46.5	402.5	3067.4	49.68	45.72	400.0	16.76	5.79
58	TECO Polk	PO	46.5	402.5	3067.1	17.64	45.72	389.0	16.15	4.42
59	TECO Polk	PO	46.5	402.5	3066.8	38.82	22.86	785.0	27.43	5.49
60	TECO Polk	PO	46.5	402.3	3067.5	8.20	60.70	1033.0	10.70	1.40
61	Lakeland MacIntosh	PO	46.9	409.2	3106.1	367.24	45.72	402.4	21.29	2.74
62	Lakeland MacIntosh	PO	46.9	409.3	3102.8	500.10	76.20	350.0	19.70	4.88
63	Farmland	PO	47.3	409.5	3080.1	67.16	30.48	355.0	9.27	2.29
64	Farmland	PO	47.3	409.5	3080.1	50.40	45.72	355.0	11.55	2.44
65	Agrico So.Pierce	PO	48.8	407.5	3071.3	130.09	45.73	350.0	39.06	1.60
66	FPC Polk	PO	53.7	414.4	3073.9	49.44	34.40	400.0	40.50	4.10
67	Hardee PS	HA	54.5	404.8	3057.4	277.60	22.90	389.0	23.90	4.88
68	USSAC	PO	57.5	416.1	3068.6	126.00	53.40	355.0	15.91	2.59

APPENDIX J

LETTER FROM DEP TO LAKE ENGINEERING REGARDING BACKGROUND VALUES

Florida Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

March 7, 1994

Mr. Larry Carlson
Lake Engineering, Inc.
Suite 500, 35 Glenlake Parkway
Atlanta, Georgia 30328

Re: Department's Review of Preapplication Modeling Results for Gulf Coast Recycling's PSD Permit Application

Dear Mr. Carlson:

The Department has reviewed your December 29, 1993, letter and the accompanying computer diskettes containing preapplication sulfur dioxide (SO_2) Ambient Air Quality Standards (AAQS) modeling results for Gulf Coast Recycling's PSD permit application. This letters responds to preapplication information only and does not constitute a PSD completeness review. That review begins only after Gulf Coast Recycling submits a PSD application to the Department along with the appropriate processing fee. We are providing the following comments as guidance for submitting the AAQS portion of your PSD application.

1. In order for a modeling analysis to show attainment of the AAQS, you must add a representative background concentration to the modeled concentrations. You did not include this concentration in your analysis. This background concentration should be representative of the overall air quality entering the region and of any sources which were not explicitly modeled (i.e., natural and unidentified sources). Normally, this concentration is a nonzero value and is based on air quality monitoring data collected in the vicinity of a proposed project or source. You have not provided sufficient evidence that this background concentration should be zero. In our November 24, 1993, letter to you responding to your proposed modeling protocol, you were advised to use a background concentration based on an annual average concentration taken from the Davis Island monitor near Gulf Coast Recycling. You were to add this value of 24 ug/m^3 to your modeled impacts for all averaging times. Therefore, the argument that your modeling results indicate that Gulf Coast Recycling does not significantly contribute to modeled exceedances of the SO_2 AAQS in Gulf Coast's impact area is only partially correct. Since the modeling considered only the impacts from Gulf Coast Recycling and other modeled sources, your analysis would not be fully correct until the effects of an added background concentration are included.

2. However, based upon your concern with double counting of source impacts and our review of the modeling information you have provided us, we have reconsidered the background concentration value for this project. In order to minimize double counting of source impacts, we have chosen a background concentration value obtained from another monitor some distance away from Gulf Coast Recycling and most of the sources input into the modeling. This monitor located in the southwestern portion of the county (TECO Big Bend Road SO_2 monitor 1800-021-G02) would less likely be impacted by sources included in the modeling. The background concentration obtained from this monitor is 6 ug/m^3 and is the highest annual average reported during the past three years. You should add this value to the modeled concentrations for all averaging times or else follow the alternative procedure given below.

