

VS
FLORIDA CRUSHED STONE COMPANY
APPLICATION FOR CERTIFICATION
POWER PLANT SITE

Copy #1



Received DER

FLORIDA CRUSHED STONE COMPANY

JUL 18 1983

RPS

July 14, 1983

Mr. Buck Oven
Administrator
Power Plant Siting Section
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301

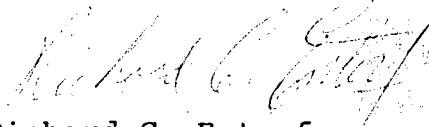
Dear Buck:

Florida Crushed Stone Company proposes to increase the amount of SO₂ absorbed in our cement plant/power plant project which will result in a significant reduction of SO₂ emissions. The specific proposal is outlined in Attachment I. The increased absorption will be accomplished by intergrinding limestone with the coal burned in the boiler. Based on information available to us this will result in power plant SO₂ emissions of 0.74#/MM BTU which would be the lowest for any power plant ever permitted in the state of Florida.

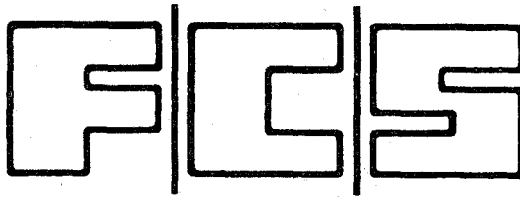
We are making this proposal on the basis that the public hearing scheduled for August 2, 3, 4 and 5 will not be delayed.

If you have any questions, or if there is any way we can be of assistance, please let John Koogler, Skip Haskell or myself know.

Regards,


Richard C. Entorf
Senior Vice President

RCE:SE
Attachment



Received DER

JUL 18 1983

ATTACHMENT I

P.P.S

Florida Crushed Stone Company
Proposal to Reduce SO₂ Emissions

7/14/83

1. FCS proposes to reduce the SO₂ emission from the proposed cement plant/power plant facility from the FDER proposal of 19% absorbtion of SO₂ and a limit of 1200#/hr from the boiler and 50#/hr from the cement plant to:

A. 39% absorbtion of SO₂ which consists of: 25% absorbtion in the boiler, resulting from the introduction of ground limestone with the coal; and 19% absorbtion in the cement plant dryer/raw mill/baghouse combination. This 39% absorbtion, when combined with the use of 0.75% sulfur coal, results in boiler emissions not to exceed 915#/hr of SO₂ or .74#/MM BTU. Cement plant emissions remain at 50#/hr.

B. When only the power plant is operating, the SO₂ emissions will be limited to the same #/hr as in item 1 A. above, not to exceed 915#/hr, by reducing the megawatt output of the power plant if necessary.

2. FCS consultants have calculated that the good engineering practice stack height is 320'. Therefore, FCS proposes, along with item 1 A. above, to increase the stack height from 310' to 320'.

Received
1/3/83 HJH

Amendment No. 3
December 30, 1982

Instruction for Inserting Amendment No. 3

Discard the old sheet and insert the new sheet as listed below. Please keep these instructions and list of effective pages in the front of the application to serve as a record of changes.

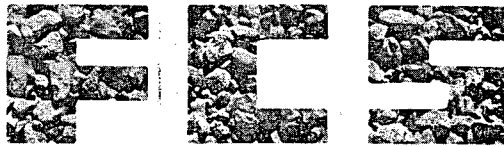
	<u>Discard Old Pages</u>	<u>Insert New Pages</u>
Chapter 3	3.8-1	3.8-1 3.8-2 3.8-3
Chapter 4	4.3-1	4.3-1 4.3-2
FIGURE		3.8-1

Amendment No. 2
November 15, 1982

Instruction for Inserting Amendment No. 2

Discard the old sheet and insert the new sheet as listed below. Please keep these instructions and list of effective pages in the front of the application to serve as a record of changes.

