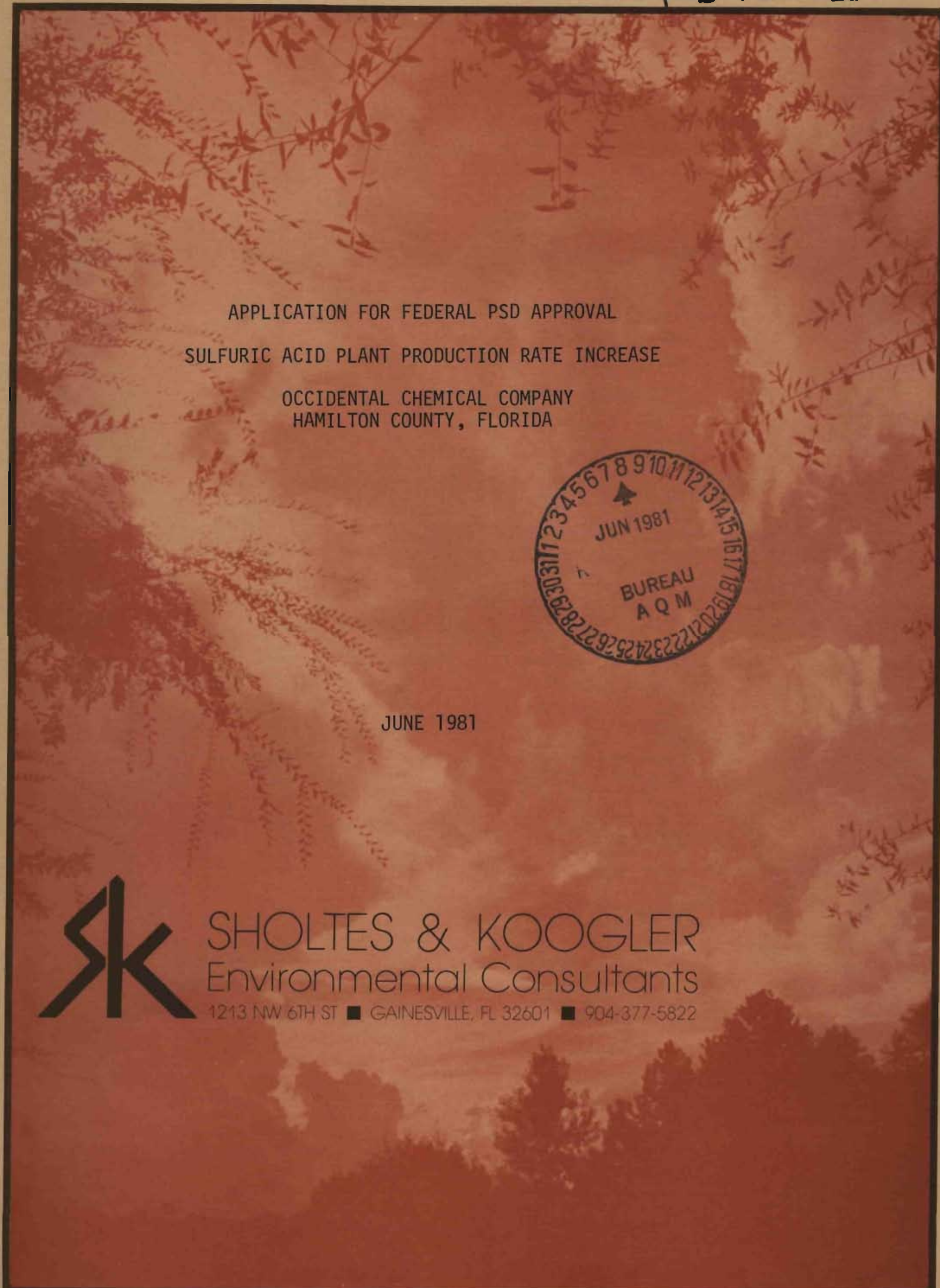
PSD-FL-082



APPLICATION FOR FEDERAL PSD APPROVAL

SULFURIC ACID PLANT PRODUCTION RATE INCREASE

OCCIDENTAL CHEMICAL COMPANY
HAMILTON COUNTY, FLORIDA

JUNE 1981

SHOLTES & KOOGLER
Environmental Consultants
1213 NW 6TH ST ■ GAINESVILLE, FL 32601 ■ 904-377-5822

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SHOLTES SK KOOGLER

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1.0 INTRODUCTION

The Occidental Chemical Company (Occidental) is a member of the Agricultural Products Group of the Hooker Chemical Corporation, a subsidiary of Occidental Petroleum Corporation.

The Florida operation of Occidental, located in Hamilton County, north of White Springs, Florida, is one of many fertilizer grade phosphate rock processing complexes in the State of Florida. Occidental is the only company, however, presently mining and processing phosphate in northern Florida. The operation which began in 1964 is situated on reserves encompassing an area of approximately 144,000 acres. There are two mines and two chemical complexes operated by Occidental; the Swift Creek and Suwannee River Mines and the Swift Creek and Suwannee River Chemical Complexes.

Occidental proposes two changes at the Swift Creek Chemical Complex (SCCC) that will trigger Federal PSD review. Occidental proposes to increase the production rate of sulfuric acid at the SCCC by taking advantage of excess capacity built into the two existing sulfuric acid plants and support facilities and to increase the sulfur content of the fuel oil used to fire the sulfuric acid plant auxillary boiler. These modifications will result in an increase in sulfur dioxide emissions at the SCCC in excess of 40 tons per year and an increase in sulfuric acid mist emissions in excess of seven tons per year; the de minimus levels for these pollutants as defined in 40 CFR 52.21. Emission rate increases of other regulated pollutants (nitrogen oxides, particulate matter, hydrocarbons and carbon monoxide will not exceed de minimus levels established in 40 CFR 52.21.

As stated, the production increases proposed by Occidental are permitted increases only designed to take advantage of excess capacity built into existing sulfuric acid plants. There will be no physical changes made to either of the plants. Likewise, the change in boiler fuel will result in no physical changes to the boiler.

The proposed increase in the sulfuric acid plant production rates are necessary to give Occidental the flexibility of operating the two sulfuric acid plants at higher rated capacities for short periods of time. The calculated increases in potential emissions, however, are based upon the units operating at the increased rates 8,760 hours per year. The proposed change in fuel oil sulfur content is to provide Occidental with a more reliable supply of oil at a more competitive price. The boiler is assumed to operate 8,540 per year.

Consistent with the requirements of 40 CFR 52.21, the following sections of the application include a description of the existing facilities and a description of the proposed project; a review of Best Available Control Technology (BACT) for sulfur dioxide and sulfuric acid mist; an air quality review for sulfur dioxide and sulfuric acid mist and a review of the secondary impacts of the proposed project.

2.0 PLANT DESCRIPTION

Occidental is the only company presently mining and processing phosphate in northern Florida. The operation which begain in 1964 is situated on reserves encompassing an area of approximately 144,000 acres. There are two mines and two chemical complexes; the Swift Creek and Suwannee River Mines and the Swift Creek and Suwannee River Chemical Complexes (Figures 2-1 and 2-2).

2.1 Description of Existing Facilities

The Suwannee River Mine started in 1964 and the Swift Creek Mine in December 1975. Each mine has the capacity to produce about 2.5 million tons of phosphate rock concentrate per year.

The mining and recovery of phosphate is a process of removing phosphate ore (matrix) from the ground by draglines and transporting it hydraulically to the beneficiation plants where the clays (approximately 23 percent) and sand (approximately 57 percent) are screened and removed. The remaining (approximately 20 percent) phosphate concentrate is stored above ground and graded according to the quality of the material.

The Suwannee River Chemical Complex (SRCC) started in 1966 and was expanded in 1975. This operation uses approximately two-thirds of the Suwannee River Mine production for the chemical upgrading into products for agriculture; chiefly high-analysis fertilizers. The chemical processing is necessary to convert the phosphate into a form that is available to plant life.

Wet phosphate rock is carried to the SRCC by conveyor and reacted with sulfuric acid, filtered to remove a calcium sulfate (gypsum) by-product, and evaporated to form a concentrated phosphoric acid. This material is sold as a "merchant grade" phosphoric acid or is further process to a granular, high-analysis fertilizer called triplesuperphosphate (TSP). Another product is produced by the reaction of ammonia with the phosphoric acid followed by granulation. This product is diammonium phosphate (DAP). A third granular product is produced by a process that calcines phosphate rock into a form suitable for use as an animal feed supplement.

Superphosphoric acid (SPA) plants and ancillary facilities provide for diversion of part of the phosphoric acid capacity to SPA. These facilities; equipment for acid clarification, concentration, storage and loading were completed in late 1978.

The Swift Creek Chemical Complex (SCCC) was started in late 1979 under PSD Approval granted in February, 1978. This facility was originally capable of producing and shipping 511,000 tons per year of P_2O_5 as SPA. The SPA contains 68-70 percent P_2O_5, with 25-40 percent conversion of total P_2O_5 to polyphosphates. This product is used to produce stable solutions of balanced liquid fertilizers near the user. In September, 1980, Occidental received EPA and FDER approval to increase the phosphoric acid and SPA capacities of the SCCC to 620,500 tons and 711,000 tons P_2O_5 per year, respectively. These rate increases affected fluoride emissions only.

Process units and related facilities at the SCCC include:

- Conveying of wet phosphate rock between the existing mine and the Chemical Complex (SCCC),
- Manufacture of sulfuric acid,
- Manufacture of phosphoric acid from sulfuric acid and phosphate rock,
- Clarification of phosphoric acid,
- Evaporation of phosphoric acid to SPA, and
- Storage, loading and shipping of SPA.

This complex presently is capable of producing 4,000 short tons per day of sulfuric acid as an intermediate product in the production phosphoric acid and SPA. Because of the production rate increase approved for the phosphoric acid and SPA facilities in 1980, Occidental now require additional sulfuric acid at the SCCC. This acid could be obtained from 1) the open market, 2) the SRCC at the expense of causing a sulfuric acid shortage at SRCC, or 3) by utilizing excess capacity built into the two sulfuric acid plants at the SCCC. Occidental has chosen the third alternative.

The SCCC is self-contained for sewage treatment, fire protection, potable water, storm drainage and garbage disposal. Process water is contained in a pond system designed, constructed, and operated to maintain a surge capacity equal to the runoff from the 25-year, 24-hour rainfall event. When chronic or catastrophic precipitation cause the water level to equal or exceed the midpoint of the surge capacity, process waters are treated at a neutralization station to meet U.S. Environmental Protection Agency guidelines and discharged.

The two chemical complexes are 5.5 miles apart (Figure 2-2) and are considered by EPA to be two separate facilities (See Appendix 2-1). All of the existing facilities at both the SRCC and the SCCC meet applicable State and Federal Air Pollution emission standards and all have been constructed under conditions set forth in applicable State and Federal air pollution source construction permits.

2.2 Description of Proposed Projects

In February, 1978, Occidental received State of Florida Air Pollution Source Construction Permits for the two 2,000 tons per day sulfuric acid plants at the SCCC. Also in February, 1978, Federal PSD approval was granted for the two sulfuric acid plants, pursuant to the 1975 PSD regulations. These were the regulations in effect at the time Occidental submitted a complete application for Federal PSD approval in November, 1977.

The two plants have been constructed and were certified to be in compliance with Federal New Source Performance Standards. At this time, Occidental is proposing to increase the production capacity of the two plants from 2,000 tons per day to 2,500 tons per day each of 100 percent sulfuric acid. This production rate increase will by accomplished by taking advantage of excess capacity designed into the sulfuric acid plants. No physical changes or modifications to the plants, as originally proposed, will be required to achieve the increases in production rate. Not True

In the following paragraphs the sulfuric acid plants are described. Information used in establishing control system performance is further discussed in Section 3.0; Best Available Control Technology.

As permitted under final PSD approval granted in February, 1978, an auxillary boiler rated at 125,000 pounds of steam per hour and two SPA heaters (boilers) each rated at 75,000 pounds of steam per hour were to be constructed at the SCCC. The auxillary boiler was expected to operate annually about 25 percent of the time and the two SPA evaporators were expected to operated about 80 percent of the time.

Instead of constructing all three boilers Occidental elected to install only the auxillary boiler and to operate it with an annual operating factor of about 93 percent. This resulted in no increase in pollutant emission rates (See Attachment #2 to "E" Boiler Application in Appendix 2-1).

The present proposed modifications to the "E" auxillary boiler will result in a change to fuel oil with 1.5 percent sulfur and an increase in the annual operating factor to 97.5 percent.

2.2.1 Sulfuric Acid Plants

The proposed project calls for increasing the production capacity of the two SCCC sulfuric acid plants from 2,000 tons per day each, to 2,500 tons per day each of 100 percent sulfuric acid. Construction approval for the two plants was granted by the Florida Department of Environmental Regulation in February 1978 and by EPA also in February 1978 (See Appendix 2-3). Both construction approvals were based on a production rate of 2,000 tons per day of 100 percent sulfuric acid by each plant.

The proposed production rate increase will be accomplished by taking advantage of excess capacity built into the two plants. No physical modifications will be required to the plants as they were proposed in State and Federal Construction Permit applications.

NOT TRUE

With the increased production rate, each plant will have a rated hourly production capacity of 104.2 tons per hour of 100 percent sulfuric acid. The plants will be scheduled to operate at 8760 hours per year. The annual production rate of the two plants will be 1.82 million tons per year of 100 percent sulfuric acid. This compares with a currently permitted production rate for the two plants of approximately 1.4 millions tons per year of 100 percent sulfuric acid.

Air pollutants emitted from the sulfuric acid plants will be sulfur dioxide, sulfuric acid mist, nitrogen oxides, and carbon monoxide. The nitrogen oxides, and carbon monoxide emitted from the plants are formed during the combustion of sulfur in the sulfur furnace. (The carbon monoxide results from the combustion of the 0.25 percent carbon contained in the sulfur). The emission rates of both nitrogen oxides and carbon monoxide are less than the de minimus levels defined in 40 CFR 52.21, hence, these pollutants are not subject to current Federal PSD regulations (See Table 2-1).

The sulfur dioxide and sulfuric acid mist emitted from the plant will exceed the de minimus levels established by 40 CFR 52.21. Because of this, these two pollutants will be subject to Best Available Control Technology (BACT) and to an air quality review. The two sulfuric acid plants were permitted by both FDER and EPA to operate at sulfur dioxide and sulfuric acid mist emission rates established by Federal New Source

Performance Standards. These standards require that sulfur dioxide emissions be limited to 4.0 pounds per tons of 100 percent acid and that acid mist emissions be limited to 0.15 pounds per tons of acid. The two plants have been tested and certified to operated in accordance to these emission limiting standards.

There were no requirements for nitrogen oxides or carbon monoxide emissions in either the State of Federal construction or generating permits.

It is proposed that BACT for sulfur dioxide by the use of two absorption towers and that BACT for sulfuric acid mist be the use of Brink HV mist eliminators. These control technologies will result in compliance with NSPS for sulfuric acid plants and be consistent with recent FDER and Federal BACT determinations.

Cooling water for the sulfuric acid plants will continue to be handled in the existing cooling water system. The proposed production rate increase will not result in a change in the cooling water system, hence there will be no affect on ambient air quality or air pollutant emissions into the ambient air from the cooling water system.

Preliminary design and engineering information for the proposed sulfuric acid plant rate increases is presented in Appendix 2-2.

The rate increases proposed for the two SCCC sulfuric acid plants, will not result in point source pollutant emission rate increase except as described above. The production rate increase will however, require an additional 330 tons per day of molten sulfur at the chemical complex. This is turn, will increase rail traffic to the facility by approximately 3.3 rail cars per day. These can be transported by existing locomotives and will therefore not result in additional mobile source emissions.

The sulfuric acid production rate will also increase the amount of product the complex is capable of producing (within existing permit limitations). This will in turn, increase product shipments from the facility. This increase in production capacity will result in an additional 17 equivalent truck round-trips from the chemical complex per day.

The air pollutant emission rate increases resulting from the proposed sulfuric acid plant production rate increases are summarized in Table 2-1. Also presented in this table are the de minimus levels defined in Table 2-CFR 52.21; emission level increases below which pollutants are not subject to Federal PSD requirements.

2.2.2 Auxillary Boiler "E"

The proposed modification calls for changing the fuel oil used for firing the "E" Auxillary Boiler from No. 6 fuel oil with 0.8 percent sulfur to No. 6 fuel oil with 1.5 percent sulfur. The modification further calls increasing the annual operating factor from the "E" boiler from 93 percent to 97.5 percent.

The boiler was permitted under final PSD approval granted by EPA in February, 1978 (See Appendix 2-3). In this final determination EPA gave approval to construct the boiler and to operate the boiler with a particulate matter emission rate of 0.1 pounds per million Btu heat input and a sulfur dioxide emission rate of 0.8 pounds per million Btu heat input. In information submitted with the PSD Application it was stated that the annual operating factor for the boiler would be approximately 25 percent and that the heat input to the boiler would be 125 million Btu per hour.

Also permitted under the same PSD approval were two SPA heaters. These heaters are boilers each with a steam production capacity of 75,000 pounds per hour. The particulate matter and sulfur dioxide emission rates approved for these boilers by EPA was identical to the emission rates approved for the "E" Auxillary Boiler. Information submitted with the PSD Application for these boilers indicated an annual operating factor of 80 percent and a heat input into each boiler of 75 million Btu per hour.

During the construction of the SCCC, Occidental decided to construct only the "E" Auxillary Boiler and to operate it with an operating factor greater than 25 percent rather than to construct the two SPA heaters. The annual operating factor for the "E" Auxillary Boiler is approximately 93 percent. This modification in construction plans and the rate of operation for Auxillary Boiler "E" resulted in emission rates of several pollutants which were less than the emission rates approved in the final PSD approval. These emissions are summarized in Attachment #2 to the "E" Boiler Permit Application which is contain in Appendix 2-2.

The emission rates that will result from the proposed modifications, that is the change in fuel and the increase in annual operating factor, over the current existing emission rates are summarized in Table 2-1. The calculations performed in arriving at this summary are contained in

Appendix 2-2. The summary in Table 2-1 shows that the sulfur dioxide emissions will increase by 596 tons per year and that the emission rates of other pollutants, when combined with emission rate increases from the two sulfuric acid plants, will not exceed the de minimus levels defined in 40 CFR 52.21.

The preliminary design and engineering information for the proposed change in the "E" Auxillary Boiler is presented in Appendix 2-2. The modifications proposed for the boiler will not result in pollutant emission rates except as described as above. There will be no significant increase in fugitive or secondary emissions resulting from the modification to the boiler since only the type of fuel will change and not the quantity (except for the amount of fuel necessary to increase the annual operating factor from 93 to 97.5 percent). The increase in quantity will result in one additional fuel truck every seven days).

The air pollutant emission rate increases resulting from the boiler modification and the sulfuric acid plant modifications are summarized in Table 2-2. This summary shows that only the sulfur dioxide and sulfuric acid mist emission rate increases exceed the de minimus levels. The emission rates increases for particulate matter, nitrogen oxide, carbon monoxide and hydrocarbons are below the de minimus levels established for these pollutants.

TABLE 2-1

NEW SOURCE EMISSION SUMMARY

OCCIDENTAL CHEMICAL COMPANY
HAMILTON COUNTY, FLORIDA

Source	Annual Pollutant Emission Rate Increase(1) (tons/year)					
	SO_2	Part. Matter	Mist	NO_x	CO	Hydrocarbons
E H_2SO_4	365	0	13	13	<1	0
F H_2SO_4	365	0	13	13	<1	0
"E" Boiler	586	18	0	13	2	1
Fugitive Emissions(2)	0	<1	0	<1	1	<1
Total	1316	18	26	39	3	1
De minimus Rates(3)	40	25	7	40	100	40

(1) These emission rate increases will result from increasing the production capacity of the "E" and "E" sulfuric acid plants from 2,000 TPD to 2,500 TPD each and from increasing the sulfur content of the fuel to the "E" auxillary boiler to 1.5 percent.

(2) Vehicle Traffic.

(3) 40 CFR 52.21.