3. If you believe the background concentration given above is still not representative of an appropriate background concentration for use in Gulf Coast's air quality analysis, you may try to further refine this estimate by using the procedure given in Sections 9.2.2 and 9.2.3 of the "Guideline on Air Quality Models (Revised)" (EPA-450/2/-78-027R), (1986), supplement A (1987) and supplement B (1993) to obtain an alternative background concentration to add to the modeled results.

If you have any further modeling questions, please call Cleve Holladay at 904-488-1344.

Sincerely,

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

CHF/cgh

cc: Jerry Campbell, EPCHC
Bill Thomas, DEP/SWD
Doug Beason, DEP/OGC
John Bunyak, NPS
Joyce Morales-Caramella, GCR

APPENDIX K

CLASS I SO_2 MODELING SOURCE INVENTORY

Emission Inventory for PSD Class 1 Analysis for SO2

County	Facility	UTM East	UTM North	SO2 (g/s)	Height (m)	Temper-ature (K)	Velocity (m/s)	Diameter (m)
Hardee	Hardee Power Station	404.8	3,057.4	92.53	22.90	389.0	23.90	4.88
Hardee	Hardee Power Station	404.8	3,057.3	92.53	22.90	389.0	23.90	4.88
Hardee	Hardee Power Station	404.8	3,057.5	92.53	22.90	389.0	23.90	4.88
Hillsborough	CF Industries	388.0	3,116.0	88.20	33.50	316.0	19.50	1.50
Hillsborough	CF Industries proposed D	388.0	3,116.0	54.60	60.35	353.0	17.77	2.44
Hillsborough	CF Industries proposed C	388.0	3,116.0	54.60	60.35	353.0	17.77	2.44
Hillsborough	CF Industries baseline C	388.0	3,116.0	-50.40	60.35	353.0	16.40	2.44
Hillsborough	CF Industries baseline D	388.0	3,116.0	-50.40	60.35	353.0	16.40	2.44
Hillsborough	CF Industries	388.0	3,116.0	-105.00	18.80	316.0	18.80	1.52
Hillsborough	Cargill Fertilizer (Gardinier) SAP #7	363.4	3,082.4	46.20	45.72	355.0	9.20	2.29
Hillsborough	Cargill Fertilizer (Gardinier) SAP #8	363.4	3,082.4	52.50	45.72	355.0	8.63	2.44
Hillsborough	Cargill Fertilizer (Gardinier) SAP #9	363.4	3,082.4	54.60	45.72	344.0	12.50	2.74
Hillsborough	Cargill Fertilizer (Gardinier) dryer	363.4	3,082.4	-28.89	20.73	310.0	13.12	1.07
Hillsborough	Cargill Fertilizer (Gardinier) SAP #4, 5, 6	363.4	3,082.4	-196.30	22.60	322.0	19.51	1.52
Hillsborough	Cargill Fertilizer (Gardinier) SAP #7	363.4	3,082.4	-50.71	45.72	355.0	9.20	2.29
Hillsborough	TECO Big Bend - Unit 4	361.9	3,075.0	654.70	149.40	342.2	19.81	7.32
Hillsborough	TECO Big Bend - Units 1 & 2	361.9	3,075.0	-2,436.00	149.40	422.0	28.65	7.32
Hillsborough	TECO Big Bend - Unit 3	361.9	3,075.0	-1,218.00	149.40	418.0	14.33	7.32
Hillsborough	Mobil Big-4 boiler (AMAX)	394.8	3,067.7	0.60	8.20	505.0	7.57	0.41
Hillsborough	Mobil Big-4 dryer (AMAX)	394.9	3,069.8	1.90	30.50	334.0	7.26	1.82
Osceola	FPC/Intercession City prop turbines/7 EA	446.3	3,126.0	124.40	15.24	819.8	56.21	4.21
Osceola	FPC/Intercession City prop turbines/7 FA	446.3	3,126.0	110.40	15.24	880.8	32.07	7.04
Pinellas	Pinellas Co Resource Recovery Facility	335.3	3,084.4	62.24	49.10	522.0	27.72	2.74
Polk	Lakeland City Power CT (Larsen)	409.2	3,102.8	29.11	30.48	783.2	28.22	5.79
Polk	Lakeland McIntosh 3	409.5	3,105.8	500.10	76.20	350.0	19.70	4.88