	<u>Discard</u> <u>Old Pages</u>	<u>Insert</u> <u>New Pages</u>
Chapter 2	2.7-1 2.7-2	2.7-1 2.7-2 2.8-1
Chapter 3	3.7-1 3.7-2	3.7-1 3.7-2 3.7-3 3.7-4 3.7-5 3.7-6 3.7-7 3.7-8 3.7-9
Chapter 4	4.1-2	4.1-2
TABLES	-0-	Table 3.7-1



FLORIDA CRUSHED STONE COMPANY

October 29, 1982

Mr. Hamilton S. Oven, Jr.
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: Florida Crushed Stone Company Power Plant Site
Certification Application No. PA 82-17

Dear Mr. Oven:

We have received your letter of October 21, 1982, listing the preliminary questions and deficiencies in the application. The attached Amendment No. 1 to the application and the following constitute our responses to those questions.

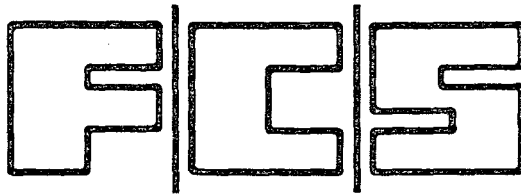
Question 1 - The need for power application will be filed with the Florida Public Service Commission as soon as possible. Delays in filing this information to date have resulted from discussions with PSC staff members regarding what type of information will be required. It appears that this situation has now been resolved and the need application can be completed expeditiously.

Question 2 - A detailed plot plan showing the coal pile, coal unloading area and coal conveyor is contained in Amendment No. 1 to the application as Figure 3.1-1.

Question 3 - Offsite wells within a two-mile radius are shown in revised Figure 2.2.3-1. The uses of the water withdrawn are shown in Table 2.2.3-3.

Question 4 - The land use map supplied in the original submittal is a part of the formally adopted Hernando County Comprehensive Land Use Plan. We anticipate that the rezoning of the power block portion of the site from mining to industrial will be completed on November 23, 1982.

Question 5 - An analysis of coal similar to that which the Company intends to purchase is contained in Amendment No. 1 as Table 3.2-1. The ash content is indicated in the Table.



Mr. Hamilton S. Oven, Jr.
October 29, 1982
Page 2

Question 6 - Section 3.3 of the original submittal has been amended to detail maximum flows, and flows when the power plant is operating minus the cement plant, the cement plant is operating minus the power plant, and during system shutdown.

Question 7 - It is anticipated that the septic tank system will be permitted separately.

Question 8 - The only solid waste we anticipate disposing of at this time would be coal pile run-off material. The discrepancy between the two sections of the original submittal indicating either a 10 to 50 acre disposal area or a 10-acre disposal area should be resolved by deleting the reference to the 50-acre disposal area.

Question 9 - Figure 3.9.2-2 has been revised to identify the structures. However, in using this figure the configuration of the ditched area should be disregarded. The ditched area is shown in Figure 3.1-1.

Question 10 - The nature of the retention basin, its configuration and capacity, as well as the dimensions, slopes and ultimate destination of the drainage ditches and design criteria for the ditches are shown in Figures 3.1-10 and 3.10-1.

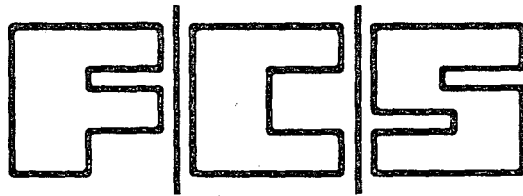
Question 11 - Information has been developed in response to this question and incorporated in the revised text to the application.

Question 12 - Information has been developed in response to this question and incorporated in the revised text to the application.

Question 13 - Information in response to this question has been developed and incorporated into the revised text to the application.

Question 14 - Information in response to this question has been developed and incorporated into the revised text to the application.

Question 15 - The boiler will be of the dry bottom type. The bottom ash will be removed from the boiler hop-



Mr. Hamilton S. Owen, Jr.
October 29, 1982
Page 3

pers via a screw conveyor which discharges into a small crusher and to a holding bin. From there it will be pumped to the ash bin at the cement plant, where it will be used as a raw material.

We hope that the foregoing information and the attached Amendment No. 1 to the application are sufficient to answer the questions you have raised. We look forward to hearing from you regarding any additional questions that you may have.