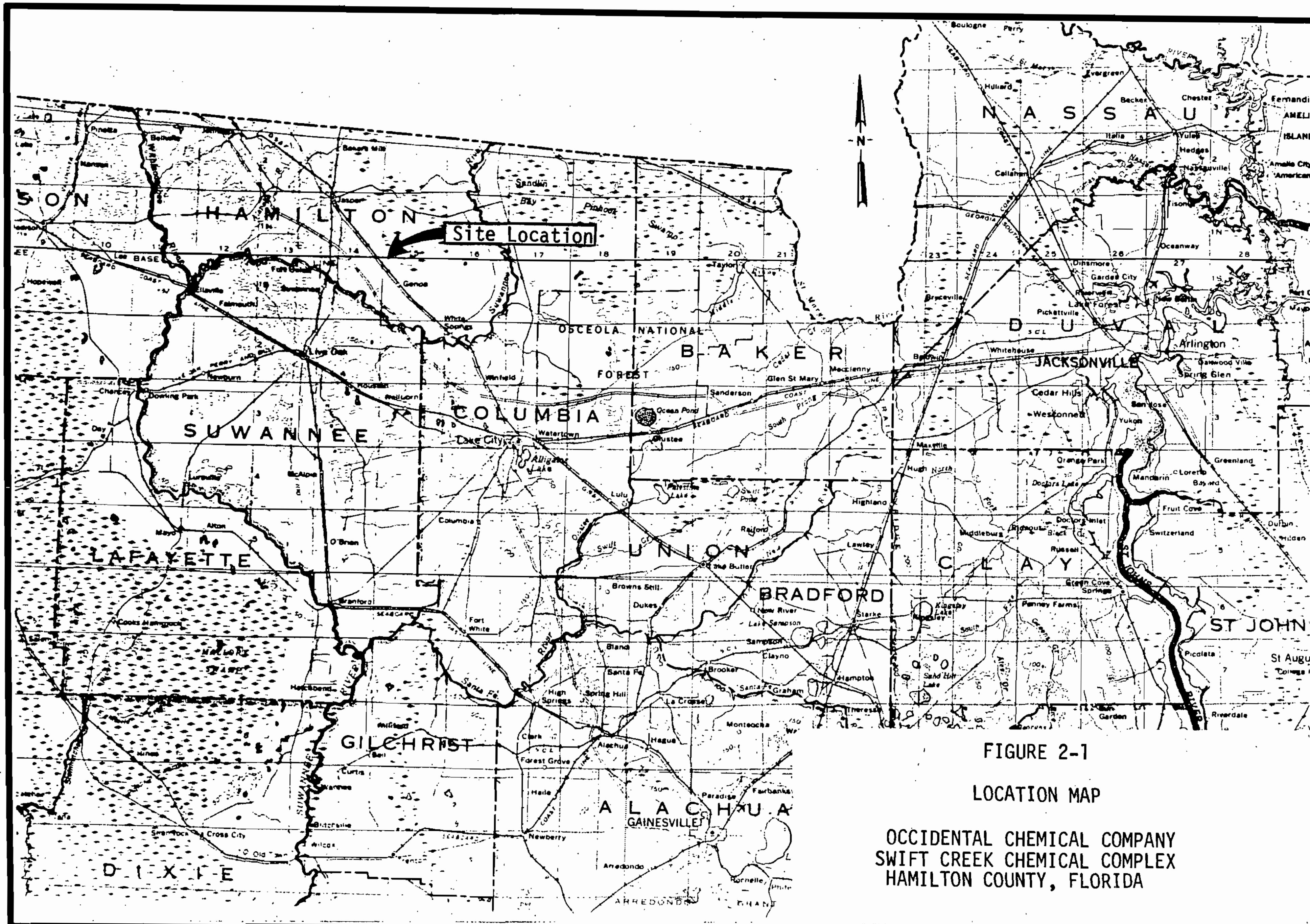

FIGURE 2-1

LOCATION MAP

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

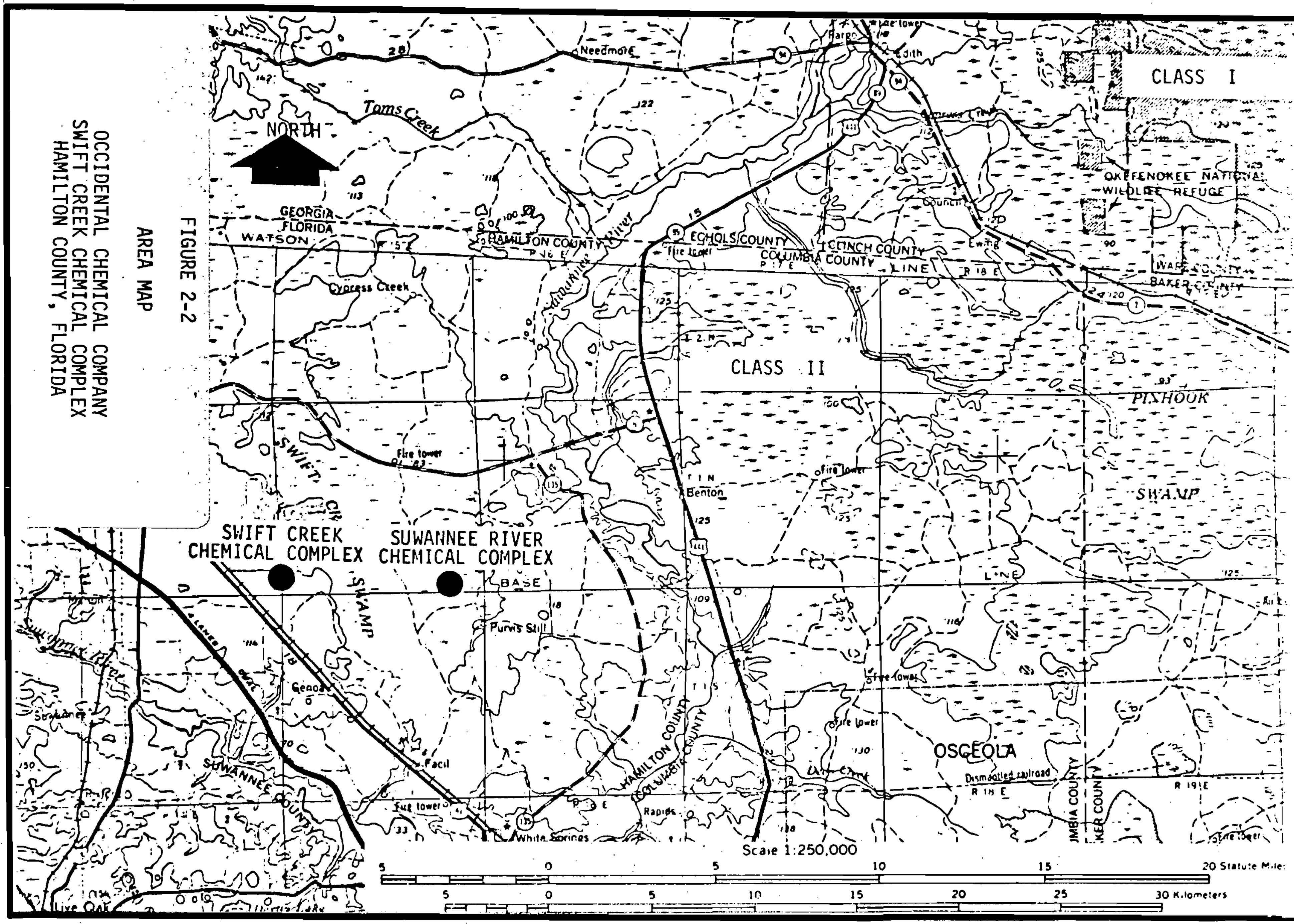

FIGURE 2-2

AREA MAP

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

APPENDIX 2-1

OCCIDENTAL/EPA CORRESPONDENCE

OXY

OCCIDENTAL CHEMICAL COMPANY, FLORIDA OPERATIONS, Post Office Box 300, White Springs, Florida 32096, Telephone 904 397-8101

March 14, 1980

Tommie A. Gibbs, Chief
Air Facilities Branch
United States Environmental
Protection Agency
Region IV
345 Courtland Street
Atlanta, GA 30308

Re: Occidental Chemical Company
White Springs Operations

Dear Mr. Gibbs:

On November 1, 1979, representatives of Occidental met with you, William Rhea and Michael Brandon of the Air Facilities Branch. We discussed the applicability of federal PSD review, under the June 19, 1978 regulations, to the Swift Creek and Suwannee River Chemical Complexes as a result of changes in the Florida air permits for those facilities.

As you will recall, the permits issued by the State of Florida, Department of Environmental Regulation for the facilities in question had been amended on October 29, 1979, to reflect an increased allowable daily instantaneous production rate. Although this increase in the allowable maximum production rate did not result in any physical change to the facilities and would result in only an insignificant or no net increases in actual emissions during the course of the year, Occidental was concerned about the applicability of federal PSD review to these permit changes.

After the discussions with you on November 1, 1979, we received a letter which confirmed that the Swift Creek and Suwannee River Chemical Complexes would be treated as two separate sources for the purpose of PSD applicability determinations. The result of this determination by EPA is that under the regulations then in effect, PSD review would not be applicable unless the permit changes constituted "modifications" and resulted in an increase in each respective sources' potential to emit of more than 100 tons per year of any regulated pollutant. Of course, "potential to emit" is to be calculated on the basis of uncontrolled emissions.

We believe that these permit changes do not constitute "modifications" under the definitions contained in the PSD regulations. However, to assure that Occidental would comply with all applicable regulatory requirements, the consulting firm of Sholtes & Koogler was retained to perform an analysis on the facilities to determine whether the 100 tons per year threshold would be exceeded.

I have attached a copy of the summary of the potential (uncontrolled) and actual emissions increases which will result from these state permit changes. The only pollutant affected is fluoride. As you can see, the annual increases in uncontrolled emissions of fluoride expected at the Suwannee River Chemical Complex will be approximately 72.2 tons per year. At the Swift Creek Chemical Complex the expected annual increase in uncontrolled fluoride emissions will be approximately 71.8 tons per year. Since this is well below the 100 tons per year threshold, we have concluded that PSD review at the federal level does not apply even if the permit change is considered a "modification." However, we felt it appropriate to advise you in writing of the conclusions reached by our consultant since this matter had been discussed with you and your staff.

Should you have any questions concerning this matter or require further information, please do not hesitate to contact me at your convenience.

Sincerely,

OCCIDENTAL CHEMICAL COMPANY

W. W. Atwood
Environmental Coordinator

WWA/sc
Enclosure

cc: Mr. R. E. McNeil, Manager Environmental, Safety & Hygiene, White Springs
Mr. Lawrence N. Curtin, Holland & Knight
Mr. Russell A. Bowman, Manager, Environmental, Safety & Hygiene, Houston
Mr. M. P. McArthur, General Manager
Mr. Johnny Cole, Air Engineer, FDER
Dr. John B. Koogler, Sholtes & Koogler Environmental Consultants

APPENDIX 2-2

SOURCE DATA FOR
SULFURIC ACID PLANTS
AND
AUXILLARY BOILER "E"

FOR INFORMATION ONLY:

APPLICATION FOR BOTH ACID PLANTS WILL BE THE SAME.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Sulfuric Acid Production [ ] New[1] [X] Existing[1]

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

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Sulfuric Acid Plant "E"

SOURCE LOCATION: Street U.S. 41 City White Springs

UTM: East 7,320,860 North 3,369,750

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office Box 300, White Springs, FL 32096

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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

*Attach letter of authorization

Signed: ____

M.P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: ____ Telephone No. (904) 397-8101

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 have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that 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: ____

John B. Koogler, Ph.D., P.E.
Name (Please Type)

(Affix Seal)

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW. 6th Street, Gainesville, FL 32608
Mailing Address (Please Type)

Florida Registration No. 12925 Date: ____ Telephone No. (904) 377-5822

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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.

Sulfur burning sulfuric acid plant is vented through an SO_2 - SO_3 converter, a double absorption tower and demister for product recovery and sulfur dioxide and sulfuric acid mist emission control. Plants are currently permitted to generate at a rate of 2000 TPD of 100% H_2SO_4. Proposed production rate is 2500 TPD.

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

Start of Construction N/A Completion of Construction date of PSD approval

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.)

Cost of pollution control system (second absorption tower and mist eliminators) will not be affected by the proposed rate increases. There will be no physical change to the plant.

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

Unit was previously permitted under FDER No. Ac-24-2715 issued February 28, 1978 and expiring December 31, 1980.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? X Yes ___ No

F. Normal equipment operating time: hrs/day 24; days/wk 7; wks/yr 52; if power plant, hrs/yr ___;

if seasonal, describe: ___

G. 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? No
   a. If yes, has "offset" been applied? --
   b. If yes, has "Lowest Achievable Emission Rate" been applied? --
   c. If yes, list non-attainment pollutants. ___
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) requirements 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

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

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Sulfur	Ash	App. 0.25%	70,000	A
				(Attachment #2)

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

1. Total Process Input Rate (lbs/hr): 70,000 lb/hr Sulfur
2. Product Weight (lbs/hr): 208,333 lb/hr 100% H_2SO_4

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1] *		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Sulfur Dioxide	416.7	18255	NSPS	416.7	416.7	1825	B
H_2SO_4 Mist	15.6	68.3	NSPS	15.6	15.6	683	B
NO_x	14.8	64.8	BACT	14.8	14.8	14.8	B
CO	0.1	0.5	BACT	0.1	0.1	0.5	B
*See Page 3A for emission rate increases.							

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]
Double Absorption	SO_2	99.7%	---	Design & Test
Contact H_2SO_4 Monsanto				
Plant				
Brink Demister in	H_2SO_4	90 + %		Vendor
exit of absorber				

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 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]If Applicable

SECTION III, C

Contaminant	Emission Rate: Permitted (lbs/hr)	Permitted (tons/year)	Proposed (lbs/hr)	Proposed (tons/year)	Increase (lbs/hr)	Increase (tons/year)
SO_2	333	1460	417	1825	84	365
Mist	13	55	16	68	3	13
NO_x	12	52	15	65	3	13
CO	<1	<1	<1	<1	<1	<1

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis:

Percent Sulfur: ____________ Percent Ash: ____________

Density: ____________ lbs/gal Typical Percent Nitrogen: ____________

Heat Capacity: ____________ BTU/lb ____________ 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.

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

Stack Height: 200 ft. Stack Diameter: 9.5 ft.

Gas Flow Rate: 136,700 ACFM Gas Exit Temperature: 156 °F.

Water Vapor Content: 0 % Velocity: 32.1 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE (For ACP Only)

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste ____________

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

Approximate Number of Hours of Operation per day ____________ days/week ____________

Manufacturer ____________

Date Constructed ____________ Model No. ____________

POLLUTANT EMISSION RATE CALCULATIONS

Pollutants : SO_2
Acid Mist
NO_x
CO

Operating factor : 8760 hr/yr

Production Rate : Permitted – 2000 TPD 100% H_2SO_4
Proposed – 2500 TPD 100% H_2SO_4

SO_2 @ 4.0 lb / ton acid

Hourly : Proposed = 4.0 × 2500/24
= 416.7 lb/hr

Permitted = 4 × 2000/24
= 333.3 lb/hr

Increase = 83.3 lb/hr

Annual : Proposed = 416.7 × 8760/2000
= 1825 tpy

Permitted = 333.3 × 8760/2000
= 1460 tpy

Increase = 365 tpy

Mist @ 0.15 lb / ton acid

Hourly : Proposed = 0.15 × 2500/24
= 15.6 lb/hr

Permitted = 0.15 × 2000/24
= 12.5 lb/hr

Increase = 3.1 lb/hr

Annual : Proposed = 15.6 × 8760/2000
= 68.3 Tpy

Permitted = 12.5 × 8760/2000
= 54.8 Tpy

Increase = 13.5 Tpy

NO_x @ 2.1×10^{-6} lb/scf (test results on existing sulfuric acid plants)

Typical Stack Gas Characteristics

SO_2 - 230 ppm

O_2 - 7%

Gas flow rate (see attached)

$= 11800 / [0.263 - 0.0126(O_2\%)]$

$= 11800 / [0.263 - 0.0126(7)]$

$\simeq 67500$ scf / ton of acid

Emission Rate

Hourly: Proposed $= 2500/24 \times 67500 \times 2.1 \times 10^{-6}$

$= 14.8$ lb/hr

Permitted $= 2000/24 \times 67500 \times 2.1 \times 10^{-6}$

$= 11.8$ lb/hr

Increase $= 3.0$ lb/hr

Annual: Proposed $= 14.8 \times 8760/2000$

$= 64.8$ TPY

Permitted $= 11.8 \times 8760/2000$

$= 51.7$ TPY

Increase $= 13.1$ TPY

CO

Sulfur consumption = 0.335 tons / ton Acid including losses

Carbon content of sulfur ~ 0.25% (assume to be "petroleum")

"Petroleum" content of Sulfur

Proposed = 2500 / 4 × 0.335 × 0.0025 × 2000 lb/ton
= 174.5 lb/hr
× 1/8 lb/gal
= 21.8 equivalent gal/hr.

Permitted = 21.8 × 2000/2500
= 17.4 gal/hr.

Emission Rate @ 5 lb CO / 1000 gal

Hourly: Proposed = 21.8/1000 × 5
= 0.11 lb/hr

Permitted = 17.4/1000 × 5
= 0.09 lb/hr

Increase = 0.02 lb/hr

Annual Proposed = 0.11 × 8760/2000
= 0.5 tpy

Permitted = 0.09 × 8760/2000
= 0.4 tpy

Increase = 0.1 tpy

STACK SAMPLING NEWS

THE PUBLICATION FOR SOURCE TESTING INFORMATION

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JANUARY 1977

PRODUCTION RATE MEASUREMENT IN SULFURIC ACID PLANTS — A NEW APPROACH

by D. James Grove and Walter S. Smith
Entropy Environmentalists, Inc.

Since the promulgation of the NSPS methods and standards in the December 23, 1971 Federal Register, the attention has been increasingly focused on accurate determination of the process parameters which enter into the compliance determination. For utility boilers, the standard is in units of pounds of particulate per million BTU's of heat input; for sulfuric acid plants, the units are pounds of pollution (sulfur dioxide or acid mist) per ton of sulfuric acid produced. The intent of this paper is to present a new approach to the measurement of the acid production rate in sulfuric acid plants (similar to the "F-factor" developed for boilers) which is based solely on flue gas measurements.

The traditional approach in compliance determinations for NSPS sulfuric acid plants involves the measurement of three parameters: pollutant concentration (either SO_2 or H_2SO_4), in pounds per standard cubic feet (lbs/scf); volumetric flow rate, in standard cubic feet per hour (scfh); and acid production rate, in tons per hour (tph). The emission rate is calculated as follows:

$$E = \frac{cQ}{P} \qquad (1)$$

where:

E	=	emission rate of SO_2 (or H_2SO_4), lbs/ton
c	=	concentration of SO_2 (or H_2SO_4), lbs/scf
Q	=	flow rate, scfh
P	=	acid production rate, tph

The disadvantage of this approach, from an enforcement standpoint, is that it relies on the acid production rate data provided by the plant owner. The production rate figures could be collected by the tester or the agency observer from the process instruments, but there is no guarantee that they are in calibration and functioning properly.

The basis of this paper is the development of an empirical means of determining the cubic feet of exhaust gas per ton of sulfuric acid, which can be combined with the pollutant concentration to yield the emission rate in pounds per ton of acid.

$$E = cS \qquad (2)$$

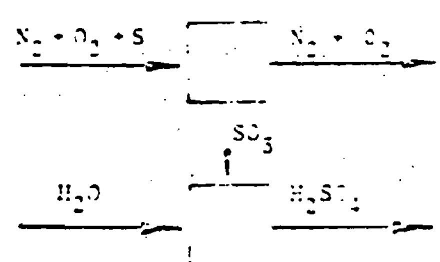
where:

S = empirical factor, scf/ton

Not only can NSPS compliance tests be performed without relying on source-supplied process data, but continuous monitoring can be done to yield pounds per ton of acid without measuring the volumetric flow rate (Q).*

In the production of sulfuric acid, sulfur is reacted with oxygen to produce sulfur trioxide, which is then combined with water to make the acid.

$$N_2 + \frac{3}{2} O_2 + S + H_2O \longrightarrow H_2SO_4 + N_2 \text{ (balanced)} \qquad (3)$$



Using the above equation and flow diagram, the following can be computed:

$$\text{flow rate of } N_2 = Q\left(\frac{100 - \%O_2}{100}\right) \qquad (4)$$

$$\text{flow rate of } O_2 \text{ @ inlet} = Q\left(\frac{.208 \text{ cf } O_2}{.792 \text{ cf } N_2}\right)\left(\frac{100 - \%O_2}{100}\right) \qquad (5)$$

*An alternative approach for continuous monitors is presented in the October 6, 1975 Federal Register which also does not require measurement of Q, but it does require measurement of the SO_2 concentration at the inlet to the absorber, and it does not work if there is air injection (or air leakage) into the absorber.

$$\text{flow rate of } O_2 \text{ @ outlet} = Q\left(\frac{\%O_2}{100}\right) \qquad (6)$$

$$\text{flow rate of } O_2 \text{ reacted} = Q\left[\left(\frac{.208}{.792}\right)\left(\frac{100-\%O_2}{100}\right)-\left(\frac{\%O_2}{100}\right)\right] \qquad (7)$$

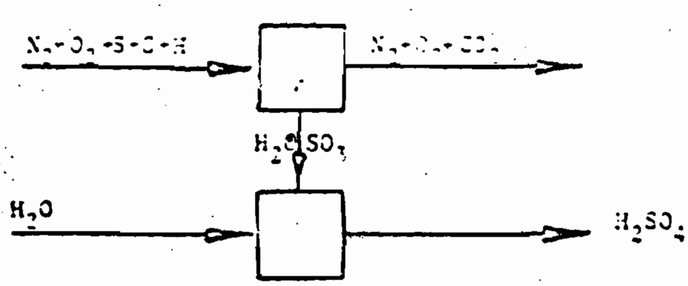
$$P = Q\left[\left(\frac{.208}{.792}\right)\left(\frac{100-\%O_2}{100}\right)-\left(\frac{\%O_2}{100}\right)\right]\left(\frac{1\ \text{lbmol}}{385\ \text{scf}}\right)\left(\frac{2\ \text{mol } SO_3}{3\ \text{mol } O_2}\right)\left(\frac{98\ \text{lbs}}{\text{lb mol}}\right)\left(\frac{\text{ton}}{2000\ \text{lbs}}\right) \qquad (8)$$

$$S = \frac{Q}{P} = \frac{11800}{0.263 - 0.0126\ \%O_2}\ \frac{\text{scf}}{\text{ton}} \qquad (9)$$

The empirical factor S is therefore a function only of the oxygen content in the stack, and the tester needs only to measure the pollutant concentration (SO_2 or H_2SO_4) and the oxygen concentration to compute the emission rate in pounds per ton of acid.