Emission Inventory for PSD Class I Analysis for SO2

County	Facility	UTM East	UTM North	SO2 (g/s)	Height (m)	Temper-ature (K)	Velocity (m/s)	Diameter (m)
Polk	WR Grace/Seminole SAP #3	409.8	3,087.0	143.77	60.96	347.0	34.00	1.52
Polk	WR Grace/Seminole SAP #4	409.8	3,087.0	−40.32	60.96	347.0	25.10	1.52
Polk	WR Grace/Seminole SAP #5	409.8	3,087.0	−40.32	60.96	347.0	25.10	1.52
Polk	WR Grace/Seminole SAP #6	409.8	3,087.0	−40.32	60.96	347.0	25.10	1.52
Polk	WR Grace/Seminole dryer	409.8	3,087.0	−39.66	15.24	327.0	17.32	2.04
Polk	WR Grace/Seminole SAP #1	409.8	3,087.0	−108.00	45.72	352.0	16.50	1.37
Polk	WR Grace/Seminole SAP #2	409.8	3,087.0	−108.00	45.72	352.0	16.50	1.37
Polk	WR Grace/Seminole SAP #3	409.8	3,087.0	−52.50	45.72	311.0	16.70	1.52
Polk	Mobil Mining & Minerals SR 676 #4 dryer	398.3	3,084.3	2.44	25.90	339.0	15.20	2.29
Polk	Mobil Mining & Minerals SR 676 boiler	398.3	3,084.3	−13.89	28.40	340.0	19.24	1.09
Polk	Mobil Mining & Minerals SR 676 boiler	398.3	3,084.3	−0.87	4.00	522.0	1.80	0.80
Polk	Royster #1	406.7	3,085.2	−152.70	51.00	356.0	9.90	2.13
Polk	Royster #2	406.7	3,085.2	35.70	61.00	360.0	12.20	2.13
Polk	US Agri−Chem Hwy 60 dryer	413.2	3,086.3	−3.41	15.80	332.0	10.01	1.83
Polk	US Agri−Chem Hwy 60 SAP	413.2	3,086.3	−42.00	28.96	305.0	7.50	2.12
Polk	US Agri−Chem Hwy 630 H2SO4 1	416.1	3,068.6	63.00	53.40	355.0	15.91	2.59
Polk	US Agri−Chem Hwy 630 H2SO4 2	416.1	3,068.6	63.00	53.40	355.0	15.91	2.59
Polk	US Agri−Chem Hwy 630 H2SO4 X	416.2	3,068.7	−78.80	29.00	314.0	6.77	3.02
Polk	US Agri−Chem Hwy 630 GTSP	416.0	3,069.0	−18.27	28.35	330.0	17.60	1.52
Polk	CF Industries DAP 1−3	408.5	3,082.5	3.97	36.40	339.0	16.11	2.13
Polk	CF Industries H2SO4 5	408.5	3,082.5	50.40	63.41	361.0	10.88	2.13
Polk	CF Industries H2SO4 6	408.5	3,082.5	50.40	63.41	370.0	7.28	2.13
Polk	CF Industries H2SO4 7	408.5	3,082.5	42.00	67.10	351.0	9.80	2.40
Polk	CF Industries H2SO4 1	408.5	3,082.5	−60.90	30.49	350.0	12.20	1.37
Polk	CF Industries H2SO4 2	408.5	3,082.5	−110.25	30.49	350.0	10.37	1.68