Sincerely,

FLORIDA CRUSHED STONE COMPANY

A handwritten signature in cursive script, appearing to read 'R C Entorf'.

Richard C. Entorf
Senior Vice-President

RCE/er
5963-106110/82:24

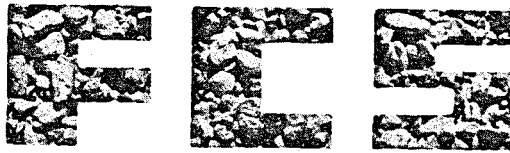
Amendment No. 1

October 29, 1982

Instruction for Inserting Amendment No. 1

Discard the old sheet and insert the new sheet as listed below. Please keep these instructions and list of effective pages in the front of the application to serve as a record of changes.

	<u>Discard Old Pages</u>	<u>Insert New Pages</u>
Chapter 2	2.2-1 2.2-2	2.2-1 2.2-2
Chapter 3	3.1-1 3.2-1 3.2-2 3.6-1 3.10-1	3.1-1 3.2-1 3.2-2 3.6-1 3.10-1
Chapter 4	4.1-1 4.1-2 4.1-3 4.5-1	4.1-1 4.1-2 4.1-3 4.5-1
Chapter 5	5.5-1 5.5-2	5.5-1 5.7-1
FIGURES	2.2.3-1 -0- 3.9.2-2 -0-	2.2.3-1 3.1-1 3.9.2-2 3.10-1
TABLES	-0- -0- -0-	Table 2.2.3-3 Table 3.2-1 Table 3.3-2



FLORIDA CRUSHED STONE COMPANY

October 18, 1982

Received DER

Mr. Hamilton S. Oven, Jr.
Florida Department of
Environmental Regulation
Twin Towers Office Building
2600 Blainstone Road
Tallahassee, Florida

OCT 18 1982

P.P.S

Dear Mr. Oven:

Enclosed are thirty-five copies of Florida Crushed Stone Company's application for Certification of a power plant site. Also enclosed is a check in the amount of \$32,500.00 (Thirty Two Thousand Five Hundred and no/100 Dollars), which represents the application fee minus the \$2,500.00 (Two Thousand Five Hundred Dollar) Notice of Intent fee previously paid.

As described in the application, Florida Crushed Stone Company seeks certification of a 125 megawatt co-generation power plant to be located at its existing Brooksville complex. The power plant will provide power necessary to operate the existing aggregate and lime plant as well as that necessary for the proposed cement plant to be located at the site. Florida Crushed Stone Company intends to sell excess power to Florida Power Corporation.

If there are any questions or comments concerning this application, please do not hesitate to contact us. We are looking forward to working with you and your staff on this application.

Sincerely,

A handwritten signature in dark ink, appearing to read 'R.C. Entorf', written over a horizontal line.

Richard C. Entorf
Senior Vice President

RCE:jf
enclosures

PERTINENT APPLICANT INFORMATION

In this application the following information should be supplied:

Applicant's Official Name FLORIDA CRUSHED STONE COMPANY

Address P. O. Box 300, Leesburg, FL 32748

Address of Official Headquarters SAME

Business entity (corporation, partnership, co-operative, name(s),
owner(s), etc., F. BROWN GREGG, OWNER

Names and Title of Chief Executive Officer(s) _____

F. BROWNE GREGG, PRESIDENT

Name, title, address and phone number of official representative
responsible for obtaining certification RICHARD C. ENTORF, SENIOR
VICE PRESIDENT, Post Office Box 300, Leesburg, FL 32748
(904) 787-0608

Professional Engineer Submitting Application Name John E. Garlanger

Florida Registration No.: 19782

Seal

Name: John B. Koogler

Florida Registration No.: _____

Seal: _____

STATE OF

FLORIDA

Site Location: County Hernando

Nearest Incorporated City Brooksville

Latitude and Longitude 28° 35' 19" N - 82° 26' 00" W

UTMs Northerly _____

Easterly _____

Name Plate Generating Capacity; Currently Existing on site _____

Capacity of Proposed Additions and Ultimate Site Capacity (where
applicable) _____

Remarks: (Additional information that will help identify the applicant)