In some sulfuric acid plants, an auxiliary fuel is burned in producing the acid. If this is the case, the fuel (containing carbon and hydrogen) will react with some of the oxygen, and a correction will have to be applied to equation (9).

$$N_2 + O_2 + S + C + H + H_2O \longrightarrow H_2SO_4 + N_2 + CO_2 \ \text{(unbalanced)} \qquad (10)$$



$$S' = \frac{11800}{0.263 - 0.0126\ \%O_2 - A\ \%CO_2} \qquad (11)$$

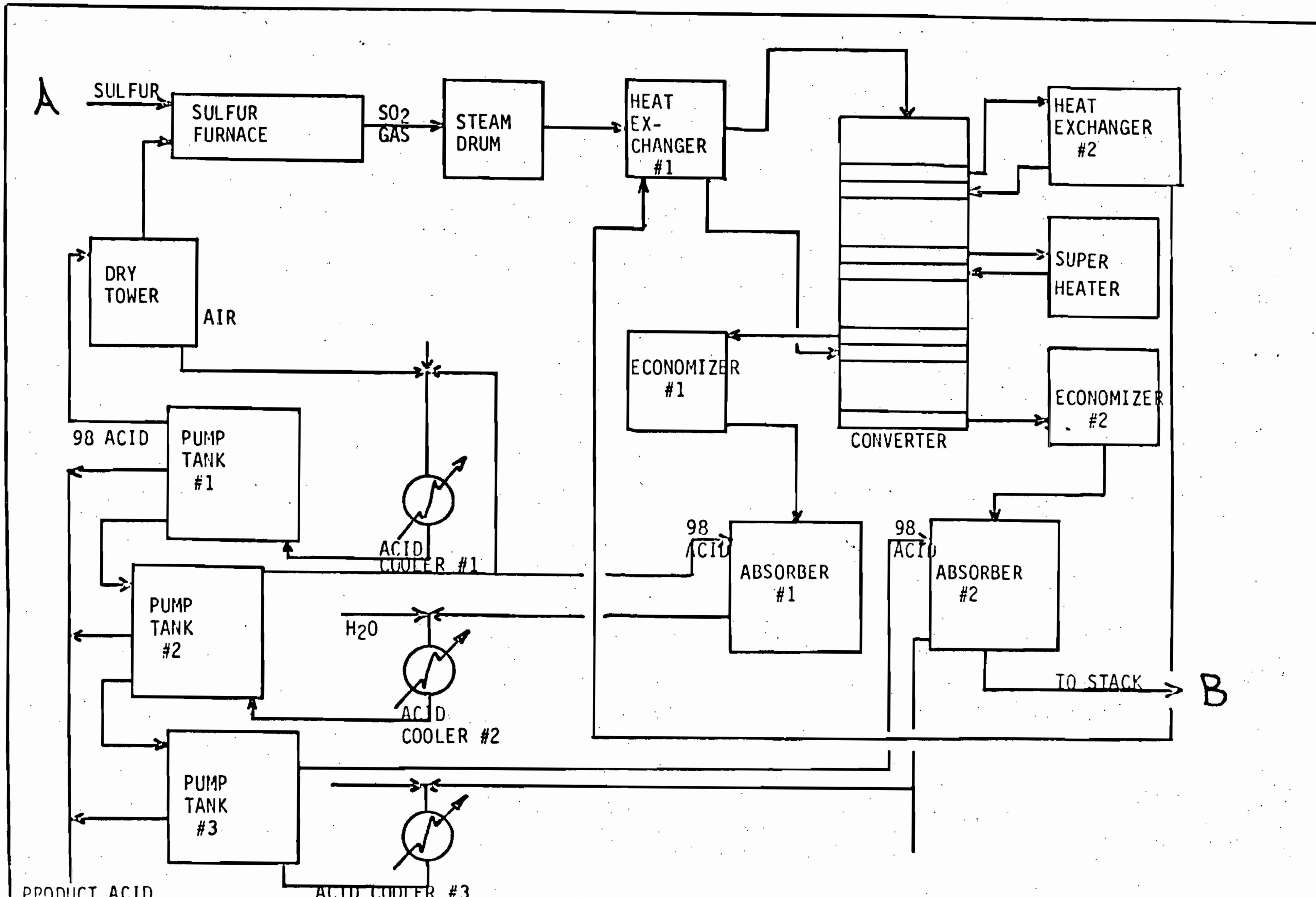
where:

A	Type of Fuel	Approximate Ratio, C/H
0.0226	methane	0.25
0.0217	natural gas	0.27
0.0196	propane	0.37
0.0172	#2 oil	0.54
0.0161	#6 oil	0.71
0.0148	bituminous coal	1.14
0.0126	coke	1/0

The above equation (11) will also apply where the raw materials have some carbon-hydrogen impurities. In this case, compute the value of "A" as follows:

$$A = \frac{(C/H) + 0.25}{100\ (C/H)} + 0.00263$$

The equations presented in this paper apply only when the raw materials are elemental sulfur or ores containing elemental sulfur. They will not apply when the sulfur is derived from spent acid or gas streams containing hydrogen sulfide.



DOUBLE CONTACT/DOUBLE ABSORPTION - SULFURIC ACID MANUFACTURE

Attachment #2

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Auxillary Boiler [ ] New[1] [XX] Existing[1]

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

COMPANY NAME: Occidental Chemical Company COUNTY: Hamilton

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) Auxillary Boiler "E"

SOURCE LOCATION: Street U.S. 41 City White Springs

UTM: East 7,231,300 North 3,369,830

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: Occidental Chemical Company

APPLICANT ADDRESS: Post Office Box 300, White Springs, FL 32096

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Occidental Chemical Company

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

*Attach letter of authorization

Signed: ______

M.P. McArthur, V.P. & General Manager
Name and Title (Please Type)

Date: ______ Telephone No. (904) 397-8101

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 have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that 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: ______

John B. Koogler, Ph.D., P.E.
Name (Please Type)

(Affix Seal)

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
Company Name (Please Type)

1213 NW 6th Street, Gainesville, FL 32608
Mailing Address (Please Type)

Florida Registration No. 12925

Date: ______ Telephone No. (904) 377-5822

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

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.

Oil fired auxillary steam boiler will be used to augment steam produced from the sulfuric acid plants to provide operating flexibility in the phosphoric acid production and evaporation process. (Previously identified as auxillary boiler No.3)

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

Start of Construction N/A Completion of Construction date of PSD approval

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.)

No add-on pollution control on boiler.

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

Unit was previously permitted under FDER No. AC-24-2717 issued February 28, 1978 and expiring on December 31, 1980.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? X Yes ____ No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr ____ ;

if seasonal, describe: Annual operating factor is 97.5%.

G. 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? No
   a. If yes, has "offset" been applied? --
   b. If yes, has "Lowest Achievable Emission Rate" been applied? --
   c. If yes, list non-attainment pollutants.
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) requirements 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? No
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

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

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

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

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		

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

1. Total Process Input Rate (lbs/hr): ______

2. Product Weight (lbs/hr): ______

C. Airborne Contaminants Emitted:

Name of Contaminant	Emission[1]		Allowed Emission[2] Rate per Ch. 17-2, F.A.C.	Allowable[3] Emission lbs/hr	Potential Emission[4]		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Sulfur Dioxide	256.1	1094	BACT	256.1	256.1	1094	(Att. 2)
Part. Matter	19.2	820	BACT	19.2	19.2	82	
NO_x	64.0	273	BACT	64.0	64.0	273	
CO	5.3	23	BACT	5.3	5.3	23	
HC	1.1	5	BACT	1.1	1.1	5	

*See page 3A for Emission Increases.

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles[5] Size Collected (in microns)	Basis for Efficiency (Sec. V, It[5]

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 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]If Applicable

SECTION III, C

Contaminant	Emission Rate: Existing (lbs/hr)	Existing (tons/year)	Proposed (lbs/hr)	Proposed (tons/year)	Increase (lbs/hr)	Increase (tons/year
SO_2	125	508	256	1094	131	586
Part Matter	16	64	19	82	3	18
NO_x	64	260	64	273	0	13
CO	5	21	5	23	0	2
Hydrocarbons	1	4	1	5	0	1

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Oil	6	25	156

*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Fuel Analysis: (Oil)

Percent Sulfur: 0.8 Percent Ash: 0.09

Density: 8 lbs/gal Typical Percent Nitrogen: Nil

Heat Capacity: 18,300 BTU/lb 146,400 BTU/gal

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

F. If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum ______

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

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

Stack Height: 50 ft. Stack Diameter: 5.25 ft.

Gas Flow Rate: 67,000 ACFM Gas Exit Temperature: 380 °F.

Water Vapor Content: 9 % Velocity: 78 FPS

SECTION IV: INCINERATOR INFORMATION

NOT APPLICABLE (For ACP Only)

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							

Description of Waste ______

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

Approximate Number of Hours of Operation per day ______ days/week ______

Manufacturer ______

Date Constructed ______ Model No. ______

POLLUTANT EMISSION RATE CALCULATIONS

Pollutants: SO_2
Part Matter
NO_x
CO
HC

Operating factor: 8760 hr/yr × 0.975

Production rate (steam): Permitted and Proposed
125,000 lb/hr

SO_2

Hourly: Proposed @ 1.5% Sulfur fuel

= 125,000 lb steam/hr × 1000 BTU/lb steam × 1/0.8 eff
× 1/18300 BTU/lb oil × (0.015 × 2) lb SO_2/lb oil
= 256.1 lb/hr

Existing = 124.8 lb/hr (See Attachment #2)

Increase = 131.3 lb/hr

Annual: Proposed = 256.1 × 8760/2000 × 0.975
= 1094 tpy

Existing = 508 tpy (Attachment #2)

Increase = 586 tpy

Part Matter

Hourly: Proposed = 8538 lb fuel/hr (from above) × 1/8 lb/gal
× 1/1000 × [10(1.5) + 3]
= 19.2 lb/hr

Existing = 15.6 lb/hr (Attachment #2)

Increase = 3.6 lb/hr

Annual: Proposed = 19.2 lb/hr x 8760/2000 x 0.975
= 82 tpy

Existing = 64 tpy (Attachment #2)

Increase = 18 tpy

NOx

Hourly: Proposed = 8538 lb fuel/hr x 1/8 x 1/1000 x 60 lb NO_x/1000 gal
= 64.0 lb/hr

Existing = 63.9 lb/hr (Attachment #2)

Increase = 0.1 lb/hr

Annual Proposed = 64 x 8760/2000 x 0.975
= 273 tpy

Existing = 260 tpy (Attachment #2)

Increase = 13 tpy

CO

Hourly: Proposed = 8538 x 1/8 x 1/1000 x 5 lb CO/1000 gal
= 5.3 lb/hr

Existing = 5.3 lb/hr (Attachment #2)

Increase = 0.0 lb/hr

Annual Proposed = 5.3 x 8760/2000 x 0.975
= 23 tpy

Existing = 21 tpy (Attachment #2)

Increase = 2 tpy

Hydrocarbons

Hourly: Proposed = 8538 x 1/8 x 1/100 x 1 lb/100 gal
= 1.1

Existing = 1.0 lb/hr (Attachment #2)

Increase = 0.1 lb/hr

Annual: Proposed = 1.1 x 8760/2000 x 0.975
= 5 tpy

Existing = 4 tpy

Increase = 1 tpy

Attachment #2

PERMITTED EMISSION RATES (PSD Approval Feb, 1978) Vs. ACTUAL "E" AUXILLARY BOILER EMISSION RATES

BOILER "E"

PERMITTED: Conditions limit SO_2 emissions to 0.8 lb/10^6 BTU and P.M. to 0.1 lb/10^6 BTU. Information submitted to EPA stated the average operating factor would be 25% of 8400 hr/yr (or 0.24). Heat input rate of 125 x 10^6 BTU/hr was also stated

SO_2 Hourly = 125 x 10^6 x 0.8
= 100.0 lb/hr

Annual = 100 x 8760/2000 x 0.24
= 105 tpy

P.M Hourly = 125 x 10^6 x 0.1
= 12.5 lb/hr

Annual = 12.5 x 8760/2000 x 0.24
= 13.1 tpy

NO_x Hourly = 125 x 10^6/146,400 x 0.06
= 51.2 lb/hr

Annual = 51.2 x 8760/2000 x 0.24
= 54 tpy

CO Hourly = 125 x 10^6/146,400 x 0.005
= 4.3 lb/hr

Annual = 4.3 x 8760/2000 x 0.24
= 4.5 tpy

H.C Hourly = 125 x 10^6/146,400 x 0.001
= 0.8 lb/hr

Annual = 0.8 x 8760/2000 x 0.24
= 0.9 tpy

BOILER "E"

OPERATED: Since SPA Heaters were not constructed, the "E" Boiler was operated at capacity 93 % of time with heat input of 156×10^6 BTU/hr

SO_2 Hourly = 100.0 lb/hr @ 125×10^6 BTU/hr $\times \frac{156}{125}$ = 124.8 lb/hr

Annual = 124.8 x 8760/2000 x 0.93
= 508 tpy

PM Hourly = 12.5 x 156/125 = 15.6 lb/hr

Annual = 15.6 x 8760/2000 x 0.93
= 64 tpy

NO_x Hourly = 51.2 x 156/125 = 63.9 lb/hr

Annual = 63.9 · 8760/2000 x 0.93
= 260 tpy

CO Hourly = 4.3 x 156/125 = 5.3 lb/hr

Annual = 5.4 x 8760/2000 x 0.93
= 21 tpy

HC Hourly = 0.8 x 156/125 = 1.0 lb/hr

Annual = 1.0 x 8760/2000 x 0.93
= 4 tpy

SPA HEATERS

PERMITTED: Two heaters @ 75×10^6 Btu/hr heat input each and operating factor of 0.8 of 8400 hours/yr (0.77). Emission limits were 0.8 lb $SO_2/10^6$ Btu and 0.1 lb P.M. $/10^6$ Btu. No limits were set for NO_x, CO or HC.

SO_2 Hourly = $2 \times 75 \times 10^6 \times 0.8$
= 120.0 lb/hr

Annual = 120 × 8760/2000 × 0.77
= 405 tpy

P.M. Hourly = $2 \times 75 \times 10^6 \times 0.1$
= 15.0 lb/hr

Annual = 15 × 8760/2000 × 0.77
= 51 tpy

NO_x Hourly = $2 \times 75 \times 10^6 / 146,400 \times 0.06$
= 61.5 lb/hr

Annual = 61.5 × 8760/2000 × 0.77
= 207 tpy

CO Hourly = $2 \times 75 \times 10^6 / 146,400 \times 0.005$
= 5.1 lb/hr

Annual = 5.1 × 8760/2000 × 0.77
= 17 tpy

HC Hourly = $2 \times 75 \times 10^6 / 146,400 \times 0.001$
= 1.0 lb/hr

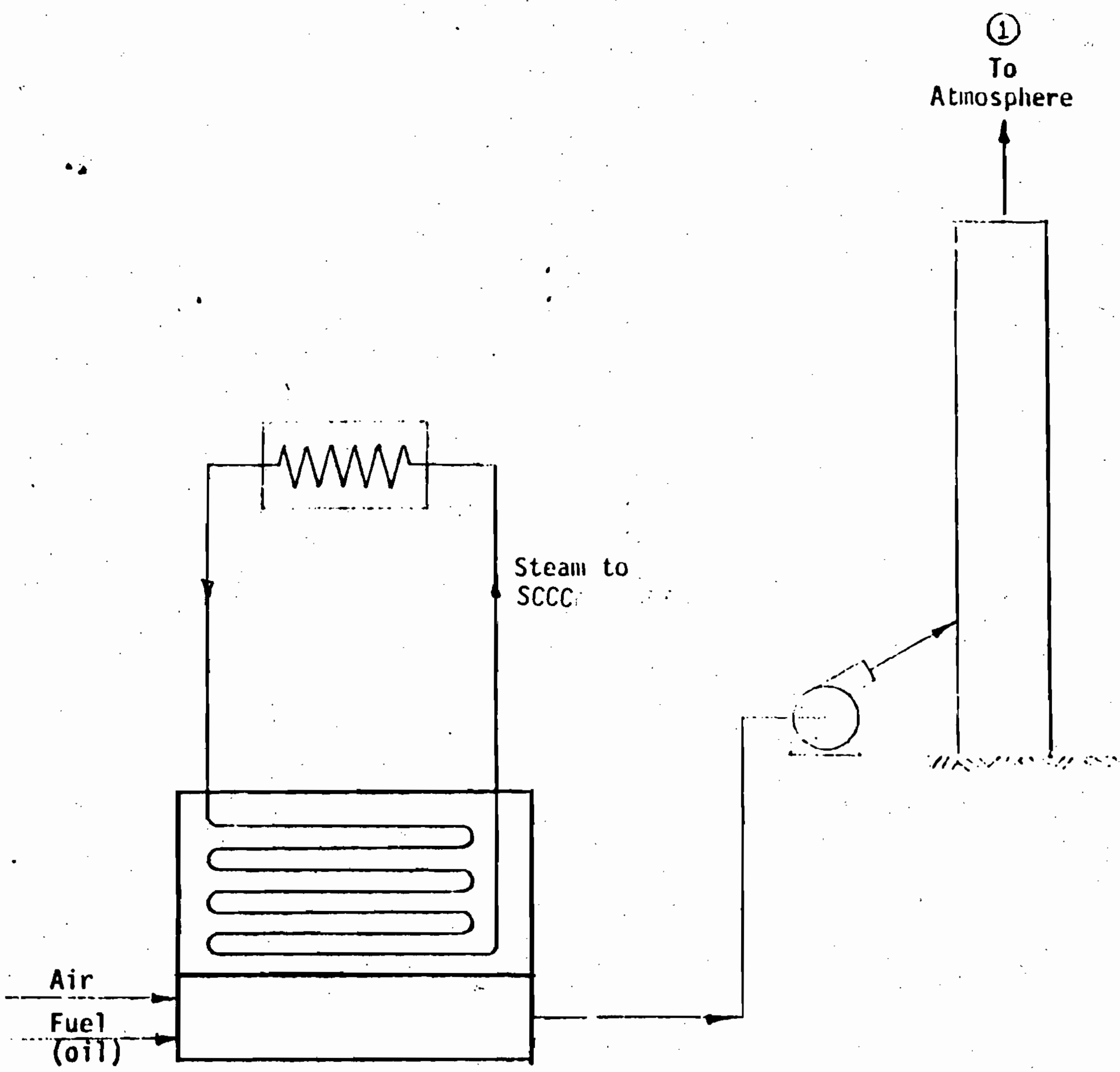
Annual = 1.0 × 8760/2000 × 0.77
= 3 tpy

Emission Summary

	Permitted (lb/hr)			Operated (lb/hr)
	Boiler "E"	SPA Heaters	Total	Boiler "E"
SO_2	100.0	120.0	220.0	124.8
PM	12.5	15.0	27.5	15.6
NO_x	51.2	61.5	112.7	63.9
CO	4.3	5.1	9.4	5.4
HC	0.8	1.0	1.8	1.0

	(tons/year)			(tons/year)
	Boiler "E"	SPA Heaters	Total	Boiler "E"
SO_2	105	405	510	508
PM	13	51	64	64
NO_x	54	207	261	260
CO	4	17	21	21
HC	1	3	4	4

ATTACHMENT #3



PROCESS FLOW DIAGRAM

SULFURIC ACID PLANT AUXILIARY BOILER
SCCC

APPENDIX 2-3

FINAL PSD APPROVAL
FOR SCCC, FEBRUARY 1978

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30308

MAR 30 1978

Mr. W. W. Atwood
Occidental Chemical Company
P.O. Box 300
White Springs, Florida 32096

Dear Mr. Atwood:

Review of your November 25, 1977, application for a phosphate fertilizer chemical complex has been completed. On the basis of this review, we have determined that the conditioned operation of the proposed plant at the specified location will not violate the Class I or Class II air quality increments specified in the EPA regulations for Prevention of Significant Deterioration (PSD). Furthermore, we have determined that this plant will meet the federal regulatory requirement under PSD that Best Available Control Technology (BACT) be used to limit emissions of sulfur dioxide and particulate matter.

A request for public comment regarding the preliminary determination on the above application was published on January 27, 1978. No comments were received during the public comment period. Authority to Construct a Stationary Source is hereby issued for the facility described above, subject to the attached conditions. This Authority to Construct is based solely on the requirements of 40 CFR 52.21, the Federal regulations governing significant deterioration of air quality. It does not apply to NPDES or other permits issued by this agency or permits issued by other agencies. Additionally, construction covered by this Authority to Construct must be initiated by December 1, 1978.

Please be advised that a violation of any condition issued as part of this approval, as well as any construction which proceeds in material variance with information submitted in your application, will be subject to enforcement action.

Authority to Construct will take effect on the date of this letter. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Ray Cunningham, Chief, Air Strategy Development Section (404/881-3286).

Sincerely yours,

for John A. Little, Deputy

John C. White
Regional Administrator

Attachment

This Approval to Construct would be issued this date Feb. 27, 1978, but for the order entered in Environmental Defense Fund versus Environmental Protection Agency, No. 78-281 (D.D.C.). (entered on February , 1978.)

John A. Little

CONDITIONS TO APPROVAL

As required pursuant to 40 CFR 52.21(d)(2)(ii), a review was conducted to determine if the proposed: 1) sulfuric acid plants, 2) wet process phosphoric acid plant, 3) superphosphoric acid plants, and 4) auxiliary boiler at Occidental Chemical Company, White Springs, Florida are applying best available control technology. Based on this review, it was determined that the applicant, Occidental Chemical Company, must meet emission limits and other requirements as specified by the U.S. Environmental Protection Agency's Standards of Performance for New Stationary Sources promulgated on December 23, 1971 and August 6, 1975 (40 CFR 60, Subparts H, T, and U). In addition, a requirement is given that the proposed auxiliary boiler shall utilize low sulfur fuel to help minimize SO_2 emissions.

1. Related to the sulfuric acid plant auxiliary boiler and the superphosphoric acid plant heaters:
   a. Gases discharged into the atmosphere shall not contain particulate matter:
      (i) in excess of 0.18 g per million cal (0.10 lb. per million BTU) heat input derived from fossil fuel,
      (ii) exhibiting greater than 20 percent opacity, except that 40 percent opacity shall be permissible for not more than two minutes in any hour.

b. Gases discharged into the atmosphere shall not contain sulfur dioxide in excess of 1.4 g per million cal (0.80 lb. per million BTU) heat input.

c. BACT for the fossil fuel fired facilities is considered to be low sulfur residual oil with a sulfur content not to exceed 0.77% by weight.

d. Analyses of representative samples of fuels to be burned in the furnace and boiler shall be submitted by the applicant to the U.S. Environmental Protection Agency (EPA) prior to initial start-up. The applicant should notify EPA in writing (and receive approval from EPA) for the procedures to be used in obtaining the representative fuel samples as well as the methods to be used in analyzing the samples.

2. Related to the sulfuric acid plants:

a. Gases discharged into the atmosphere shall not contain sulfur dioxide in excess of 2 kg per metric ton of acid produced (4 lb. per ton), the production being expressed as 100 percent H_2SO_4.

b. Gases discharged into the atmosphere shall not:

(i) Contain acid mist, expressed as H_2SO_4 in excess of 0.075 kg per metric ton of acid produced (0.15 lb. per ton), the production being expressed as 100 percent H_2SO_4.

(ii) Exhibit 10 percent opacity, or greater.

b. Fluoride emissions from the superphosphoric acid plants are to be controlled by a venturi scrubber or equivalent. Design criteria of the scrubber must be submitted.

5. The applicant must submit to EPA within five (5) working days after it becomes available, copies of all technical data pertaining to selected control devices, including formal bid from the vendor, guaranteed efficiency or emission rate and and all design parameters.

Specifically, the design parameters pertaining to selected control devices are as follows:

Mist Eliminator

1. Flow rate, vapor velocity
2. Vapor density
3. Liquid density
4. Liquid viscosity
5. Surface tension
6. Liquid particle size and quantity (mist loading of gases)
7. Operating temperature and pressure
8. Material of construction
9. Area, thickness and Δp of mist eliminator
10. Collection efficiency

Venturi Scrubber and Packed Scrubber

1. Scaled drawings showing the design dimensions of the scrubbers
2. Gas velocity at throat for the venturi scrubber
3. Gas volumetric flow rates
4. Liquid flow rates and velocities
5. Δp across the scrubbers
6. Liquid supply pressures
7. Scrubbing liquids
8. Materials of construction
9. Type of venturi scrubber (water or gas actuated)
10. Particle loading, size distribution and collection efficiencies and fluoride loading

EPA may, upon review of these data, disapprove the application if EPA determines the selected control device(s) to be inadequate to meet the emission limits specified in this conditional approval.