Emission Inventory for PSD Class I Analysis for SO2

County	Facility	UTM East	UTM North	SO2 (g/s)	Height (m)	Temperature (K)	Velocity (m/s)	Diameter (m)
Polk	CF Industries H2SO4 3	408.5	3,082.5	−107.10	30.49	364.0	4.27	2.74
Polk	CF Industries H2SO4 4	408.5	3,082.5	−174.83	30.49	358.0	7.93	2.13
Polk	CF Industries H2SO4 5	408.5	3,082.5	−226.80	63.41	358.0	10.67	2.13
Polk	CF Industries H2SO4 6	408.5	3,082.5	−170.10	63.41	359.0	10.37	2.13
Polk	Farmland Industries 3, 4 H2SO4	409.5	3,079.5	67.16	30.48	355.0	9.27	2.29
Polk	Farmland Industries 5 H2SO4	409.5	3,079.5	41.96	45.72	355.0	9.65	2.44
Polk	Farmland Industries 1, 2 H2SO4	409.5	3,079.5	−83.98	30.48	311.0	20.18	1.37
Polk	Agrico Pierce dryers 1, 2	404.1	3,079.0	−24.32	24.38	339.0	12.94	1.52
Polk	Agrico Pierce dryers 3, 4	404.1	3,079.0	−23.00	24.38	339.0	18.82	2.43
Polk	Agrico South Pierce H2SO4	407.5	3,071.3	−75.60	45.73	350.0	26.40	1.60
Polk	Agrico South Pierce H2SO4	407.5	3,071.3	113.50	45.73	350.0	39.06	1.60
Polk	Agrico South Pierce DAP plant	407.5	3,071.3	4.41	38.10	328.0	14.60	3.10
Polk	Conserve Inc. rock dryer	398.4	3,084.2	−3.88	24.40	339.0	12.90	1.52
Polk	Conserve Inc.	398.4	3,084.2	42.00	45.70	352.0	10.30	2.30
Polk	Conserve Inc.	398.4	3,084.2	−54.60	30.50	308.0	18.90	1.80
Polk	IMC New Wales DAP	396.6	3,078.9	5.54	36.60	319.1	20.15	1.83
Polk	IMC New Wales multiphos	396.6	3,078.9	4.80	52.40	314.0	15.80	1.40
Polk	IMC New Wales SAP #1, 2, 3 projected	396.6	3,078.9	189.00	61.00	350.0	15.31	2.60
Polk	IMC New Wales SAP #4, 5 projected	396.6	3,078.9	126.00	60.70	350.0	15.31	2.60
Polk	IMC New Wales rock dryer	396.6	3,078.9	−34.27	21.00	347.0	18.60	2.13
Polk	IMC New Wales SAP #1, 2, 3 baseline	396.6	3,078.9	−146.00	61.00	350.0	14.28	2.60
Polk	IMC New Wales AFI Plant	396.6	3,078.9	0.20	52.40	322.0	13.10	2.40
Polk	Mobil−Electrophos boiler	405.6	3,079.4	−6.53	7.32	464.0	3.23	0.91
Polk	Mobil−Electrophos boiler	405.6	3,079.4	−10.05	6.10	464.0	7.71	0.91
Polk	Mobil−Electrophos rock dryer	405.6	3,079.4	−21.81	18.29	350.0	6.79	1.83