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CHAPTER 1

PURPOSE OF THE PROPOSED FACILITY

Florida Crushed Stone Company proposes to construct a 125 megawatt (MW*) power plant and associated coal handling facilities, which will provide electricity for the existing aggregate and lime plants in Brooksville, Florida, as well as for a proposed 600,000 ton per year cement plant* to be constructed on the same site in Brooksville, Florida. The existing aggregate and lime plants require 12 MW of electricity while the proposed cement plant will require about 13 MW of electricity. Therefore, the total initial power requirement of Florida Crushed Stone Company will be approximately 25 MW. Plans allow for future expansion of the cement plant from 600,000 to 1,200,000 tons per year which would add another 13 MW power requirement.

The proposed 125 MW facility will qualify as a co-generation power plant under the Public Utilities Regulatory Policy Act (PURPA), and the rules of the Federal Energy Regulatory Commission (FERC), and the Florida Public Service Commission. As a qualified co-generator, Florida Crushed Stone Company intends to sell excess power to Florida Power Corporation.

*Unless otherwise specified, generating capacity will be expressed in terms of net values.

**The proposed cement plant is being permitted separately.

CHAPTER 2

THE SITE

2.1 SITE LOCATION AND LAYOUT

2.1.1 Map

Figure 2.1.1-1 is a map of the Florida Crushed Stone site.

2.1.2 Site Modification

The project area is located on approximately 6,400 contiguous acres owned by Florida Crushed Stone Company, zoned for mining and actively mined since 1938. The actual site to be modified is approximately 30 acres within a 100 acre area. Application has been made for appropriate zoning to accommodate the power plant project.

2.1.3 Existing and Proposed Uses

The existing land use is that of an active mining area. This area has been mined since 1938 providing aggregate and road base material for the construction industry of Central Florida. This operation is expected to continue well into the twenty-first century adding cement to its product line. The 100 acre project area will be affected and approximately 1,050 of the 6,400 acres devoted to an existing waste water system settling pond area. See Figures 2.1.1-1 and 2.2.2-1.

FIGURE 2.1.1-1 IS LOCATED IN THE BACK OF THE APPLICATION.

2.2 REGIONAL DEMOGRAPHY, LAND AND WATER USE

Figure 2.2-1 depicts the boundaries of towns and cities within an area of a five-mile radius centered at the proposed plant location.

2.2.1 Demography

The Hernando County Chamber of Commerce indicates the 1982 population of the City of Brooksville is 7,000.

2.2.2 Land Use

The land on which the power plant will be sited is classified as Barren Land on the present land use map of Hernando County. The site is a part of the Brooksville limerock mine which has been in operation since 1938. Essentially all of the lands affected by the installation of the power plant are lands which have been previously mined or cleared and altered over the past 8 years through the mining process.

Figure 2.2.2-1 indicates the present land use within a five-mile radius of the proposed site. Figure 2.2.2-2 shows the major zoning categories within a five-mile radius of the proposed site. The attached Article IV "Zoning District Regulations" indicate the zoning restrictions both at the site and within five miles of the proposed plant. At this time it is anticipated that no new transmission line corridors will be necessary. Plans call for the use of existing structures.

2.2.3 Water Use

Major water users within a 5-mile radius of the pond system determined from existing Southwest Florida Water Management District (SWFWMD) Consumptive Use Permits (CUP) are permitted for an average annual groundwater withdrawal rate of 57.6 mgd and a maximum daily pumpage rate of 98.1 mgd. The Florida Crushed Stone CUP represents 46 percent and 38 percent of these average annual and maximum daily pumping rates, respectively. The water users include agriculture, municipal, other mining operations, and recreational. Within about one mile of the site the only existing CUP other than Florida Crushed Stone is for Bell Creek Farms, which is permitted at 0.27 mgd average annual pumpage rate.

26.5
37.3

The existing water use from the Florida Crushed Stone Company operation since January 1982 is summarized in Table 2.2.3-1.