6. Additional requirements for all processes:

   a. All sources must be tested within 60 days after reaching full production but in no case later than 180 days after initial start-up. Applicable EPA test procedures must be used.

   b. Continous monitors must be certified using applicable performance specifications.

   c. Thirty days notice must be given EPA before any tests are conducted so that they may have the opportunity to have an observer present.

c. SO_2 emission will be controlled by double absorption.

d. SO_2 emissions from each plant shall be continuously monitored.

e. Acid mist emissions will be controlled by a mist eliminator. Design criteria of the mist eliminator must be submitted.

3. Related to the west process phosphoric acid plant:

a. Gases discharged into the atmosphere shall not contain total fluorides in excess of 10.0 g/metric ton of equivalent P_2O_5 feed (0.020 lb/ton).

b. Particulate emissions from the phosphoric acid plant will be controlled by a baghouse or to an equivalent degree by process design. Design criteria for particulate control must be submitted to EPA within five working days after it becomes available.

c. Fluoride emissions from the phosphoric acid plant are to be controlled by a 3-stage scrubber or equivalent. Design criteria of the scrubber must be submitted.

4. Related to the superphosphoric acid plant:

a. Gases discharged into the atmosphere shall not contain total fluorides in excess of 5.0 g/metric ton of equivalent P_2O_5 feed (0.010 lb/ton of equivalent P_2O_5 feed).

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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

Source Type: Air Pollution [X] Incinerator [ ]
Type of application: [ ] Operation [X] Construction
Source Status: [X] New [ ] Existing [ ] Modification

Source Name: OXY-SPA Chemical Complex - Auxiliary Boiler for Sulfuric Acid Plant County Hamilton

Source Location: Street U.S. Route 41 City White Springs

UTM: East 320.9 km North 3368.75 km

Appl. Name and Title: Occidental Chemical Company
Appl. Address: P.O. Box 300, White Springs, Florida 32096

STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

The undersigned owner or authorized representative of * Occidental Chemical Company is fully aware that the statements made in this application for a construction permit are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department or revisions thereof. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted establishment.

Signature of the Owner or Authorized Representative

M. W. Chesson, General Manager

Date: Telephone No.: 904/397-8101

*Attach a letter of authorization. If applicant is a corporation, a Certificate of Good Standing must be submitted with application. This may be obtained, for a $5.00 charge, from the Secretary of State, Bureau of Corporate Records, Tallahassee, Florida 32304.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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

Signature

Name Gordon F. Palm
(Please Type)

Company Name Gordon F. Palm & Assoc.

Florida Registration Number 8349

Mailing Address 602 Schoolhouse Road
Lakeland, FL 33803

Telephone No.: 813/646-5775

Date

*These instructions will be furnished by the vendors supplying the pollution control equipment. Said instructions and vendor guarantees will be reviewed for

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will be established when a vendor is selected. Emission...

DETAILED DESCRIPTION OF SOURCE

A. Describe the nature and extent of the project. Refer to existing pollution control facilities, expected improvement in performance of the facilities and state whether the project will result in full compliance. Attach additional sheet if necessary.

The source is a fossil fuel fired steam generator used to generate steam at the rate of 125,000 lbs/hr. The unit will be used to provide steam necessary for the start-up of four (4) sulfuric acid plants. Once the acid plants are on-line, the steam generator will operate in stand-by mode; i.e., at approximately 10% of rated capacity. The unit will be fired with approximately 854 gal/hr of commercial distillate fuel oil with a sulfur content of <0.8% at rated capacity and with approximately 85 gal/hr of the same fuel while in stand-by mode. Control of air pollutant emissions will result from the use of low sulfur fuel (0.8% sulfur). This is considered BACT.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction January 1, 1977

Completion of Construction December 31, 1978

C. Costs of Construction (Show a breakdown of costs for individual components/units of the project serving pollution control purpose only). Information on actual costs shall be furnished with the application for operation permit.

BACT is the use of low sulfur (0.8% sulfur) fuel oil. The cost differential between low sulfur oil and standard fuel oil is $1.60 per bbl. For this unit, burning approximately 44,425 bbl/year of oil, the additional annual fuel cost (1976) is $71,080.

D. For this source indicate any previous DER permit: issuance dates, and expiration dates; and orders and notices.

NONE

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 221-2, Florida Administrative Code? ......Yes ..X...No

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AIR POLLUTION SOURCES & CONTROL DEVICES
(other than incinerators)

A. Identification of Air Contaminants

1) [X] Particulates
a) [ ] Dust b) [X] Fly Ash c) [ ] Smoke d) [ ] Other (Identify)

2) [X] Sulfur Compounds
a) [X] SO_x as SO_2 b) [ ] Reduced Sulfur as H_2S c) [ ] Other (Identify)

3) [ ] Nitrogen Compounds
a) [ ] NO_x as NO_2 b) [ ] NH_3 c) [ ] Other (Identify)

4) [ ] Flourides 5) [ ] Acid Mist 6) [ ] Odor

7) [ ] Hydrocarbons 8) [ ] Volatile Organic Compounds

9) [ ] Other (Specify) ______

B. Raw Materials and Chemicals Used (Be Specific)

Description	Utilization Rate lbs./hr.	Approximate Contaminant Content		Relate to Flow Diagram
		Type	% Wt.	
NONE - see fuel consumption				

C. Process Rate:
1) Total Process input Rate* N/A Units.
2) Product Weight* N/A Units.
3) Normal Operating Time year around; average, ~~XXXXXXXXXXXXX~~ operating factor is 0.25;
hrs./day 24 days/wk. 7 wks/yr 50 ~~xxxxxx~~ range from 0.1 - 1.0

D. Airborne Contaminants Discharged:

Name of Contaminant	Actual** Discharge lbs./hr.	Actual** Discharge T/yr.	Discharge Criteria Rate*	Allowable Discharge Lbs./hr.	Relate to Flow Diagram
SO_2	104	114	BACT	BACT	1
particulate matter	16.8	4.75	BACT	BACT	1

*Refer to Chapter 17-2.04(2), Florida Administrative Code.
(Discharge Criteria: Rate= #/ton P_2O_5, #/M BTU/hr., etc.)
**Estimate only if this is an application to construct.

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Airborne Contaminants Discharged. (Cont'd.)

Name of Contaminant	Hourly Emission (lb./hr.)	Daily Emission (lb./day)	Yearly Emission (T/yr.)	Basis for Emission Estimate (Test Data, Material Balance)
SO_2	104	1,250*	114	material balance
particulate matter	16.8	202*	18.4	design

*Assume daily operating factor of 0.50

Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency*	Conditions of Operations	Basis for Efficiency Operational Data, Test, Design, Data)
NONE (BACT is the use of low sulfur [0.8%] fuel oil)				

*See required supplement.
(Include any test data and/or design data for efficiency substantiation)

F. Fuels

Type (Be Specific, includes %S, etc.)	Daily Consumption *		Maximum Heat Input MBTU/hr.
	Avg./hr.	Max./hr.	
Commercial distillate with 0.8% S	1,708 lbs	6,831 lbs	125 x 10^6/hr

* Units: Natural Gas - MCF/hr.; Fuel Oils, Coal - lbs./hr.

Fuel Analysis:

Percent Sulfur 0.8 Percent Ash 0.09

Density 8.0 lb./gal.

Heat Capacity 18,300 BTU/lb. 146,400 BTU/gal.

Other Fuel Contaminants Neg.

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G. Describe briefly, without revealing trade secrets, the processes/operations generating the airborne emissions identified in this application.

A conventional oil fired boiler to produce steam for sulfuric acid plant start-up. Particulate matter and SO_2 are generated during the combustion of the fuel oil.

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

NONE

I. Emission Stack Geometry and Flow Characteristics, (Provide Date for each Stack).

Stack Height 50 ft, Stack Diameter 7.5 ft.

Gas Flow Rate 85,000 ACFM, Gas Exit Temperature 380 °F

J. Required Supplements:

1. Total process input rate and product weight – show deviation. N/A
2. Efficiency Estimation. N/A
3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate whether raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particulates are evolved and where finished products are obtained. SEE ATTACHMENT #1
4. An 8½" x 11" plot plan showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. SEE OXY/SPA ATTACHMENT PACKAGE
5. An 8½" x 11" plot plan showing the exact location of the establishment, and points of airborne emissions in relation to the surrounding area, residences and other permanent structures and roadways. SEE OXY/SPA ATTACHMENT PACKAGE
6. If applicable, provide a brief description of the control device or treatment system serving the discharge point for airborne contaminants identified in this application. Include details of the manufacturer, model, size, type and capacity for control/treatment device and the features of the discharge point (height above ground, diameter, period(s) of discharge and discharge temperature). Boiler specifications and suppliers have not yet been determined. Emissions will be governed by BACT.
7. Plans for storm water control during and after construction. SEE OXY/SPA ATTACHMENT PACKAGE

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STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
APPLICATION TO ~~OPERATE~~/CONSTRUCT AIR POLLUTION SOURCES

Source Type   Air Pollution [X]   Incinerator [ ]

Type application: [ ] Operation   [X] Construction

Source Status: [X] New   [ ] Existing   [ ] Modification

Source Name: OXY-SPA Chemical Complex - Auxiliary Boiler "A" for SPA Plant   County Hamilton

Source Location: Street U.S. Route 41   City White Springs

UTM: East 321.10 km   North 3369.80 km

Appl. Name and Title: Occidental Chemical Company

Appl. Address: P.O. Box 300, White Springs, Florida 32096

STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

The undersigned owner or authorized representative of * Occidental Chemical Company is fully aware that the statements made in this application for a construction permit are true, correct and complete to the best of his knowledge and belief. Further, the undersigned agrees to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provisions of Chapter 403, Florida Statutes, and all the rules and regulations of the Department or revisions thereof. He also understands that a permit, if granted by the Department, will be non-transferable and he will promptly notify the Department upon sale or legal transfer of the permitted establishment.

Signature of the Owner or Authorized Representative

M. W. Chesson, General Manager

Date: ____________   Telephone No.: 904/397-8101

*Attach a letter of authorization. If applicant is a corporation, a Certificate of Good Standing must be submitted with application. This may be obtained, for a $5.00 charge, from the Secretary of State, Bureau of Corporate Records, Tallahassee, Florida 32304.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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

Signature ____________   Mailing Address 602 Schoolhouse Road

Name Gordon F. Palm   Lakeland, Florida 33803

(Please Type)

Company Name Gordon F. Palm & Assoc.   Telephone No.: 813/646-5775

Florida Registration Number 8349   Date ____________

*These instructions will be furnished by the vendors supplying the pollution control equipment. Said instructions and vendor guarantees will be reviewed [illegible] and recommendations made where required.

will be established when a vendor is selected.

DETAILED DESCRIPTION OF SOURCE

A. Describe the nature and extent of the project. Refer to existing pollution control facilities, expected improvement in performance of the facilities and state whether the project will result in full compliance. Attach additional sheet if necessary.

The source will consist of a fossil fuel fired steam generator used to generate 75,000 lbs steam/hour. The steam will be used to evaporate 55% phosphoric acid to 70% acid (super phosphoric acid). The steam generator will be fired with approximately 512 gal/hour of low sulfur (0.8%) commercial distillate fuel oil (heat input $\simeq 75 \times 10^6$ BTU/hr). Best available control technology (BACT) for such a steam generator is the use of low sulfur oil.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction January 1, 1977

Completion of Construction December 31, 1978

C. Costs of Construction (Show a breakdown of costs for individual components/units of the project serving pollution control purpose only). Information on actual costs shall be furnished with the application for operation permit.

BACT is the use of low sulfur (0.8% S) fuel oil. The cost differential between low sulfur oil and standard residual fuel oil is $1.60 per bbl. For this unit burning 85,000 bbl/year of oil, the additional annual fuel cost (1976) is $136,800.

D. For this source indicate any previous DER permit: issuance dates, and expiration dates; and orders and notices.

NONE

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22I -2, Florida Administrative Code ? ....Yes ..X....No

AIR POLLUTION SOURCES & CONTROL DEVICES
(other than incinerators)

A. Identification of Air Contaminants

1) [X] Particulates
   a) [ ] Dust   b) [X] Fly Ash   c) [ ] Smoke   d) [ ] Other (Identify)

2) [X] Sulfur Compounds
   a) [X] SO_x as SO_2 b) [ ] Reduced Sulfur as H_2S c) [ ] Other (Identify)

3) [ ] Nitrogen Compounds
   a) [ ] NO_x as NO_2 b) [ ] NH_3 c) [ ] Other (Identify)

4) [ ] Flourides   5) [ ] Acid Mist   6) [ ] Odor

7) [ ] Hydrocarbons   8) [ ] Volatile Organic Compounds

9) [ ] Other (Specify) ______

B. Raw Materials and Chemicals Used (Be Specific)

Description	Utilization Rate lbs./hr.	Approximate Contaminant Content		Relate to Flow Diagram
		Type	% Wt.	
NONE - see fuel oil consumption				

C. Process Rate:

1) Total Process input Rate* N/A Units.

2) Product Weight* N/A Units.

3) Normal Operating Time year around; 0.8 operating xxxxxxxxxxxxxxx factor for 50 weeks
   hrs./day 24 days/wk. 7 wks/yr. 50

D. Airborne Contaminants Discharged:

Name of Contaminant	Actual** Discharge		Discharge Criteria Rate*	Allowable Discharge Lbs./hr.	Relate to Flow Diagram
	lbs./hr.	T/yr.			
SO_2	<62	<207	BACT	BACT	4
particulate matter	<10	< 33	BACT	BACT	4
	FOR	EACH	BOILER		

*Refer to Chapter 17-2.04(2), Florida Administrative Code.
(Discharge Criteria: Rate= #/ton P_2O_5, #/M BTU/hr., etc.)
**Estimate only if this is an application to construct.

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D. Airborne Contaminants Discharged (Cont'd.)

Name of Contaminant	Hourly Emission (lb./hr.)	Daily Emission (lb./day)	Yearly Emission (T/yr.)	Basis for Emission Estimate (Test Data, Material Balance)
SO_2	<62	1,488	207	material balance
particulate matter	<10	240	33	design

E. Control Devices:

Name and Type (Model and Serial No.)	Contaminant	Efficiency*	Conditions of Operations	Basis for Efficiency Operational Data, Test, Design, Data)
NONE (BACT is the use of low sulfur [0.8%] fuel oil)				

*See required supplement.
(Include any test data and/or design data for efficiency substantiation)

F. Fuels

Type (Be Specific, includes %S, etc.)	Daily Consumption *		Maximum Heat Input MBTU/hr.
	Avg./hr.	Max./hr.	
commercial distillate with 0.8% S	3,280 lbs	4,096 lbs	75×10^6/hr

* Units: Natural Gas - MCF/hr.; Fuel Oils, Coal – lbs./hr.

Fuel Analysis:

Percent Sulfur 0.8 Percent Ash 0.09

Density 8.0 lb./gal.

Heat Capacity 18,300 BTU/lb. 146,400 BTU/gal.

Other Fuel Contaminants NONE

G. Describe briefly, without revealing trade secrets, the processes/operations generating the airborne emissions identified in this application.

A conventional oil fired boiler to produce steam, which in turn will evaporate phosphoric acid to super phosphoric acid. Particulate matter and SO_2 are generated during the combustion of fuel oil.

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

NONE

I. Emission Stack Geometry and Flow Characteristics, (Provide Date for each Stack).

Stack Height 50 ft, Stack Diameter 7.5 ft.

Gas Flow Rate 51,000 for one heater ACFM, Gas Exit Temperature 380 °F

Required Supplements:

1. Total process input rate and product weight – show deviation. N/A
2. Efficiency Estimation. N/A
3. An 8½" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate whether raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particulates are evolved and where finished products are obtained. SEE ATTACHMENT #1
4. An 8½" x 11" plot plan showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram. SEE OXY/SPA ATTACHMENT PACKAGE
5. An 8½" x 11" plot plan showing the exact location of the establishment, and points of airborne emissions in relation to the surrounding area, residences and other permanent structures and roadways. SEE OXY/SPA ATTACHMENT PACKAGE
6. If applicable, provide a brief description of the control device or treatment system serving the discharge point for airborne contaminants identified in this application. Include details of the manufacturer, model, size, type and capacity for control/treatment device and the features of the discharge point (height above ground, diameter, period(s) of discharge and discharge temperature). Boiler specifications and supplier have not yet been determined. Emissions will be govered by BACT.
7. Plans for storm water control during and after construction. SEE OXY/SPA ATTACHMENT PACKAGE

3.0 BEST AVAILABLE CONTROL TECHNOLOGY

Best Available Control Technology (BACT) is required to control pollutants emitted from major modifications to air pollution sources if the increases in the emission rate exceed de minimus levels (40 CFR 52.21). The de minimus levels for pollutants potentially emitted from sulfuric acid plants and boilers are defined in 40 CFR 52.21.(See Table 2-1). For the Occidental SCCC BACT is to apply for sulfur dioxide and sulfuric acid mist.

Preliminary engineering data are included in the Appendix of Section 2.0 for the control systems proposed for the two sulfuric acid plants and the auxillary boiler. The sulfur dioxide from the acid plants will be controlled by double absorption and the acid mist will be controlled with high efficiency mist eliminators. These measures are proposed as BACT for sulfur dioxide and acid mist. Double absorption for sulfur dioxide and mist eliminators to control acid mist to 0.15 pounds per ton of acid have recently been approved as BACT both by FDER and EPA (Appendix 3-1).

The sulfur dioxide emissions from the "E" auxillary boiler are the only pollutant emitted from this source that is subject to PSD review. The sulfur dioxide emissions from this source will be controlled by using fuel oil with 1.5 percent sulfur content.

The actual emission rate increases for nitrogen oxides, particulate matter, hydrocarbons and carbon monoxide from the proposed modifications are less than the de minimus levels. These pollutants are, therefore, not subject to BACT or other requirements of 40 CFR 52.21.

In the following sections the control technology proposed for each pollutant is discussed.

3.1 Sulfuric Acid Plants

Sulfuric acid plants emit sulfur dioxide, acid mist, nitrogen oxides and possibly carbon monoxide. EPA has NSPS regulating the sulfur dioxide and acid mist emission rates.

EPA has recently completed a review of NSPS for sulfuric acid plants(1). In this document it is concluded that NSPS for sulfuric acid plants should not be made more stringent than the existing 4.0 pounds sulfur dioxide and 0.15 pound acid mist per ton of 100 percent acid produced.

3.1.1 Sulfur Dioxide

Double absorption is the best demonstrated control technology available for sulfur dioxide control. This technology has the advantage of reducing sulfur dioxide emissions, producing no by-products and introducing no unfamiliar operating factors to plant operators. Improvements to this system by reducing catalyst life from three to five years to two years were considered(1) but rejected since it reduced pre-tax profit by approximately 20 percent.

Scrubbing systems; bisulfite and ammonia, were evaluated and described as feasible. These systems; however, would not be expected to result in significantly lower sulfur dioxide emission rates. In addition these systems are untested, they will generate by-products, and they will introduce a system that requires completely different operating technology(1).

Molecular sieves have been tried and found unacceptable because of operating difficulties.

It is concluded that double absorption with catalyst screening and make-up every three to five years represents BACT for sulfur dioxide. This will also assure compliance with NSPS.

3.1.2 Sulfuric Acid Mist

Acid mist and the resulting opacity can be controlled by mist eliminators and theoretically by electrostatic precipitators. Practically, precipitators are not considered an alternative because of operating problems that will develop in the acid environment.

It has been the experience of the industry that either Brink HV or HE mist eliminators are the most effective at this time. The HV mist eliminators are presently on the plants and are proposed as BACT by Occidental. These mist eliminators will also assure that NSPS will be satisfied.

3.1.3 Nitrogen Oxides and Carbon Monoxide

Neither nitrogen oxide nor carbon monoxide emission rates exceed the annual de minimus levels established by 40 CFR 52.21. The annual emission rate increase of nitrogen oxides as a result of the proposed project will be 26 tons per year compared with the de minimus level of 40 tons per year. The increase in the annual emission rate of carbon monoxide is less than one ton per year compared with a de minimus level of 100 tons per year. Since the de minimus levels are not exceeded, neither of these pollutants are subject to the requirements of 40 CFR 52.21.

3.2 Auxillary Boiler "E"

Fuel combustion sources emit sulfur dioxide, particulate matter, nitrogen oxides, carbon monoxide and hydrocarbons. Of these pollutants only sulfur dioxide is subject to Federal PSD Review since this is the only pollutant emitted by the boiler for which emission rate increases exceeds the de minimus levels established by 40 CFR 52.21.

3.2.1 Sulfur Dioxide

For boilers with a heat input of less than 250 million Btu per hour EPA has determined that the most effective means for controlling sulfur dioxide emissions is throught the sulfur content of the fuel burned in the boiler. Currently Occidental is permitted to operate the "E" auxillary boiler with a fuel oil containing 0.8 percent sulfur. Occidental is requesting a change in both State and Federal permit conditions to allow the use of No. 6 fuel oil with 1.5 percent sulfur. The reasons for requesting the fuel change are related to both cost and the reliability of supply.

Currently Occidental can obtain fuel oil with a 0.8 percent sulfur content at a cost of 0.6523 dollars per gallon. This fuel has a heat content of 136 thousand Btu gallon. The cost of fuel oil containing 1.5 percent sulfur is 0.5824 dollars per gallon and the heat content of this oil is 146 thousand Btu per gallon. The cost per million Btu for the 0.8 percent sulfur oil is $4.80 per million Btu and the cost per million Btu for fuel oil with 1.5 percent sulfur content $3.99 per million Btu.

With a heat input of 156 million Btu per hour, the cost of operating the "E" auxillary boiler 8540 hours per year is $6.39 million dollars if 0.8 percent sulfur fuel is used and $5.31 million dollars if fuel oil with 1.5 percent sulfur fuel is used. The savings to Occidental resulting from the fuel change on the "E" auxillary boiler will be $1.08 million dollars per year.

In addition to the cost advantage to using fuel oil with a higher sulfur content, Occidental is also concerned about having an adequate supply of fuel oil. Presently the Occidental fuel oil supplier has assured Occidental that a supply of 0.8 percent sulfur oil is available. The supplier goes on to state, however, that fuel oil with low sulfur contents are becoming more scarce and that long-term supplies cannot be guaranteed (See Appendix 3-1).