County	Facility	UTM East	UTM North	SO2 (g/s)	Height (m)	Temperature (K)	Velocity (m/s)	Diameter (m)
Polk	Mobil-Electrophos calciner	405.6	3,079.4	-7.11	25.61	306.0	6.97	2.13
Polk	Mobil-Electrophos coke dryer	405.6	3,079.4	-3.17	18.29	322.0	22.87	0.70
Polk	Mobil-Electrophos furnace	405.6	3,079.4	-47.25	29.27	314.0	8.52	2.13
Polk	Auburndale Cogeneration	420.8	3,103.3	6.35	48.80	411.0	14.30	5.49
Hillsborough	Hillsborough Co Resource Recovery Facility	368.2	3,092.7	21.40	50.00	491.0	18.30	1.80
Pasco	Proposed Pasco Co Cogeneration Facility	385.6	3,139.0	5.04	30.48	384.3	17.13	3.35
Polk	Ridge Cogeneration	416.7	3,100.4	13.80	99.10	350.0	14.54	3.05
Hillsborough	Tampa City McKay Bay Refuse-to-Energy	360.0	3,091.9	21.42	45.70	449.7	21.30	1.34
Hernando	Asphalt Pavers No. 3	359.9	3,162.4	2.25	12.20	377.0	10.58	1.37
Hernando	Asphalt Pavers No. 4	361.4	3,168.4	1.76	8.50	357.4	10.95	1.08
Hillsborough	CLM Chl	361.8	3,088.3	21.02	30.00	375.0	20.00	0.61
Pasco	Couch Construction - Odessa (asphalt)	340.7	3,119.5	7.25	9.14	436.0	22.30	1.40
Pasco	Couch Construction - Zephyrhills (asphalt)	390.3	3,129.4	3.54	6.10	422.0	21.00	1.38
Pasco	Dris Paving (Asphalt)	340.6	3,119.2	0.23	12.20	339.0	6.47	3.05
Hernando	ER Jahna (lime dryer)	386.7	3,155.8	0.82	10.67	327.0	8.99	1.83
Pasco	Evans Packing	383.3	3,135.8	0.20	12.30	466.2	9.20	0.40
Hernando	FDOC boiler #3	382.2	3,166.1	2.99	9.14	478.0	4.57	0.61
Hernando	Florida Mining & Materials kiln 2	356.2	3,169.9	1.45	32.01	394.2	9.90	4.27
Hernando	Florida Crushed Stone kiln 1	360.0	3,162.4	98.40	97.60	442.0	23.23	4.88
Citrus	Crystal River 4	334.2	3,204.5	1,008.80	182.90	398.0	21.00	6.90
Citrus	Crystal River 5	334.2	3,204.5	1,008.80	182.90	398.0	21.00	6.90
Citrus	Crystal River 1	334.2	3,204.5	-314.00	152.00	422.0	42.10	4.57
Citrus	Crystal River 2	334.2	3,204.5	-1,859.00	153.00	422.0	42.10	4.88
Volusia	FPC/DeBary prop turbines	465.7	3,197.2	466.40	15.24	819.8	56.21	4.21
Pinellas	Hospital Corp of AM boiler #1	333.4	3,141.0	0.08	10.98	533.0	4.00	0.31
Hillsborough	Couch Construction	362.1	3,096.7	2.14	12.50	449.7	20.12	1.25