Florida Crushed Stone maintains a 1050-acre waste water treatment system, which is permitted by the Department of Environmental Regulation, and the Southwest Florida Water Management District. Water is pumped from the pond at a rate of about 15,000 GPM to the aggregate plant where it is used along with well water to wash impurities from the crushed rock. This water is then pumped to the settling ponds where the washed material (limerock tailings) settles out. Typical grain size distribution curves for the lime-rock tailings are presented in Figure 2.2.3-2. The decant water is re-cycled. Supplemental make-up water is withdrawn from thirteen wells located on the property and permitted with SWFWMD. Consumptive water loss due to evaporation and water shipped in the product is calculated to be approximately one million gallons per day.

Table 2.2.3-2 summarizes the existing well inventory within one half mile of the treatment pond system. All of these wells are located within the Florida Crushed Stone Company property. Table 2.2.3-3 summarizes the existing well inventory within two miles of the proposed plant site. Figure 2.2.3-1 locates these wells on the property.

FIGURES 2.2-1, 2.2.2-1 AND 2.2.2-2 ARE LOCATED IN THE BACK
OF THE APPLICATION.



2 — NO. OF EXISTING WELLS IN THE SECTION
BASED ON SWFWMD WELL INVENTORY

Amend #1



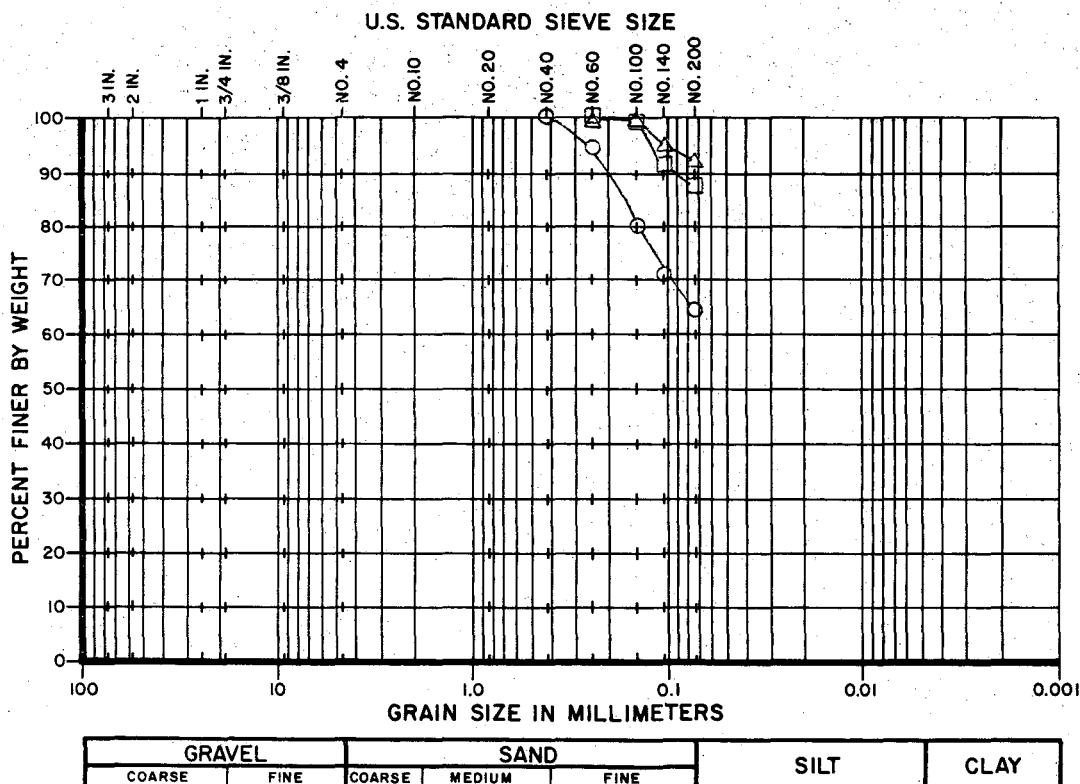
Ardaman & Associates, Inc.
Consulting Engineers in Soil Mechanics,
Foundations, and Material Testing

GEOHYDROLOGICAL INVESTIGATION
HERNANDO COUNTY, FLORIDA
FLORIDA CRUSHED STONE CO.