In order to maintain a reliable supply of oil at a competive price, Occidental is requesting the modification which would allow the use of 1.5 percent sulfur fuel oil in the "E" auxillary boiler.

3.2.2 Other Pollutants

The other pollutants emitted from the auxillary boiler include particulate matter, nitrogen oxides, carbon monoxide and hydrocarbons. The changes in emission rates of these pollutants as a result of increasing the sulfur content of the fuel and increase the operating time of the "E" boiler are included in Appendix 2-2. The calculations indicate the emission rates of these pollutants, even when combined with emission rate increases of pollutant from the sulfuric acid plants, will not exceed de minimus levels established for these pollutants.

Since the de minimus levels are not exceeded none of these pollutants are subject to the requirements of 40 CFR 52.21.

REFERENCES
SECTION 3

1. Drabkin, M. and Brooks, K.J., A review of Standards of Performance for New Stationary Sources - Sulfuric Acid Plants, US EPA, EPA-450/3-79-003, January 1979.

APPENDIX 3-1

RECENT FDER AN EPA BACT DETERMINATIONS
FOR
SULFURIC ACID PLANTS

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

August 24, 1979

RECEIVED BY
NEW WALES CHEMICALS, INC.
T. L. CRAIG

AUG 30 1979

Noted.................File.................

Referred To.................

Mr. Thomas L. Craig,
Vice President & General
Manager
New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

Subject: Best Available Control Technology (BACT) for New Wales Chemicals, Inc. Sulfuric Acid Plants No. 4 & No. 5, to be located in Polk County

Dear Mr. Craig:

The Department of Environmental Regulation has reviewed the BACT Application submitted by you, and determined Best Available Control Technology (BACT) for the above referenced soruce as follows:

SO_2:	Emission not to exceed 4.0 #/ton of 100% H_2SO_4/attainable with a double absorption system.
Sulfuric Acid Mist:	Emissions not to exceed 0.15 #/ton of 100% H_2SO_4/attainable with a high efficiency demister.
Opacity:	Not greater than 10 percent.
Test Method:	As prescribed in EPA NSPS, 40 CFR, Part 60, Subpart H.

The complete BACT determination document is attached.

Sincerely,

Victoria Martinez [signature] for WE

Victoria Martinez,
BACT Coordinator

VM/es

Attachment

original typed on 100% recycled paper

State of Florida

DEPARTMENT OF ENVIRONMENTAL REGULATION

INTEROFFICE MEMORANDUM

For Routing To District Offices And/Or To Other Than The Addressee	
To:	Loctn.:
To:	Loctn.:
To:	Loctn.:
From:	Date:

TO: Jacob D. Varn
Secretary

FROM: J. P. Subramani, Chief
Bureau of Air Quality Management

DATE: August 20, 1979

SUBJECT: BACT Determination - New Wales Chemicals, Inc. Sulfuric Acid Plants No. 4 and No. 5, to be located in Polk County

Facility: Two identical double absorption sulfuric acid plants with a combined process input rate of 1320 tons/day of sulfur.

<u>BACT Determination Requested by the Applicant:</u>

Pollutant

SO_2: 4 lbs/ton 100% H_2SO_4 acid produced

Sulfuric Acid Mist: 0.15 lbs/ton 100% H_2SO_4 acid produced

<u>Date of Receipt of a Complete BACT Application:</u>

June 5, 1979

<u>Date of Publication in the Florida Administrative Weekly:</u>

August 6, 1979

<u>Date of Publication in a Newspaper of General Circulation:</u>

August 8, 1979, The Ledger, Lakeland, Florida

Study Group Members:

A BACT determination on a sulfuric acid plant was completed April 16, 1979. There has been no significant technological improvement since that date. Thus the same BACT applies and a study group is not needed.

EPA's New Source Performance Standards (NSPS) for Sulfuric Acid Plants:

Pollutant	Rate of Concentration
SO_2:	4 #/ton of 100 H_2SO_4
Sulfuric Acid Mist:	0.15 #/ton of 100% H_2SO_4

BACT Determination by the Florida Department of Environmental Regulation:

SO_2:	Emission not to exceed 4.0 #/ton of 100% H_2SO_4/attainable with a double absorption system.
Sulfuric Acid Mist:	Emissions not to exceed 0.15 #/ton of 100% H_2SO_4/attainable with a high efficiency demister.
Opacity:	Not greater than 10 percent.
Test Method:	As precribed in EPA NSPS, 40 CFR, Part 60, Subpart H.

Justification of DER Determination:

There has been no significant technological improvements since December 1978 when EPA reviewed its NSPS for this type of source. Although lower emissions than NSPS are attainable the selection of NSPS as BACT allows for the normal decrease in efficiency with the passage of time.

Details of the Analysis May be Obtained by Contacting:

Victoria Martinez, BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32301

Recommendation from: Bureau of Air Quality Management

by: ______________________
J. P. Subramani

Date: AUGUST 20 1979

Approved by: ______________________
Jacob D. Varn

Date: 21^ST AUGUST 1979

JDV/es

Attachment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30308

MAY 23 1980

REF: 4AH-AP

Mr. A. L. Girardin III
Environmental Services, Supervisor
New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

Dear Mr. Girardin:

Review of your September 26, 1979 application to modify a phosphate fertilizer complex, near Mulberry and Bartow, Florida has been completed. The construction is subject to rules for the Prevention of Significant Air Quality Deterioration (PSD), contained in 40 CFR 52.21.

We have determined that the construction, as described in the application, meets all applicable requirements of the PSD regulations, subject to the conditions in the conclusions section to the final determination (enclosed). EPA has performed the preliminary determination concerning the proposed construction, and published a request for public comment on April 21, 1980. No comments were received. Authority to Construct a Stationary Source is hereby issued for the facility described above, subject to the conditions in the conclusions section to the final determination. This Authority to Construct is based solely on the requirements of 40 CFR 52.21, the Federal regulations governing significant deterioration of air quality. It does not apply to NPDES or other permits issued by this agency or permits issued by other agencies. Information regarding EPA permitting requirements can be provided if you contact Mr. Joe Franzmathes, Director, Office of Program Integration and Operations, at (404) 881-3476. Additionally, construction covered by this Authority to Construct must be initiated within 18 months from the receipt of this letter.

United States Court of Appeals for the D. C. Circuit issued a ruling (December 4, 1979) in the case of Alabama Power Co. vs. Douglas M. Costle (78-1006 and consolidated cases) which has significant impact on the EPA Prevention of significant deterioration (PSD) program and permits issued thereunder. The ruling will require modification of the PSD regulations and could affect permits issued under the existing program. You are hereby advised that this permit may be subject to reevaluation.

Please be advised that a violation of any condition issued as part of this approval, as well as any construction which proceeds in material variance with information submitted in your application will be subject to enforcement action.

Authority to Construct will take effect on the date of this letter. The complete analysis which justifies this approval has been fully documented for future reference, if necessary. Any questions concerning this approval may be directed to Kent Williams, Chief, New Source Review Section (404/881-4552).

Sincerely yours,

Thomas W. Devine
Director
Air & Hazardous Materials Division

Enclosure

cc: S. Smallwood
Florida Department of Environmental Regulation

TWD:JLS:jt

FINAL DETERMINATION

I. Applicant

New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

II. Project Location

The plant site is in western Polk County, Florida, at Highway 640 and County Line Road. UTM coordinates are 396.6km east and 3078.9km north.

III. Project Description

The existing New Wales plant manufactures several fertilizer products using both wet and dry phosphoric acid processes. The dry process, with its existing facilities, is to be eliminated.+ Production of phosphoric acid (P_2O_5) will be increased by 50% or 500,000 tons/year (as 54% concentrate) using the wet process exclusively. Sulfuric acid for the wet process will be provided from two new sulfuric acid plants producing 2000 tons/day H_2SO_4 each. A dual train diammonium phosphate (DAP) plant will produce 140 tons/hour of DAP by reacting anhydrous ammonia with the P_2O_5 produced at the plant.* A third product loadout system will separately handle granular triple super phosphate (GTSP) from the existing complex.

Phosphate rock, as a raw material, is mined and shipped by truck and rail to the New Wales plant from mines within Polk County. These include Kingsford, Phosphoria, Noralyn, and Clear Springs.

Plans are to begin construction in early 1980 with completion by January, 1982. Startups will be phased throughout the interim as construction is completed.

+(The trend towards the increasing use of the wet process is not because of improved technology, but is, instead, because the increasingly expensive fuel costs and air emission regulations are forcing the industry to abandon the dry process)(7).

*A liming station will be built for water treatment.

F. Source Impact on Class I Areas

PSD regulations require source impact on Class I areas be assessed, 40 CFR 52.21(q)(1).

The nearest Class I area to the New Wales site is the Chassahowitzka National Wildlife Refuge 62 miles northwest. The largest area of significant impact of proposed emissions is 72 km or 45 miles, and this is for the SO_2 3-hr average. This means there is no significant impact of emissions on the Class I area. New Wales' proposed emissions will not impact the Chassahowitzka National Wildlife Refuge.

V. Conclusions

EPA Region IV proposes a final determination of approval with conditions for New Wales to construct the proposed expansion projects described in the PSD permit application, PSD-FL-034. This approval recommendation is based on information submitted to EPA by the applicant in the following correspondence:

1.	June 5, 1979	PSD permit application submittal
2.	September 5, 1979	DAP plant proposal
3.	October 19, 1979	additional information submittal
4.	December 20, 1979	more additional information
5.	February 14, 1980	applicant's response to FDER's comments on air quality modeling

This approval recommendation requires the following conditions be a part of the PSD permit to be issued:

1. In the P_2O_5 plant all potential sources of total fluoride emissions including (but not limited to) the hotwell, Prayon filter, seal tank, vents from sumps, clarifiers and acid tanks, will either be unexposed to ambient air or will be ducted to this facility's wet scrubber system.
2. There will be no visible emissions from the phosphate rock receiving, unloading, and conveying operations at the source. There will also be no visible emissions from the rock storage pile.
3. Fugitive PM emissions during construction phases of the proposed project are limited to 20% opacity. Control will be achieved through use of water suppression, wind breaks, and road paving as needed to meet the opacity limitation.

4. The following existing source facilities scheduled to be phased out will have zero emissions after any facility of this permit begins operating:

Facility	Designation Code
Dry Rock Silo	A053-5963
Rock Grinding-west	A053-5969
Dry Rock load-out	A053-5979
Rock Grinding-east	A053-5967
Dry Rock Silo Bottom	A053-5980
Dry Prod. Belt. Trans.	A053-5981
Wet Rock Dryer	A053-5982
Phos. Acid Rock Bin-west	A053-4970
Phos. Acid Rock Bin-east	A053-5968

5. Unless otherwise specified, each emission point associated with this permit is subject to a 20 percent visible emission standard using Method 9.

6. H_2SO_4 plant SO_2 continuous emissions monitoring is required in accordance with 40 CFR 60.84.

7. The mass flow of phosphorus-bearing feed will be monitored at the DAP plant and the P_2O_5 plant in accordance with 40 CFR 60.223 and 40 CFR 60.203, respectively.

8. The total pressure drop across process scrubbing systems in the DAP plant and the P_2O_5 plant will be monitored in accordance with 40 CFR 60.223 and 40 CFR 60.204, respectively.

9. The emissions from the constructed facilities will not exceed the allowable emission limits outlined in the attached allowable emissions tables for fluorides, particulate matter, sulfur dioxide, and acid mist (H_2SO_4).

10. In accordance with 40 CFR 60.8 performance tests using EPA approved methods will be conducted to ensure that each allowable emissions of this permit is complied with. The gypsum ponds are exempted from this requirement on the basis that no accepted method exists for testing fugitive emissions of fluoride from gypsum ponds.

11. Post construction continuous monitoring for particulate matter and sulfur dioxide will be performed for a period of at least one year. Such monitoring will be in accrodance with the EPA

quality assurance procedures and the requirements outlined in Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA-450/2-78-019).

12. The applicant will comply with the requirements and procedures of the attached general conditions.

Sulfur dioxide allowable emissions:

Facility	Allowable Emissions	Control Technology
No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant (2000 TPD capacity each)	4 lb/ton H_2SO_4 produced, expressed as 100% H_2SO_4, and 333 lb/hr each	double adsorption process; catalyst changeover as required to keep SO_2 emissions within compliance
DAP reactor, granulator, and dryer (dual train)	22 lb/hr from each of two dryers, and 1.1 lb/10^6 Btu input	2.5% S maximum No. 6 fuel oil; free ammonia present in the dryer vapors naturally supresses SO_2 emissions, 60% control is estimated based on firing 140 gal/hr total.

NO_x allowable emissions:

Facility	Allowable Emissions	Control Technology
No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant	12.6 lb/hr each, and 2.1 x 10^{-6} lb/dscf	good engineering practices; no scrubber technology known. Allowabl emissions are based on actual measui ments of existing identical units
DAP reactor, granulator, and dryer	4.3 lb/hr each train, and 0.21 lb/10^6 Btu input	low NO_x type burners for the dryer; free ammonia present in the dryer vapors naturally supresses some NO_x species. Air/fuel control for oil firing in dryers is achieved by fix orifices in both oil and air lines using variable pressure on the oil pump; high excess air is required f proper process flow; steam atomizat of fuel oil.

Acid mist (H_2SO_4) allowable emissions:

Facility	Allowable Emissions	Control Technology
No. 4 H_2SO_4 plant; No. 5 H_2SO_4 plant	12.5 lb/hr each, and 0.15 lb/ton H_2SO_4 produced, expressed as 100% H_2SO_4	HE or HV mist eliminators, 90% control of potential emissions; opacity must not exceed 10% by Method 9

APPENDIX 3-2

FUEL OIL COSTS AND
AVAILABILITY

B' 1 J Koogler SKEC

INTER-OFFICE MEMO
OCCIDENTAL CHEMICAL COMPANY

DATE: September 16, 1980

TO: W. Atwood

FROM: L. R. Peiper

SUBJECT: NO. 6 FUEL OIL PRICES

As we discussed, the latest prices for No. 6 residual fuel oil are as follows:

0.8% Sulfur - $.6523/Gal. and 136,000 BTu/gal

1.0% Sulfur - .6373/Gal.

1.5% Sulfur - .5824 Gal. and 146,000 BTu/gal

2.5% Sulfur - .5224/Gal.

Larry R. Peiper

LARRY R. PEIPER
ENERGY CONSERVATION MANAGER

dsa

EASTERN SEABOARD PETROLEUM COMPANY, INC.
P. O. BOX 3233, STATION F—6531 EVERGREEN AVE.
JACKSONVILLE, FLORIDA 32206

OFFICES
JACKSONVILLE
TAMPA

TELEPHONE 904/355-8675
CABLE ADDRESS
EASTPET

November 11, 1980

RECEIVED
NOV 1 2 1980
W. A. BAKER

Mr. Bill Baker
Manager of Utilities
Occidental Chemical
PO Box 300
White Springs, FL 32096

Dear Bill:

You asked for our comments concerning the availability of certain grades of fuel oil for the operation of your White Springs plant. Specifically, you mentioned 0.8% No. 6, 1.5% No. 6 and 2.5% No. 6 all indicating the percentage of sulfur by weight in the fuel.

Our best estimate of the supply situation reveals periods, such as last fall, when the lower sulfur grades will be very tight in supply and availability of fuels with sulfur contents of less than 2.0% almost nonexistent. On the other hand, mild winters and availability of natural gas will relieve this situation and all grades will be in surplus similar to the present situation.

Further, we know that the light lower sulfur crudes worldwide are diminishing in supply and that refiners are being forced both economically as well as from an availability standpoint to run heavy sour crudes in their refineries. Producing nations are keeping more of these light crudes for their own refineries. This certainly will have a great effect on the supply of low sulfur fuels in the future. Increasing demand for low sulfur coupled with decreasing manufacturing capability will surely create supply problems in the years ahead.

The Iran-Iraq war has added a greater burden on supply of low sulfur crudes and even if it ended today most observers speculate it would be one to two years before any production from these countries began again.

Certainly we are in a fragile position in this country having to depend so heavily on foreign crude sources. Any event that disrupts the world balance of supply and demand will be felt first in these lower sulfur grades.

Very truly yours,

Arnold E. Seaton

Arnold E. Seaton
Assistant Vice President

AES/tab

4.0 EXISTING AIR QUALITY DATA

4.1 Existing Data

The only pollutant for which monitoring data might be required is sulfur dioxide. Various factors, including air quality modeling and existing monitoring data justify the elimination of the requirement for Occidental to enter into a preconstruction ambient air monitoring program.

The existing PSD regulations state that applications submitted, and determined to be complete, prior to June 8, 1981 must meet the monitoring requirements of the 1978 PSD regulations. These regulations state [40 CFR 52.21(n)] "As necessary(underlining added for emphasis) to determine whether emissions from the proposed source or modification would cause or contribute to a violation of a national ambient air quality standard, any permit applications submitted after August 7, 1978, shall include an analysis of continuous air quality monitoring data . . ." This requirement has been discussed with EPA staff personnel several times in the past three years. In cases where sources have been relatively isolated and air quality modeling has demonstrated there was no threat to ambient air quality standards it has always been agreed that preconstruction monitoring would not be required.

It is the opinion of Occidental and its consultant that the air quality modeling results included in Section 5.0 demonstrate that air quality standards are sufficiently protected and because of this preconstruction monitoring should not be required.

4.2 Background Concentrations

Background levels for sulfur dioxide have been assumed to be zero. This assumption was made since all of the sulfur dioxide emitted within several miles of the two Occidental Hamilton County facilities is emitted from permitted air pollution sources. Emission data for these sources are on file with the Florida Department of Environmental Regulation office in Jacksonville, Florida and were taken into consideration in developing emission inventories which were used for air quality modeling.

The fact that all significant sulfur dioxide emissions in the study area are from permitted sources; sources that can readily be accounted for by modeling, is another reason for suggesting that preconstruction air quality monitoring is not necessary.

5.0 EMISSION DATA AND METEROLOGICAL DATA

5.1 Emission Data

Several air quality impact studies conducted by Occidental in the past and reviewed by FDER have confirmed that the only sources that have a significant sulfur dioxide or acid mist impact at the Occidental site are the sources at the SCCC and the SRCC. Emission data from these sources have been confirmed with the FDER office in Jacksonville. The emission data for sulfur dioxide are summarized in Table 5-1.

The sulfuric acid mist emission data were calculated based on the nominal production rates of the sulfuric acid plants and the allowable acid mist emission rates. The "A" and "B" sulfuric acid plants have and operating rate of 1000 tons per day of 100 percent acid and an allowable mist emission rate of 0.5 pounds per ton of acid. The "C" and "D" sulfuric acid plants have an operating rate of 1800 tons per day and the "E" and "F" plants have a permitted operating rate of 2000 tons per day. The allowable acid mist emission rate for these four plants is 0.15 pounds per ton of acid.

5.2 Meterological Data

Surface meterological data from Valdosta and upper air data from Waycross for the years 1972-1976 were used for all air quality studies. These data are summarized in Table 5-2 and Figure 5-1.

February 12, 1981

TABLE 5-1
SULFUR DIOXIDE EMISSION DATA AND STACK PARAMETERS

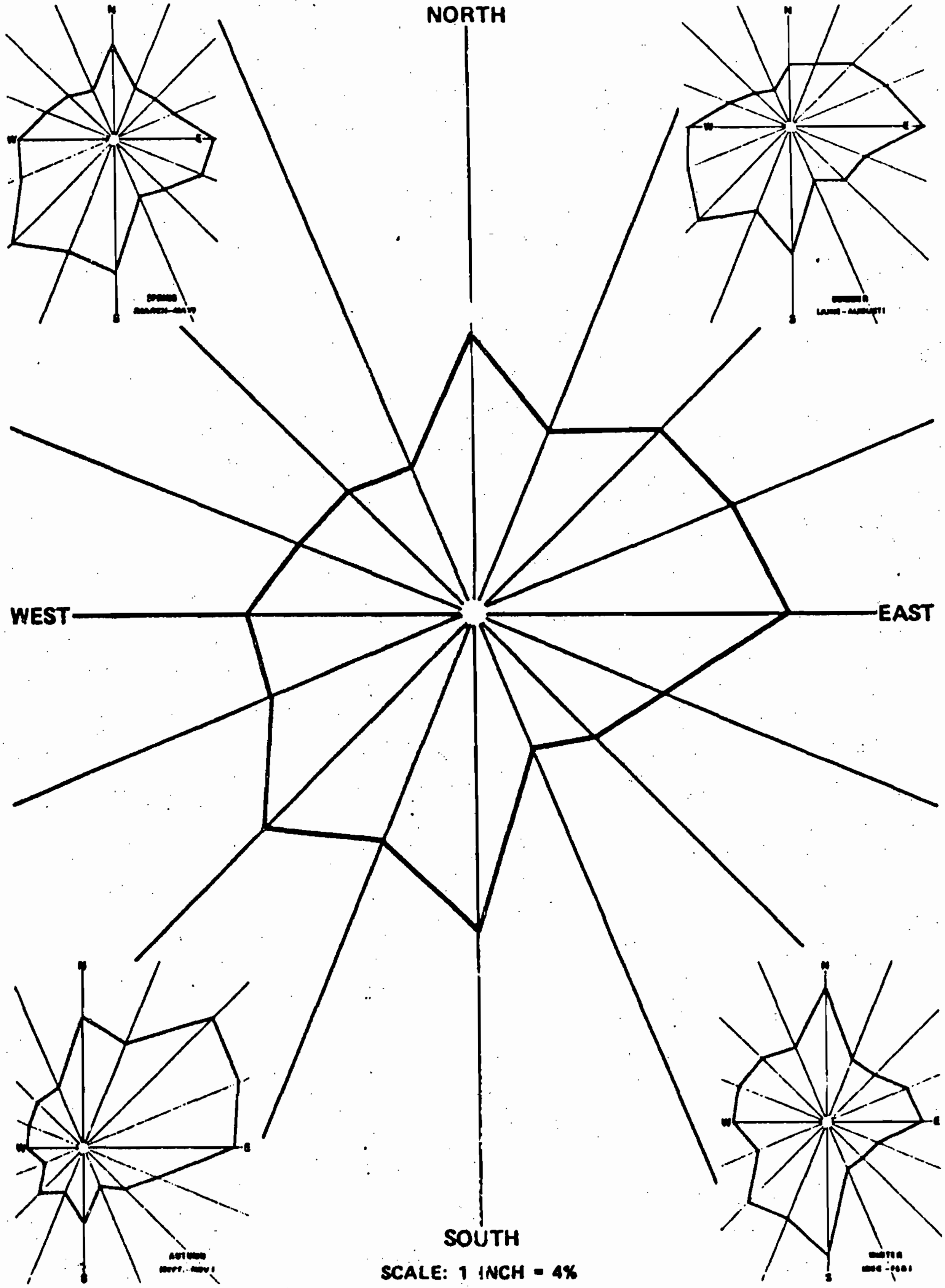
OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

Source	Emission Rate: Annual (tons/day)	Emission Rate: Maximum (gr/sec)	Stack Data: Height (m)	Stack Data: Temp (°K)	Stack Data: Velocity (m/sec)	Stack Data: Dia. (m)	Source Location: X Cord. (km)	Source Location: Y Cord. (km)	
Sulfuric Acid A	14.500	152.25	61.0	350.0	15.5	1.80	28.69	68.99	
Sulfuric Acid B	14.500	152.25	61.0	350.0	15.5	1.80	28.69	69.07	
Sulfuric Acid C	3.600	37.80	45.7	356.0	28.7	1.59	28.71	69.17	
Sulfuric Acid D	3.600	37.80	45.7	356.0	28.7	1.59	28.71	69.23	
DAP 1	0.13	1.40	36.6	322.0	12.2	2.13	28.48	68.89	
DAP 2	0.06	0.79	42.7	325.0	13.1	2.44	28.45	68.87	
GTSP/Dical	0.13	1.40	32.3	314.0	13.1	2.13	28.49	69.03	Revised 4/23/81
Auxiliary Boiler A (A & B Sulfuric)	0.31	3.23(1)	12.2	466.0	12.5	1.13	28.66	69.03	
Auxiliary Boiler B(2) (C & D Sulfuric)	0.41	4.30(1)	10.7	468.0	9.5	1.46	28.68	69.18	
Pollyphos Feed Prep.	0.06	0.62	28.7	342.0	14.9	1.07	28.87	68.85	
Pollyphos Reactor A	1.25	13.10	30.5	322.0	10.1	1.22	28.87	68.83	
Pollyphos Reactor B	1.25	13.10	30.5	322.0	10.1	1.22	28.88	68.83	
SPA #1	0.009	0.10	30.5	318.0	17.8	0.43	28.68	68.79	
Rock Dryer #3 (SCCC)	0.46	4.80	15.2	317.0	17.2	2.16	20.90	68.96	
Rock Dryer East	0.34	3.61	18.3	343.0	5.7	2.95	30.17	68.47	
Rock Dryer West	0.34	3.61	18.3	343.0	5.7	2.95	30.15	68.47	
Auxiliary Boilers C & D(2)	0.64	26.44	31.7	468.0	15.2	1.98	28.90	68.90	Revised 5/6/81
Sulfuric Acid E(2)	4.00	42.0	61.0	356.0	9.3	2.90	20.95	69.82	
Sulfuric Acid F(2)	4.00	42.0	61.0	356.0	9.3	2.90	20.90	69.70	
Auxiliary Boiler E(2) (E & F Sulfuric)	0.41	4.3(1)	15.3	428.0	15.9	1.60	20.90	69.75	

(1) 25 percent of maximum rate.
(2) Not included in baseline.