Emission Inventory for PSD Class 1 Analysis for SO2

County	Facility	UTM East	UTM North	SO2 (g/s)	Height (m)	Temper-ature (K)	Velocity (m/s)	Diameter (m)
Pinellas	Hospital Corp of AM boiler #2	333.4	3,141.0	0.08	10.98	533.0	4.00	0.31
Osceola	Kissimmee Util Exist	460.1	3,129.3	32.10	18.30	422.0	38.00	3.66
Lake	Proposed Lake Co Cogeneration Facility	434.0	3,198.8	5.04	30.48	384.3	17.13	3.35
Pasco	New Port Richey Hospital boiler #1	331.2	3,124.5	0.06	10.98	544.0	3.88	0.31
Pasco	New Port Richey Hospital boiler #2	331.2	3,124.5	0.03	10.98	544.0	3.88	0.31
Hernando	Oman Construction (Asphalt)	359.8	3,164.9	2.09	7.62	347.0	6.29	1.83
Orange	Orlando Util Stanton 1	483.5	3,150.6	601.00	167.60	325.7	21.60	5.80
Orange	Orlando Util Stanton 2	483.5	3,150.6	91.80	167.60	324.2	23.50	5.80
Pasco	Overstreet Paving (Asphalt)	355.9	3,143.7	3.67	9.14	408.0	16.00	1.30
Pasco	Pasco County Resource Recovery Facility	347.1	3,139.2	14.10	83.82	394.3	15.70	3.05
Hillsborough	Borden dryer	394.6	3,069.6	−6.48	30.48	344.0	14.79	1.82
Polk	Borden dryer	414.5	3,109.0	−5.29	17.07	333.0	8.26	2.34
Polk	Brewster Imperial dryer	404.8	3,069.5	−19.26	27.44	339.0	15.25	2.29
Polk	Dolime dryer	404.8	3,069.5	−5.68	27.43	333.0	20.67	1.52
Polk	Dolime boiler	404.8	3,069.5	−4.52	27.43	494.1	7.25	0.61
Polk	Estech/Swift dryer	411.5	3,074.2	−23.94	18.29	339.0	8.47	2.95
Polk	Estech/Swift dryer	411.5	3,074.2	−22.80	18.75	340.0	5.06	2.95
Polk	Estech/Swift SAP	411.5	3,074.2	−92.87	30.79	358.0	3.90	2.13
Hillsborough	Gen. Port Cement kiln 4	358.0	3,090.6	−62.99	35.97	505.2	17.61	2.74
Hillsborough	Gen. Port. Cement kiln 5	358.0	3,090.6	−69.30	45.42	494.1	5.80	3.81
Hillsborough	Stauffer boiler	325.6	3,116.7	−4.86	7.32	464.0	3.23	0.91
Hillsborough	Stauffer dryer	325.6	3,116.7	−1.50	18.29	322.0	22.87	0.70
Hillsborough	Stauffer furnace	325.6	3,116.7	−50.93	49.00	335.0	3.60	1.20
Hillsborough	Stauffer kiln	325.6	3,116.7	−7.36	25.61	306.0	6.97	2.13
Hillsborough	Stauffer roaster	325.6	3,116.7	−0.45	25.61	322.0	6.97	0.91

County	Facility	UTM East	UTM North	SO2 (g/s)	Height (m)	Temperature (K)	Velocity (m/s)	Diameter (m)
Highlands	TECO Sebring Airport	464.3	3,035.4	55.62	45.72	441.3	24.17	1.83
Highlands	TECO Sebring Airport	464.3	3,035.4	55.62	45.72	449.7	24.35	1.83
Osceola	Kissimmee Cane Island	447.7	3,127.9	29.40	12.20	654.0	29.10	3.05
Polk	FPC Polk	414.4	3,073.9	12.36	34.40	400.0	40.50	4.10
Polk	FPC Polk	414.4	3,073.9	12.36	34.40	400.0	40.50	4.10
Polk	FPC Polk	414.4	3,073.9	12.36	34.40	400.0	40.50	4.10
Polk	FPC Polk	414.4	3,073.9	12.36	34.40	400.0	40.50	4.10
Polk	TECO Polk	402.5	3,067.4	49.68	45.72	400.0	16.76	5.79
Polk	TECO Polk	402.5	3,067.4	17.64	45.72	389.0	16.15	4.42
Polk	TECO Polk	402.5	3,067.4	38.82	22.86	785.0	27.43	5.49
Polk	TECO Polk	402.5	3,067.4	8.20	60.70	1033.0	10.70	1.40

ATTACHMENT 2

PSD Class I
Receptors
Chassahowitzka

UTME (km)	UTMW (km)
340.3	3165.7
340.3	3167.7
340.3	3169.8
340.7	3171.9
342.0	3174.0
343.0	3176.2
343.7	3178.3
342.4	3180.6
341.1	3183.4
339.0	3183.4
336.5	3183.4
334.0	3183.4
331.5	3183.4

APPENDIX L

CLASS I MODELING SUMMARY