DRAWN BY: T.S.	CHECKED BY: 465	DATE: 9/30/82
FILE NO. 82-112	APPROVED BY: <i>[Signature]</i>	

FROM USGS QUAD MAPS BROOKSVILLE
AND BROOKSVILLE NW. T21, 22S, R18, 19E

FIGURE 2.2.3-1



TEST HOLE NO.	SAMPLE NO.	DEPTH	SYMBOL	SAMPLE DESCRIPTION	UNIFIED CLASS.
		TOP	○	36" DISCHARGE PIPE	
		MIDDLE	□		
		BOTTOM	△		

GRAIN SIZE DISTRIBUTION



Ardaman & Associates, Inc.
Consulting Engineers in Soil Mechanics,
Foundations, and Material Testing

GEOHYDROLOGICAL INVESTIGATION
HERNANDO COUNTY, FLORIDA
FLORIDA CRUSHED STONE CO.

DRAWN BY: T. S. CHECKED BY: H. S. DATE: 10/14/82
FILE NO. 82-112 APPROVED BY: *[Signature]*

(TAKEN AFTER BROMWELL, 1982)

FIGURE 2.2.3-2

Table 2.2.3-1

Florida Crushed Stone Company Water Use

Brooksville Quarry

SWFWMD CUP No. 200215

Average Daily Quantity		Average Daily Quantity	
<u>Month and Year</u>	<u>in million gallons per day</u>	<u>Month and Year</u>	<u>in million gallons per day</u>
January 1981	20.028	January 1982	17.769
February 1981	25.377	February 1982	19.026
March 1981	21.635	March 1982	23.016
April 1981	23.703	April 1982	12.945
May 1981	22.681	May 1982	10.574
June 1981	19.080	June 1982	10.884
July 1981	18.618	July 1982	10.072
August 1981	17.453	August 1982	9.650
September 1981	19.602	September 1982	11.209
October 1981	18.305		
November 1981	17.199		
December 1981	<u>21.785</u>		
	20.421		

Table 2.2.3-2
WELL INVENTORY FOR FLORIDA CRUSHED STONE PROPERTY
HERNANDO COUNTY, FLORIDA

WELL	SIZE	DEPTH	WITHDRAWAL LATITUDE	POINT LONGITUDE	SIZE	PUMP TYPE	H.P.	CAPACITY GPM	WITHDRAWAL AVERAGE	G.P.D. MAXIMUM
1. Quarters	6"	Unknown	28 35 29	82 26 1	2"	Gould	1.5	75	739,726	1,080,000
2. Wash Rack	8"	Unknown	28 35 29	82 26 1	6"	Lane	30	1,000	986,301	1,040,000
3. Capped										
4. Mech. Shop W	10"	118'	28 35 25	82 26 15	10"	U.S.	150	2,000	1,479,452	2,160,000
5. Mech. Shop E	10"	154'	28 35 25	82 26 15	10"	Gould	150	2,000	2,958,904	4,320,000
6. Mech. Shop M	12"	146'	28 35 25	82 26 15	12"	Gould	300	3,500	3,452,057	5,040,000
7. Elect. Shop	8"	Unknown	28 35 25	82 26 15	8"	Gould	50	1,200	1,183,561	1,728,000
8. North Pit	20"	280'	28 35 51	82 26 29	12"	Lane	150	5,800	5,720,547	8,352,000
9. North Pit	16"	84'W.L.	28 35 51	82 26 29	14"	Vertiline	150	5,800	4,931,506	7,200,000
10. North Pit	6"	160'	28 35 51	82 26 29	6"	Gould	50	1,200	1,183,561	1,728,000
11. Chem Lim N	6"	250'	28 35 14	82 26 8	6"	Peerless	40	600	900,000	936,000
12. Chem Lim S	8"	250'	28 35 14	82 26 8	6"	Peerless	60	675	553,846	576,000
13. Capped										
14. Capped										
15. New Load Out	14"	165'			14"	Johnston	300	5,000	2,416,147	2,952,000
16. Dike Pump					30"	Deleval	1500	23,000		22,080,000