Table 6-1 Annual Wind Speed-Wind Direction Distribution for All Stability Classes - Valdosta, Georgia 1972-1976

	Windspeed (m/sec)					
Wind Direction	0-1.5	1.6-3	4-5	6-8	9-11	> 11
N	0.0170	0.0269	0.0254	0.0063	0.0002	0.0
NNE	0.0135	0.0204	0.0174	0.0030	0.0000	0.0
NE	0.0145	0.0272	0.0240	0.0053	0.0001	0.0
ENE	0.0174	0.0305	0.0231	0.0048	0.0001	0.0
E	0.0192	0.0355	0.0266	0.0046	0.0001	0.0
ESE	0.0139	0.0238	0.0151	0.0027	0.0001	0.0
SE	0.0139	0.0208	0.0102	0.0011	0.0000	0.0
SSE	0.0110	0.0165	0.0091	0.0020	0.0002	0.0
S	0.0193	0.0297	0.0253	0.0100	0.0011	0.0
SSW	0.0131	0.0229	0.0198	0.0096	0.0006	0.0
SW	0.0175	0.0294	0.0239	0.0103	0.0011	0.0
WSW	0.0133	0.0220	0.0182	0.0055	0.0002	0.0
W	0.0144	0.0253	0.0164	0.0055	0.0004	0.0
WNW	0.0116	0.0208	0.0135	0.0057	0.0003	0.0
NW	0.0107	0.0172	0.0143	0.0051	0.0001	0.0
NNW	0.0090	0.0161	0.0135	0.0039	0.0004	0.0



ANNUAL WIND DIRECTION DISTRIBUTION VALDOSTA, GEORGIA 1972-1976
SOURCE: NATIONAL WEATHER SERVICE SCALE FOR INSETS: 1/2 INCH = 5%

Figure 5-2

6.0 AIR QUALITY IMPACT ANALYSIS

6.1 Introduction

Air quality modeling has been conducted to evaluate the impact of the increased sulfur dioxide and acid mist emissions from the two SCCC sulfuric acid plants. The baseline concentration for these pollutants and the impact of new or modified sources (all major sources constructed since January 6, 1975 and all sources since August 7, 1977) have been established by air quality modeling. The impact of new or modified sources within the area of the SCCC have been included in the air quality impact analysis.

The air quality modeling for both long-term and short-term impacts was conducted in accordance with guidelines established by EPA (Guideline for Air Quality Models, March 1978). For sulfur dioxide the annual, the 24-hour and the 3-hour time periods were investigated. For acid mist the impacts for the same time periods were investigated even though air quality standards do not exist for this pollutant.

The annual impacts were evaluated by using the Air Quality Display Model (AQDM). Meteorological data from Valdosta for the period 1972-1976 were used with this model.

For the 24-hour and 3-hour periods, the CRSTER and PTMTPW models were used. The CRSTER was used to establish the area of significant impact and the meteorological conditions resulting in the highest second-high impacts in various directions from the fertilizer complex. Once the meteorological conditions were established, these data plus emission data from Occidental SCCC sources and sources up-wind of the SCCC were input into the PTMTPW model and the maximum impacts were determined. Receptor spacing of 0.1 km were used in determing the maximum impacts.

The results of the modeling are summarized in Table 6-1 and various Figures. The computer print-outs for all of the air quality modeling are bound as a separate document.

6.2 Impact Analysis

The short-term impact is defined as the 3-hour and 24-hour impact of pollutants emitted from sources in the study area. The short-term impact analysis was conducted with the CRSTER and PTMTPW air quality models.

The CRSTER model was run first using as input the emission data from the proposed sources and meteorological data for the period 1972-1976 from Valdosta, Georgia. The receptor distances in the CRSTER model were set to predict the point of maximum impact and also the boundary of the area of significant impact of the proposed sources. Significant, as it is used in this context, is defined in Table 6-2. The areas of significant impact for sulfur dioxide are shown in Figure 6-1.

Air pollutant emissions from all major sources that are within 50 kilometers of Occidental and that have a significant impact on air quality at Occidental were included in the impact studies. This includes sources well beyond the area of significant impact of the proposed action.

The emission inventory for sulfur dioxide in the area of influence was developed from data on file at the Florida Department of Environmental

Regulation District Office in Jacksonville, Florida. These files were reviewed source by source to develop an emission inventory which is as realistic as possible.

Meteorological data for evaluating the 3-hour and 24-hour pollutant levels in the ambient air were seleoted from the CRSTER model output. Meteorological data resulting in the highest second-high 24-hour and 3-hour sulfur dioxide concentrations in several directions from Occidental were selected for evaluating sulfur dioxide impacts. Only the directions at which the maximum impacts were predicted were selected for evaluating the 24-hour and 3-hour acid mist impacts.

The long-term impact is defined as the annual average impact of pollutants emitted from sources within the study area. The long-term impact analysis was conducted with the AQDM. The input data to the AQDM included emission data for sulfur dioxide resulting from all sources within approximately 50 km of Occidental. This includes sources outside the area of significant impact of the proposed sources.

The meteorological data input to the AQDM were for the 1972-1976 period from Valdosta, Georgia. These data were in the STAR format with five stability classes. Receptor spacing used in the AQDM was 1.0 km.

6.2.1 Sulfur Dioxide Impact Analysis

6.2.1.1 Short-Term Sulfur Dioxide Impact

The short-term impact analysis for sulfur dioxide involved a 24-hour impact analysis and a 3-hour impact analysis. These time periods correspond to applicable ambient air quality standards.

The CRSTER model was run multiple times with sulfur dioxide emission data for the new and proposed Occidental sources and meteorological data for the period 1972-1976 for Valdosta, Georgia. On the first set of runs the receptors were set to determine the maximum air quality impact of the new and proposed sources. From this run the meteorological conditions resulting in the highest second-high 24-hour and 3-hour impacts at several locations were selected. The locations selected represented the direction to the maximum highest second-high concentration for both the 24-hour and 3-hour periods and directions that would allow investigation of the combined impacts of SCCC sources and other sources which would be aligned with SCCC during the occurance of various wind directions. The direction selected for evaluation and the meteorological conditions resulting in the highest second-high impact for each direction are presented in Figure 5-2 for the 24-hour sulfur dioxide impact analysis and in Figure 5-3 for the 3-hour sulfur dioxide impact analysis.

The second series of runs with the CRSTER model were made to determine the area of significant impact of the proposed sources. The distance to the boundary of the area of annual significant impact was determined to be 8.3 km; distance to the boundary for the 24-hour period was 30.5 km and for the 3-hour period 45.5 km. The areas of significant influence are shown in Figure 6-1. Also shown in this Figure is the Class I PSD area nearest Occidental; the Okefenokee Wildlife Refuge in Georgia. It can be seen that the proposed sources do potentially impact significantly on the Class I area, for the 3-hour period. The PTMTPW runs for all new sources for 24-hour and 3-hour periods are summarized in Table 6-1 and show the actual impacts are less than permitted for Class I areas. This is further discussed in Section 6.4.

The sulfur dioxide emission inventory used for the air quality impact analysis included all major sources that are within approximately 50 km of the Occidental site and that have a significant impact on air quality at Occidental.

The critical meterological conditions established with the CRSTER model and the emission inventory were input to the PTMTPW model to determine the maximum impact for each condition investigated. The receptor spacing used for determining the point of maximum impact was 0.1 km. The results of these runs are summarized in Table 6-1 and Figures 6-5 and 6-6.

6.2.1.2 Long-Term Sulfur Dioxide Impact

The AQDM was run once to determine the impact of sulfur dioxide emissions resulting from the proposed production rate increase, a second time to determine the impact of new and proposed sources, and a third time to determine the impact of all sources; the latter with the two sulfuric acid plants at 2,500 tons per day each and the SCCC auxiliary boiler operating at 100 percent capacity.

The annual average sulfur dioxide levels for all sources, new and proposed sources and proposed action are summarized in Figures 6-7 through 6- 9 respectively.

6.2.2 Acid Mist Impact Analysis

A summary Air Quality Review was conducted to determine the impact of acid mist emitted from sulfuric acid plants in the vicinity of the SCCC. This review was conducted because of the requirements of 40 CFR 52.21. It should be recognized that there are no ambient air quality standards or PSD increments against which to evaluate the predicted ambient levels of acid mist.

The annual average acid mist impact analysis was determined with the AQDM and the short-term impact analyses were conducted with the PTMTPW.

The AQDM was run with sulfuric acid mist emissions from the two sulfuric acid plants only and again with acid mist emissions from these two plants plus the four sulfuric acid plants located at the Occidental SRCC.

To determine the maximum 3-hour and 24-hour impacts of acid mist emissions in the vicinity of the SCCC the PTMTPW was run with emissions from the SCCC sulfuric acid plants. The PTMTPW was run twice for both the 3-hour and 24-hour periods; once with emissions only from the two SCCC sulfuric acid plants and the second time with sulfuric acid mist emissions from all six Occidental sulfuric acid plants. The meteorological data used with the PTMTPW for these runs were the data determined to give the maximum impacts from the sulfuric acid plants (Figure 6-4).

The air quality review for sulfuric acid mist is summarized in Figures 6-10 through 6-12 and in Table 6-3.

6.3 Downwash Analysis

When pollutants are emitted from a stack or vent at a velocity less than two times the prevailing wind speed or at a height less than approximately 2.5 times the height of the nearby structures, there is a possibility that the pollutant will be entrapped in the turbulent wake generated by the structure or stack and be mixed immediately to ground level. Such an event is referred to as a downwash.

The sulfuric acid plants at the SCCC have 200 foot high stacks. The highest structure with any applicable width associated with the sulfuric acid plants or near these plants will be approximately 80 feet high. The 200 foot stack is 2.5 times higher than this structure. In addition, the gas velocity leaving the stack will be approximately ten meters per second; approximately three times the average wind speed at the Occidental site. Considering the height of the sulfuric acid plant stack relative to surrounding structures and the gas velocity leaving the stack, it is very unlikely that downwash from this source will occur.

The stack height of the auxillary boiler stack is 50 feet, the stack gas velocity is 15.9 meters per second and the stack gas temperature is 311°F. There are structures at the SCCC higher than the boiler stack but the structures greater than 50 feet high that are within 10 "structure-heights" of the boiler are "open" structures. That is, the structures consist of piping, ducts, structural members and/or cylindrical vessels. Because of the nature of these structures and the relatively high stack gas velocity and temperature characteristic of the boiler stack gas, it is doubtful that plume downwash will occur.

6.4 Impact on Class I Areas

The Okeefenokee National Wildlife Refuge is located approximately 41 kilometers northeast of Occidental. The impact of sulfur dioxide emissions from the proposed

SCCC modifications was determined with the CRSTER and ISC models. The meteorological conditions resulting in worst case 24-hour and 3-hour impacts at the Okeefenokee boundary were determined with the CRSTER.

These meteorological conditions and emission data from all new Occidental sources were then input to the ISC model. A sulfur dioxide half-life of eight hours was used with the model in accordance with a suggestion of Lou Nagler of EPA, Region IV.

This analysis, with the proposed fuel oil switch to 1.5 percent sulfur oil, resulted in 24-hour and 3-hour impacts greater than the allowable Class I PSD increments. As a result of this, the sulfur content of the fuel oil was reduced to 1.3 percent. With this fuel oil sulfur content the maximum 3-hour impact at the Okeefenokee is 21 micrograms per cubic meter and the maximum 24-hour impact is 4.6 micrograms per cubic meter.

6.5 Air Quality Review Summary

The air quality review for the proposed sulfuric acid plant production rate increase was conducted in accordance with modeling guidelines established by the U. S. Environmental Protection Agency. The long-term impact analyses were conducted with the AQDM and the short-term analyses with the CRSTER and PTMTPW. Meteorological data from Valdosta for the period 1972-1976 were used in the air quality review.

The emission data utilized in conducting the air quality review were obtained from the FDER office in Jacksonville. With the Occidental sources it was assumed that all sources would be operating at maximum permitted rates for short-term and annual periods. Under this assumption the six sulfuric acid plants at Occidental, the auxiliary boilers, and all other sources were assumed to be operating at maximum rated capacity.

The air quality review indicates that the production rate of the two SCCC sulfuric acid plants can be increased to 2,500 tons per day each and that fuel oil with 1.3 percent sulfur can be burned in the SCCC auxiliary boiler with no threat to ambient air quality standards or PSD increments. The impact of sulfuric acid mist resulting from the proposed production rate increase likewise is not considered to be significant.

The proposed action does not have a significant impact on the Okeefenokee National Wildlife Refuge; the Class I PSD area nearest to Occidental. There are no sulfur dioxide non-attainment areas in North Florida that can be impacted by the proposed action.

TABLE 6-1

SUMMARY OF AIR QUALITY REVIEW FOR SULFUR DIOXIDE

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

Pollutant	CLASS II			CLASS I
	Max. New Source Impact (ug/m^3)	Max. Impact of all Sources (ug/m^3)	Max. Increase From Proposed Rate Increase (ug/m^3)	Max. New Source Impact (ug/m^3)
Annual	3	10 (at SCCC)	2	<1
24-Hour	86	86 (at SCCC)	33	4.6
3-Hour	440	440 (at SCCC)	132	20.7

TABLE 6-2

AIR QUALITY STANDARDS AND
CLASS II PSD INCREMENTS FOR SULFUR DIOXIDE

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

Time Period	Air Quality Standard (ug/m^3)	Class II PSD Increment (ug/m^3)	Class I PSD Increments (ug/m^3)	Significant Impact Levels (ug/m^3)
Annual	60	20	2	1
24-Hour	260	91	5	5
3-Hour	1300	512	25	25

TABLE 6-3

SUMMARY OF AIR QUALITY REVIEW FOR ACID MIST

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

Pollutant	Max. New Source Impact (ug/m^3)	Max. Impact of all Sources (ug/m^3)	Max. Increase From Proposed Rate Increase (ug/m^3)
Annual	0.05	0.14 (at SCCC)	0.01
24-Hour	1.5	2.1	0.3
3-Hour	10.7	10.7	3.2

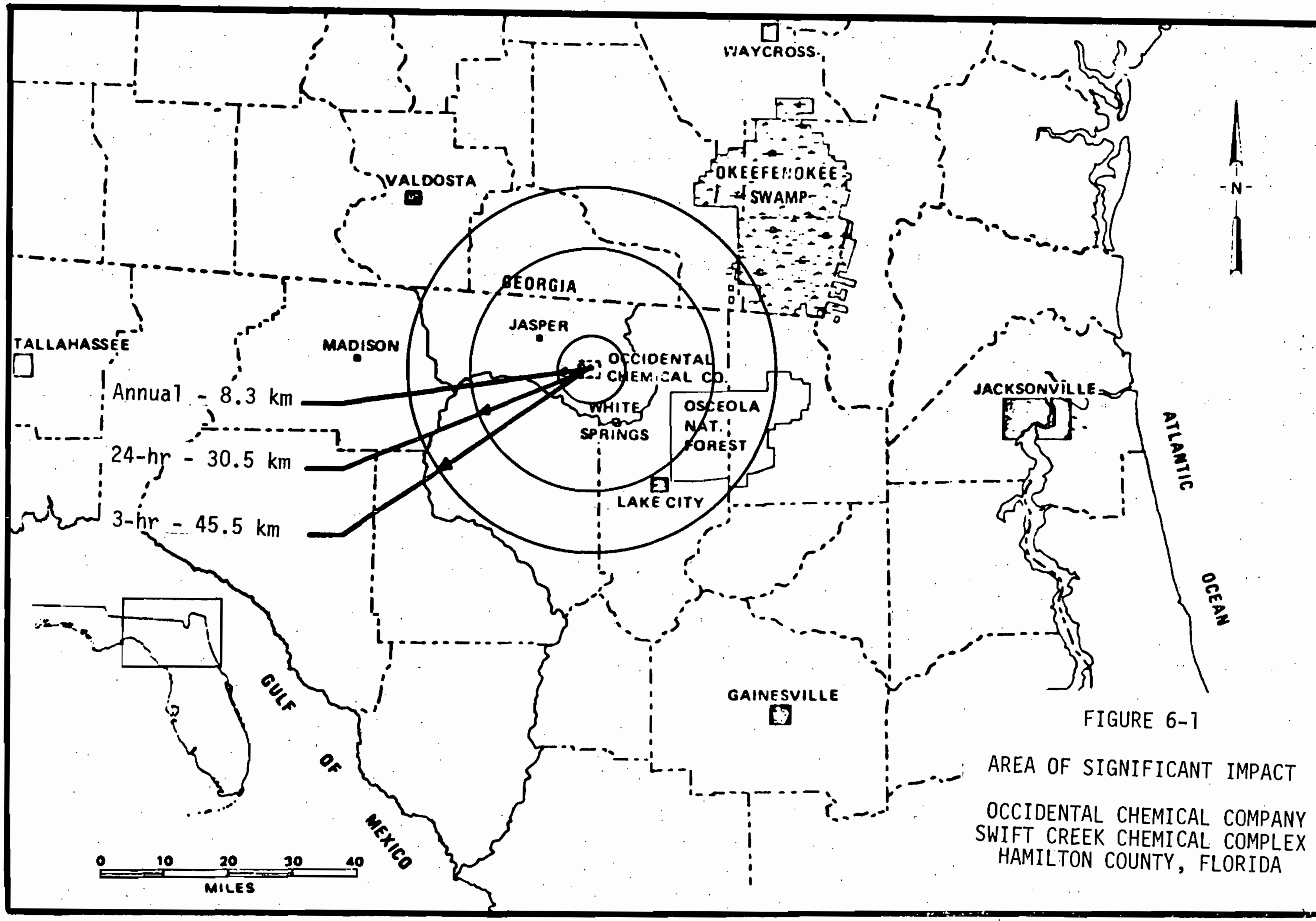


FIGURE 6-1

AREA OF SIGNIFICANT IMPACT

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

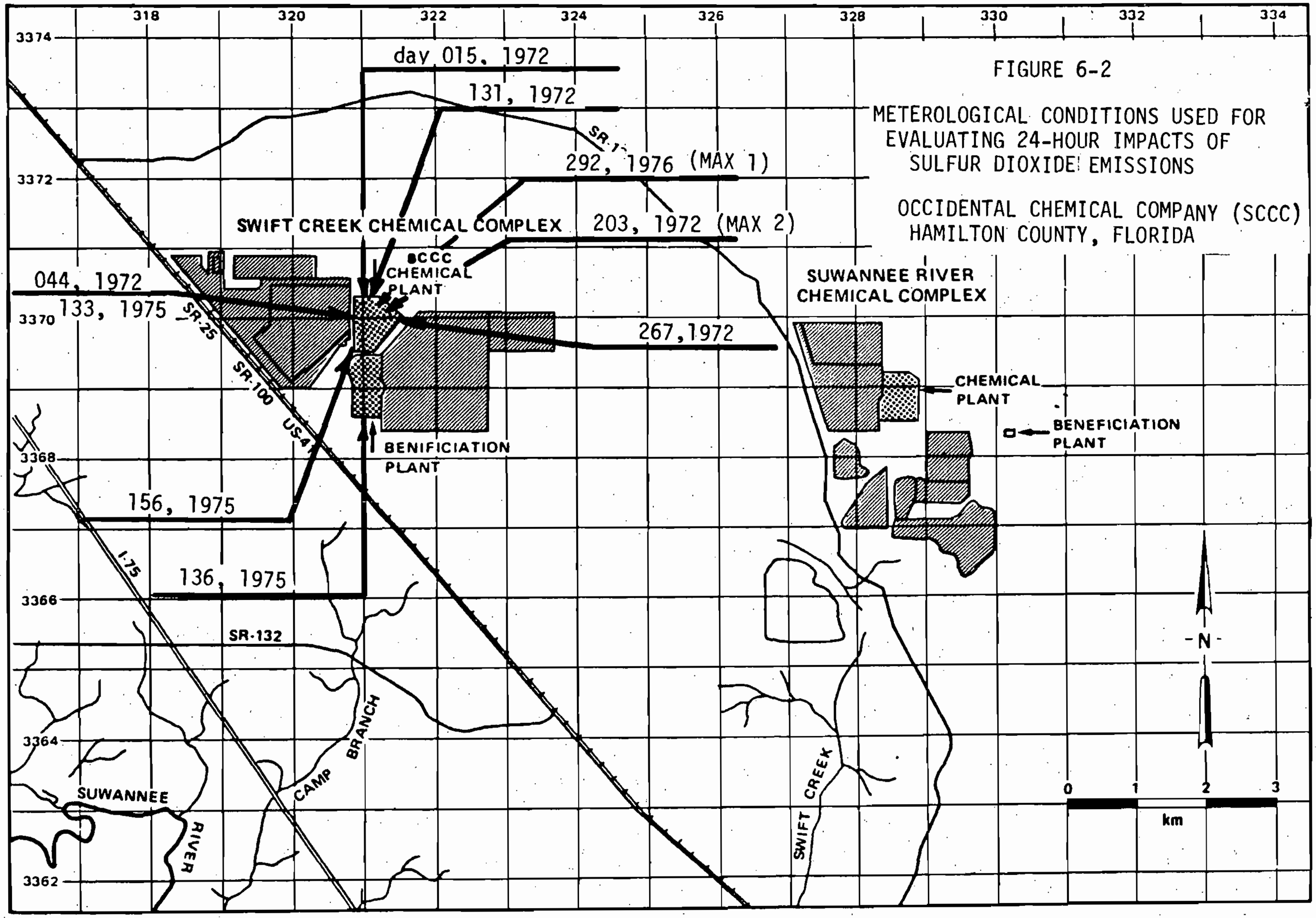


FIGURE 6-2

METEROLOGICAL CONDITIONS USED FOR EVALUATING 24-HOUR IMPACTS OF SULFUR DIOXIDE EMISSIONS

OCCIDENTAL CHEMICAL COMPANY (SCCC)
HAMILTON COUNTY, FLORIDA

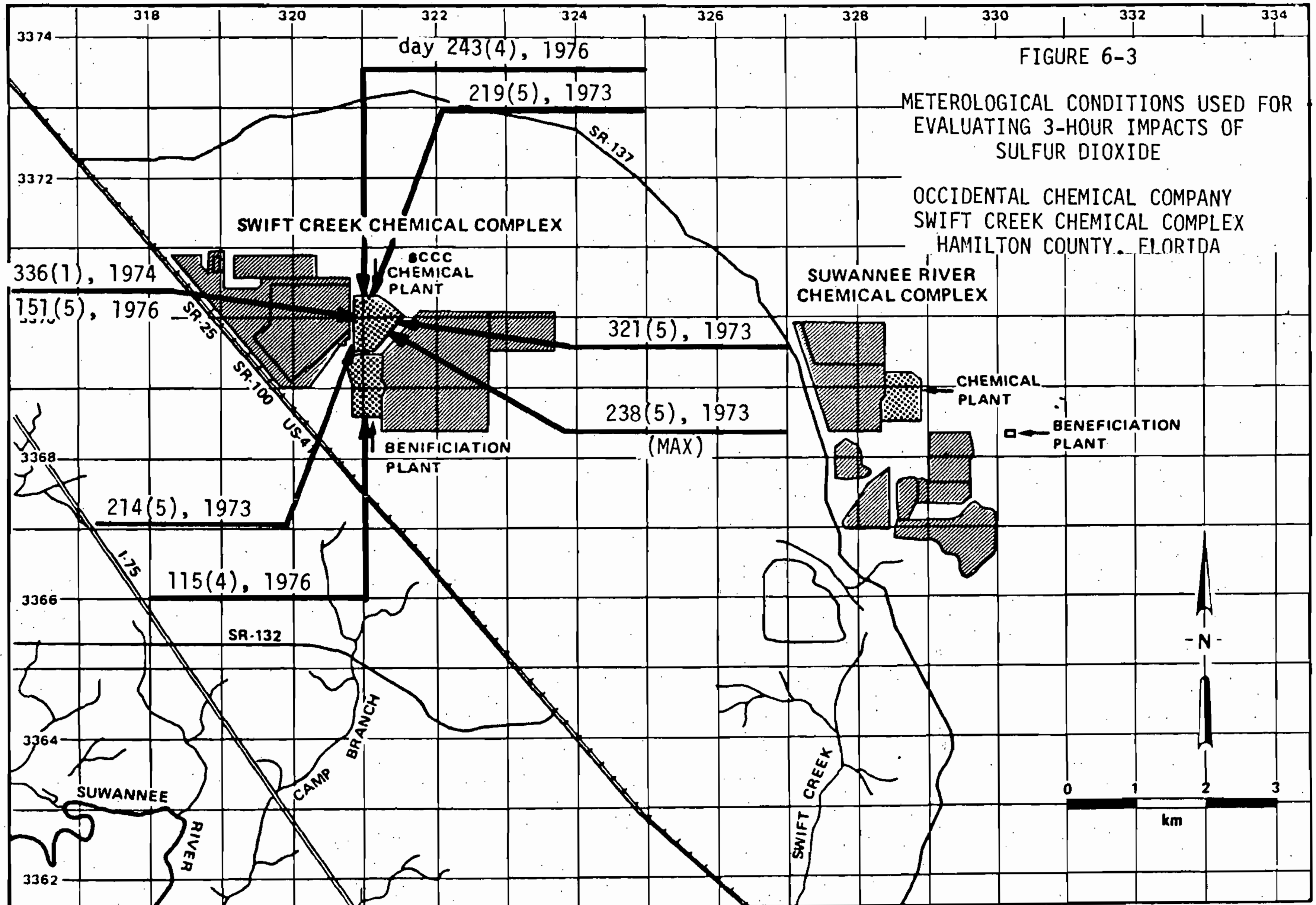


FIGURE 6-3

METEROLOGICAL CONDITIONS USED FOR EVALUATING 3-HOUR IMPACTS OF SULFUR DIOXIDE

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

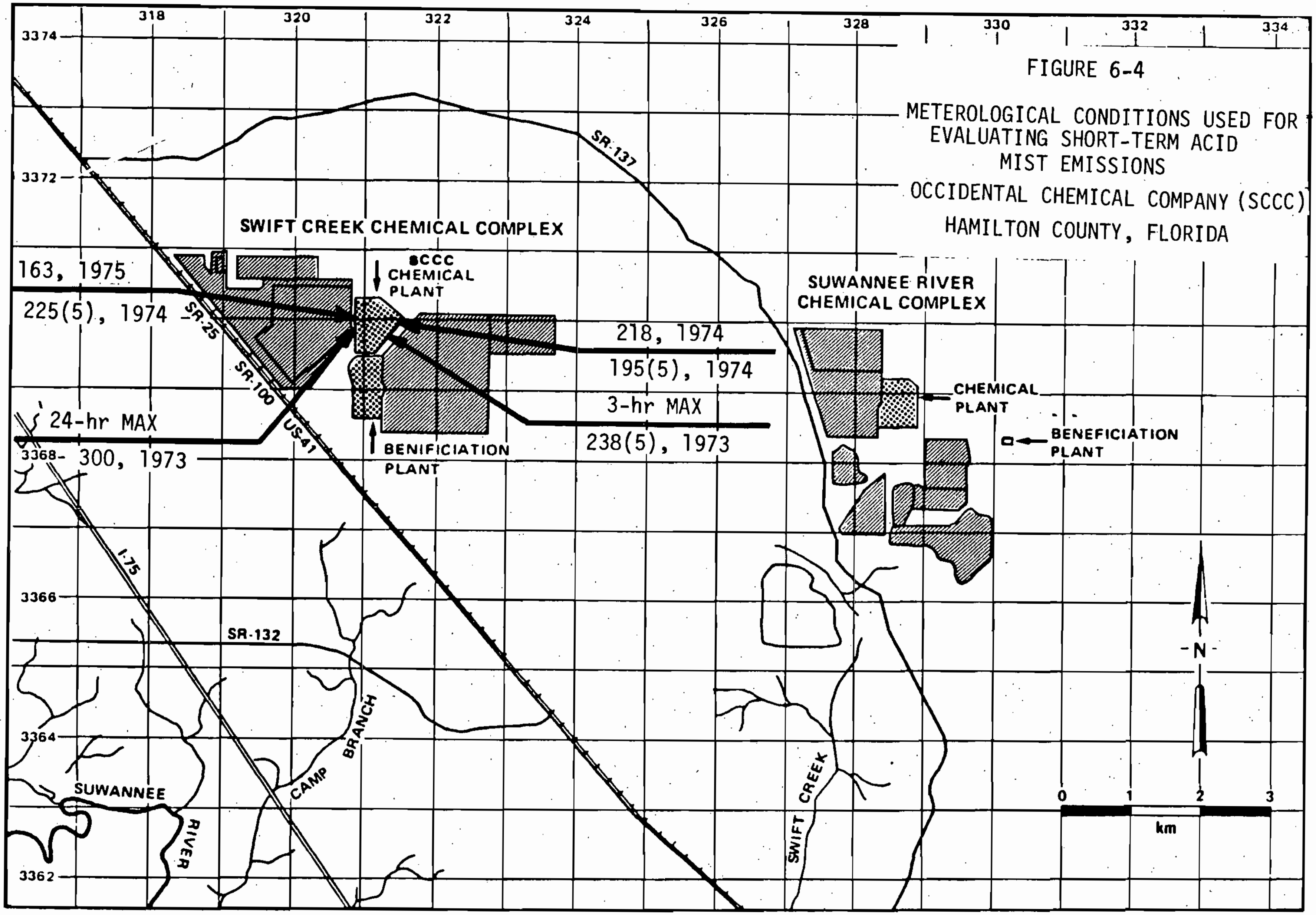


FIGURE 6-4

METEROLOGICAL CONDITIONS USED FOR EVALUATING SHORT-TERM ACID MIST EMISSIONS

OCCIDENTAL CHEMICAL COMPANY (SCCC)

HAMILTON COUNTY, FLORIDA

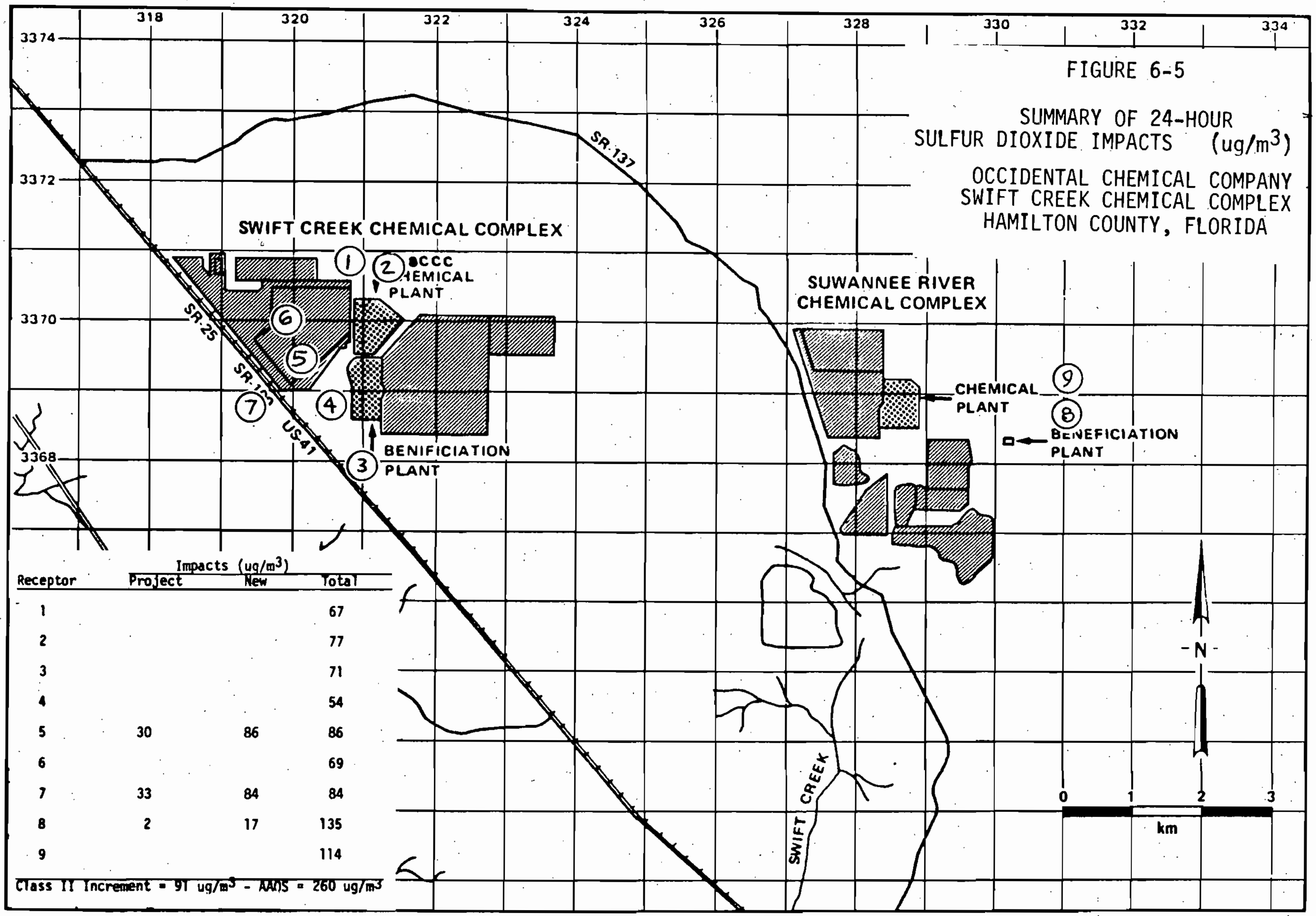


FIGURE 6-5

SUMMARY OF 24-HOUR SULFUR DIOXIDE IMPACTS (ug/m^3)

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

Receptor	Impacts (ug/m^3) Project	New	Total
1			67
2			77
3			71
4			54
5	30	86	86
6			69
7	33	84	84
8	2	17	135
9			114

Class II Increment = 91 ug/m^3 - AAQS = 260 ug/m^3

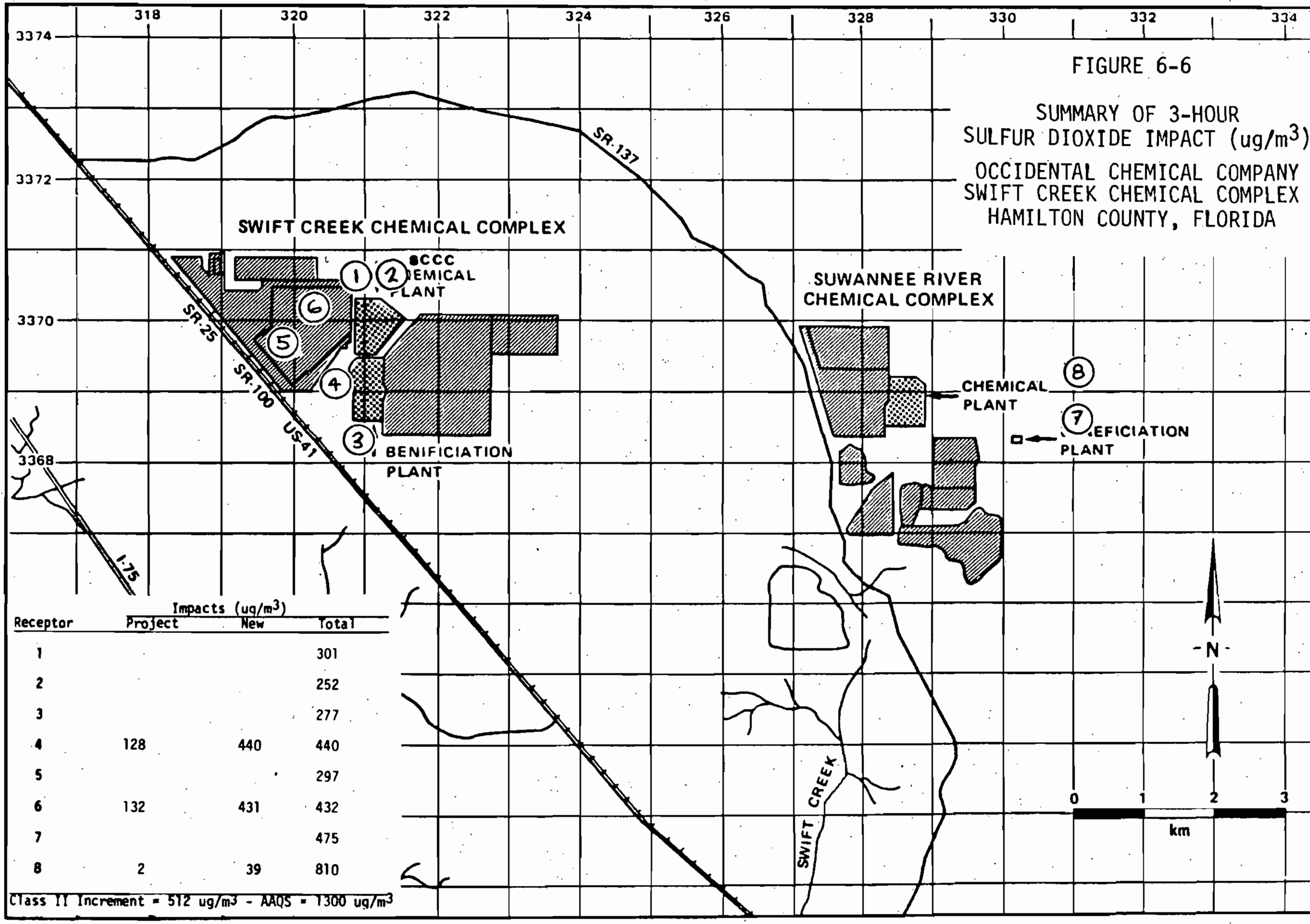


FIGURE 6-6

SUMMARY OF 3-HOUR SULFUR DIOXIDE IMPACT (ug/m³)

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

Receptor	Impacts (ug/m³) Project	New	Total
1			301
2			252
3			277
4	128	440	440
5			297
6	132	431	432
7			475
8	2	39	810

Class II Increment = 512 ug/m³ - AAQS = 1300 ug/m³

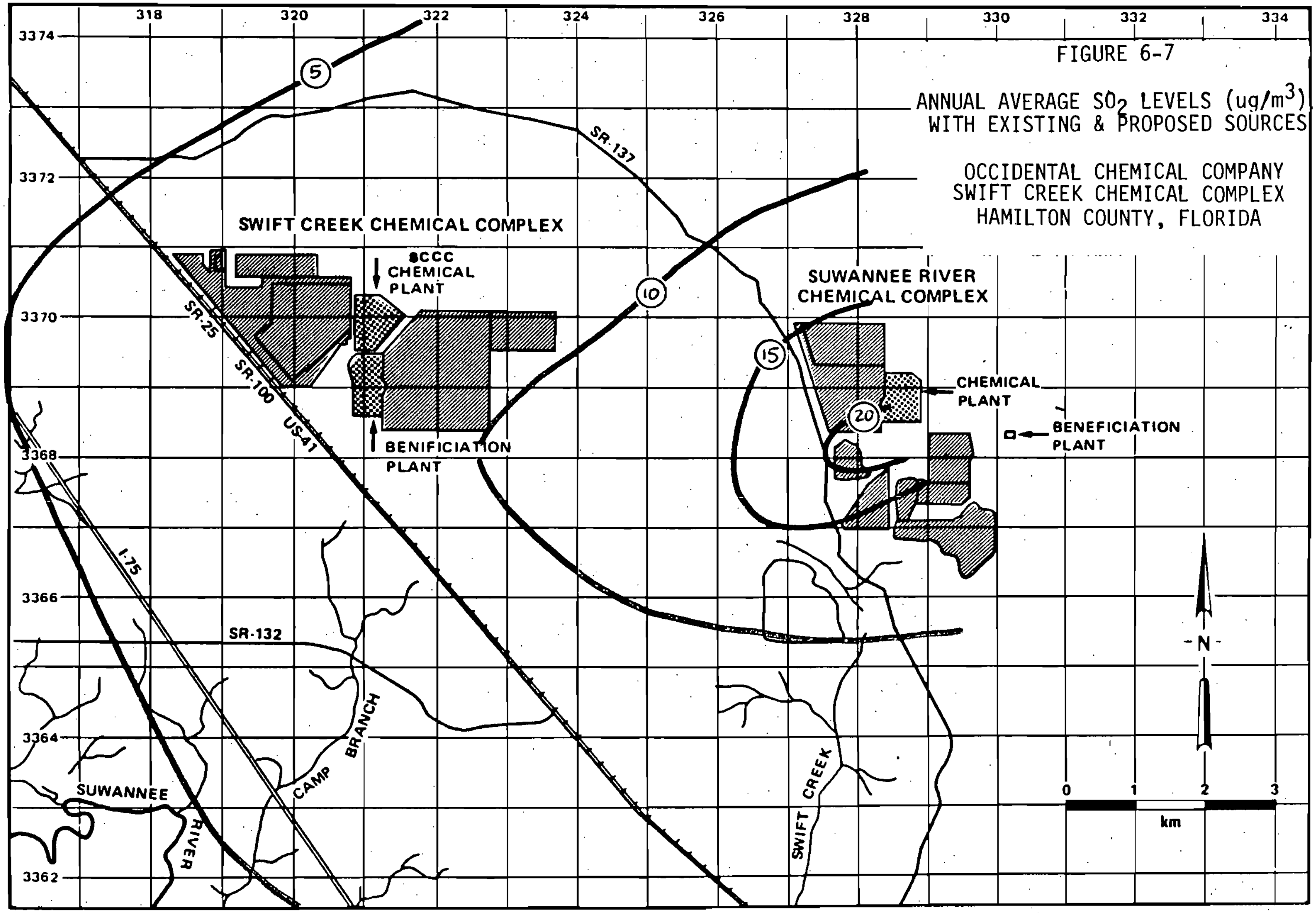


FIGURE 6-7

ANNUAL AVERAGE SO_2 LEVELS (ug/m^3) WITH EXISTING & PROPOSED SOURCES

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

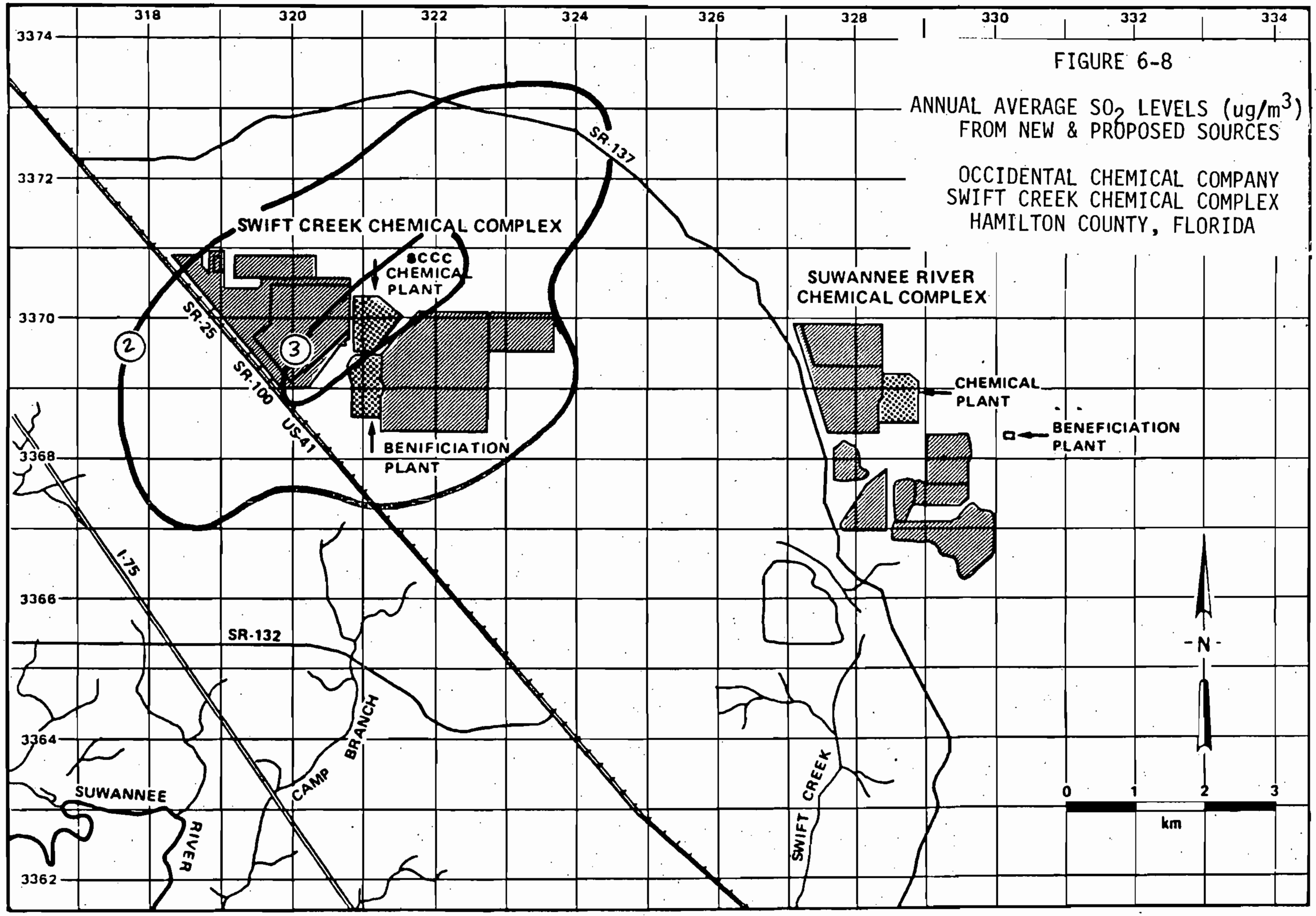


FIGURE 6-8

ANNUAL AVERAGE SO_2 LEVELS (ug/m^3) FROM NEW & PROPOSED SOURCES

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

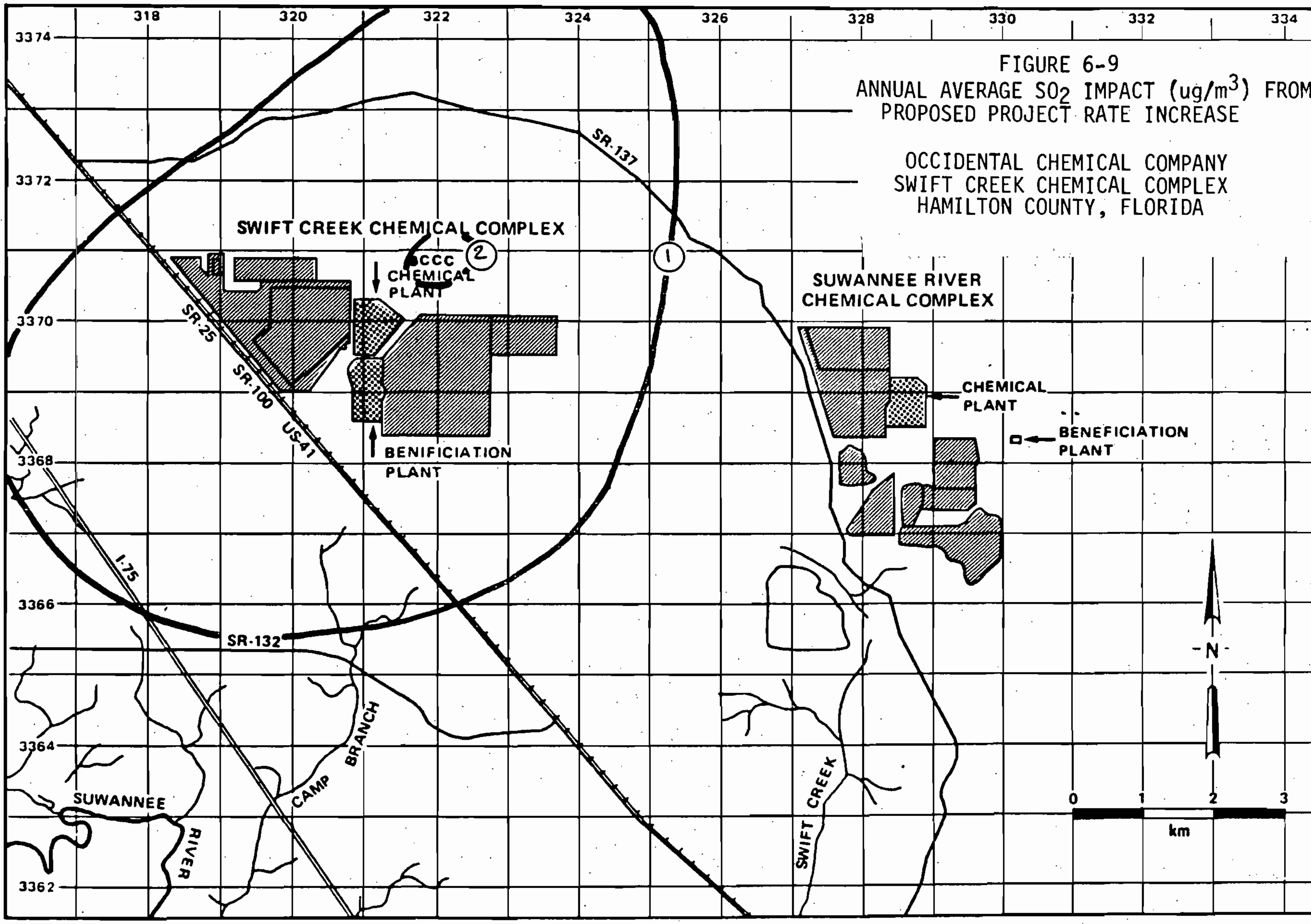


FIGURE 6-9
ANNUAL AVERAGE SO_2 IMPACT (ug/m^3) FROM PROPOSED PROJECT RATE INCREASE

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

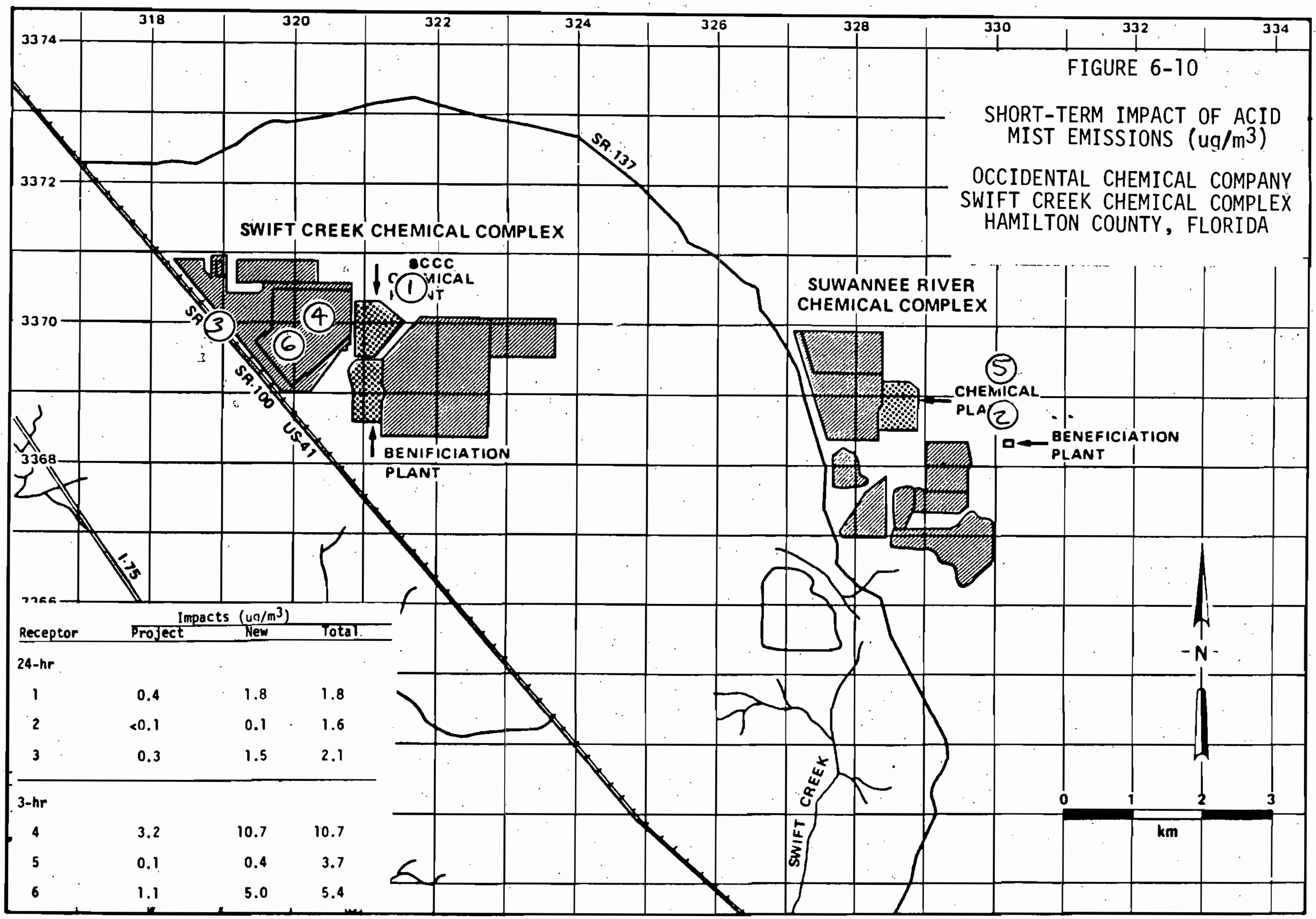


FIGURE 6-10

SHORT-TERM IMPACT OF ACID MIST EMISSIONS (ug/m3)

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

Receptor	Impacts (ug/m3) Project	New	Total
24-hr			
1	0.4	1.8	1.8
2	<0.1	0.1	1.6
3	0.3	1.5	2.1
3-hr			
4	3.2	10.7	10.7
5	0.1	0.4	3.7
6	1.1	5.0	5.4

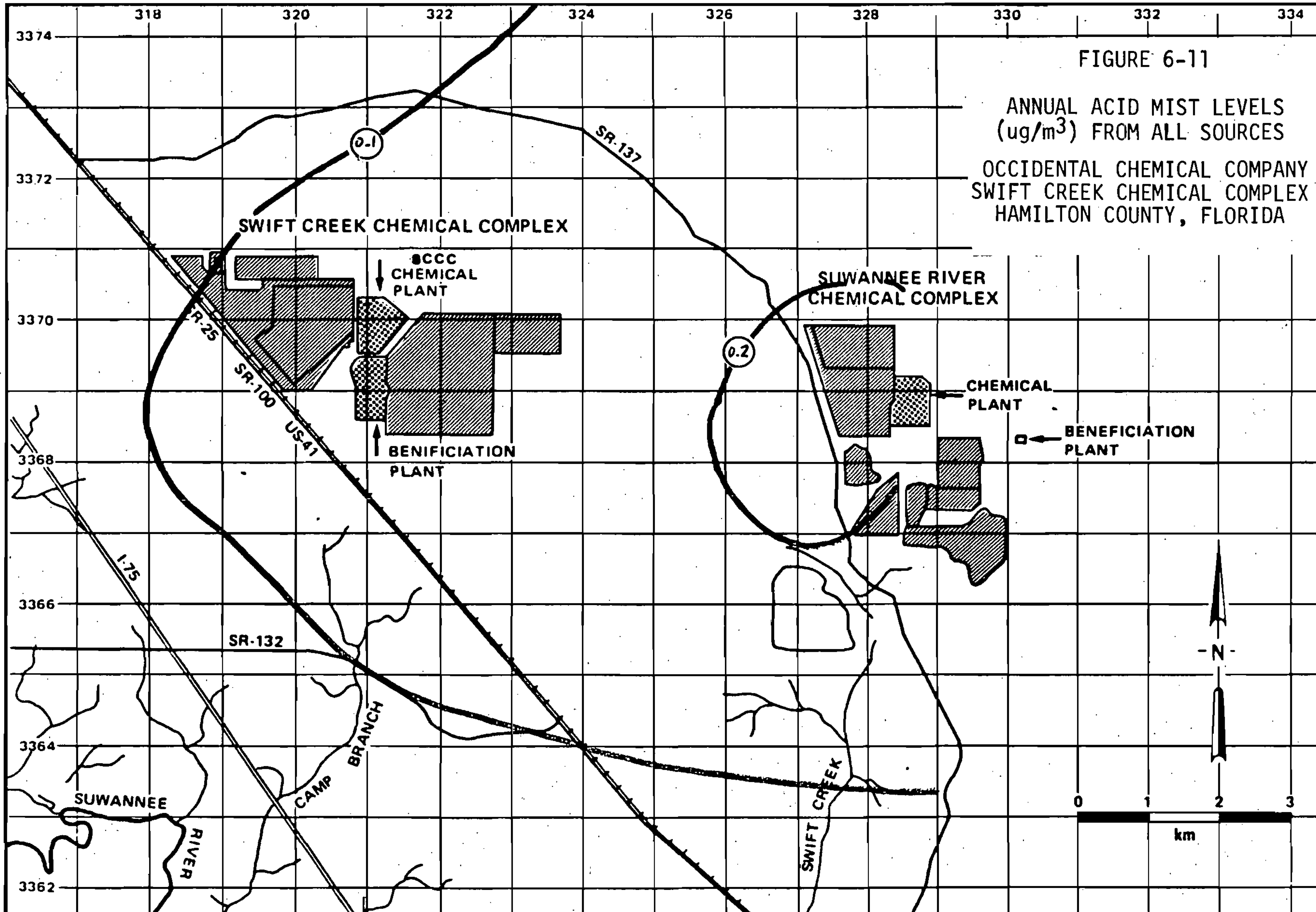


FIGURE 6-11

ANNUAL ACID MIST LEVELS (ug/m^3) FROM ALL SOURCES

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

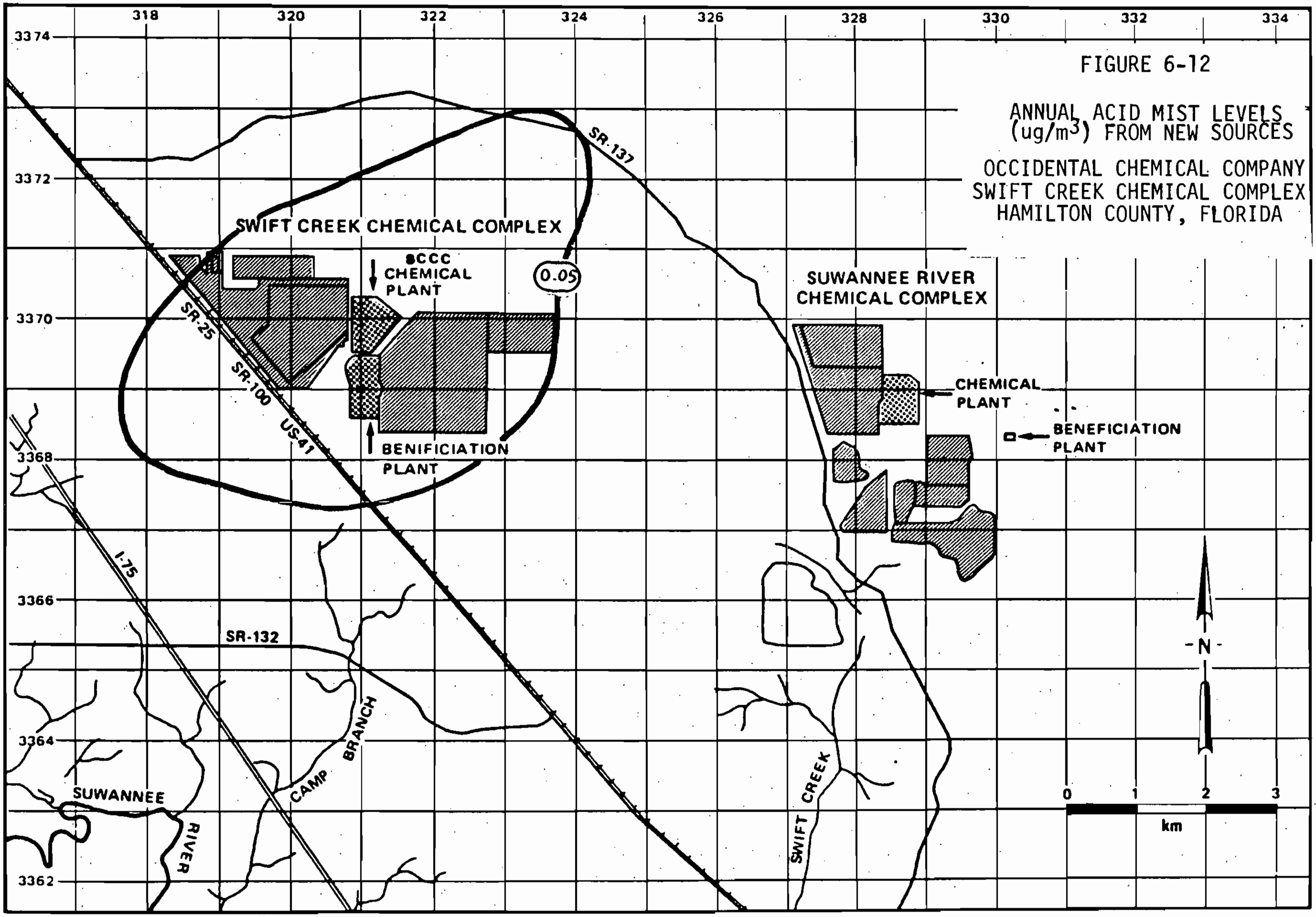


FIGURE 6-12

ANNUAL ACID MIST LEVELS (ug/m^3) FROM NEW SOURCES

OCCIDENTAL CHEMICAL COMPANY
SWIFT CREEK CHEMICAL COMPLEX
HAMILTON COUNTY, FLORIDA

7.0 SECONDARY IMPACTS FROM MOBILE SOURCES

In this section the secondary impacts of mobile sources on ambient air quality are addressed.

The sulfuric acid plant production rate increase proposed by Occidental will result in no new employees and will require an additional 17 trucks and three rail cars per day.

The additional truck traffic will result in approximately 11,900 vehicle miles traveled per year on Occidental property. This distance was calculated by considering vehicle travel from U.S. 41 approximately one mile north of the plant to the plant site and returning to U.S. 41. The three rail cars can be handled by additional locamotives and will, therefore, not result in the significant generation of regulated air pollutants.

Using EPA emission factors from AP-42 it was calculated that the additional traffic will generate the following pollutant burdens:

Carbon monoxide	-	1.0 tons per year
Nitrogen oxides	-	0.1 tons per year
Hydrocarbons	-	0.2 tons per year
Particulate matter	-	0.1 tons per year.

Considering the fact that these pollutants will be emitted as a line source approximately one mile long, the impact on air quality will not be significant.

8.0 IMPACT ON SOILS, VISIBILITY AND VEGETATION

8.1 Introduction

A qualitative evaluation of the proposed expansion on soils, visibility, vegetation and commercial growth in the area has been prepared.

8.2 Sulfur Dioxide

Air quality modeling has demonstrated that sulfur dioxide levels after the proposed sulfuric acid plant production rate increase will be well below the national secondary air quality standards. Since these standards were promulgated to protect welfare related values, it is projected that the proposed expansion will not adversely impact soils, vegetation and visibility in the surrounding area.

8.3 Sulfuric Acid Mist

Sulfuric acid mist, as a result of the proposed production rate increase in the two SCCC sulfuric acid plants, will result in total ambient levels for annual, 24-hour and 3-hour periods of 0.2, 2.1 and 10.7 micrograms per cubic meter, respectively. Acid mist level increases resulting from the proposed project will be 0.05, 0.4 and 3.2 ug/m^3 for the annual, 24-hour and 3-hour periods, respectively. These maximum increases will occur on Occidental property. It is not anticipated that these small incremental increases or the total ambient levels will result in significant adverse impacts on soils, vegetation or visibility.

8.4 Commercial Growth

The proposed production rate increase will result in no new jobs and, hence, no impact on population growth or automotive traffic in the area.

The rate increase will increase the sulfuric acid production capacity of Occidental by about 10 percent. Compared with the magnitude of other phosphate related acitivities in the area this is not considered to have a significant impact on the growth of the Hamilton County area.