Table 2.2.3-3

FCS WELL INVENTORY

<u>Section</u>	<u>Township (South)</u>	<u>Range (East)</u>	<u>Permit Number</u>	<u>Owner</u>	<u>Diameter of well (Inches)</u>	<u>Depth of casing (Feet)</u>	<u>Depth of Well (Feet)</u>	<u>Water Use</u>	<u>Driller Number</u>
35	21	18	366,488	Stocker, Ro	4	-	-	D	1351
35	21	18	368,178	Burns, Ed	4	92	170	D	1351
35	21	18	370,680	Collins, Br	4	113	190	D	1351
35	21	18	356,774	Garraway, V.	4	138	200	D	1226
35	21	18	348,281	McLaughlin	4	44	200	D	1100
35	21	18	348,661	Kriedeck, M.	4	52	226	D	1037
35	21	18	331,640	Loreusen, E.	4	155	155	D	1100
35	21	18	335,924	Jeffery, J.	4	84	104	D	1328
36	21	18	360,624	Troyer, Jr	4	130	150	D	2120
36	21	18	362,842	Jackson, Ba	3	105	112	D	1351
36	21	18	372,370	Bair, Frank	4	-	-	D	2120
36	21	18	376,377	Silvey, Cha	4	-	-	D	1351
36	21	18	376,642	Shapiro, Ed	4	-	-	H	2120
36	21	18	356,775	Seabal, Jam	4	117	150	D	1226
36	21	18	357,709	Clark, Will	4	125	200	D	1226
36	21	18	359,108	Keefer, Ken	4	105	165	D	2120
36	21	18	359,109	Champ, Juli	4	150	215	D	2120
36	21	18	352,615	Prystupa, M	4	222	235	D	1351
36	21	18	352,357	Shapero, Ed	4	70	165	D	2064
36	21	18	342,511	Maxwell, JF	4	62	156	D	1314
36	21	18	344,020	Jackson, J	3	105	165	D	1100
36	21	18	338,353	Bellamy, BF	3	84	120	D	1100
36	21	18	378,559	Piehl, J	4	150	215	D	1226
36	21	18	341,433	Peters	4	84	165	D	1100
36	21	18	332,846	Bavnack, H	4	105	160	D	1226
36	21	18	335,993	Greene, RC	4	21	185	D	1100
36	21	18	329,218	Benanti, J	4	63	170	D	1076
36	21	18	329,730	Forrest, P	4	126	165	D	1351
36	21	18	318,827	Frost, D	4	-	170	D	0025
36	21	18	314,572	Jullan, G	4	189	221	D	0025
36	21	18	314,569	Shearer, K	4	42	207	D	0025
36	21	18	315,436	Garraway, V	4	63	230	D	0025
36	21	18	317,889	Maye, F. Sr.	4	112	145	D	0010
36	21	18	317,888	Ritchie, J	4	126	170	D	0010
36	21	18	306,797	-	4	100	165	D	0169
36	21	18	307,290	Robinson, A	3	105	146	D	0025
36	21	18	308,961	Kolasa, F	4	95	250	D	0043
36	21	18	312,002	Duval, J	4	42	175	D	0025
36	21	18	312,299	Baggett, J	4	9999	160	D	0025
01	22	18	373,878	Cotton, Bil	4	74	129	D	2120
01	22	18	347,158	Glasbrenner	4	83	110	D	1071
01	22	18	337,317	Phillips, W	4	63	100	D	1436

Table 2.2.3-3
(cont'd)

FCS WELL INVENTORY (cont'd)

<u>Section</u>	<u>Township (Scuth)</u>	<u>Range (East)</u>	<u>Permit Number</u>	<u>Owner</u>	<u>Diameter of well (Inches)</u>	<u>Depth of casing (Feet)</u>	<u>Depth of Well (Feet)</u>	<u>Water Use</u>	<u>Driller Number</u>
01	22	18	332,444	Davis, WL	4	85	85	D	1751
01	22	18	322,947	Royal, D.W.	4	120	170	D	1100
01	22	18	310,047	Kessel, K.	4	126	165	D	0010
02	22	18	364,785	Randolph, R	4	81	165	D	1005
02	22	18	365,042	Stewart, JI	4	168	192	D	1843
02	22	18	365,722	White, Mari	4	105	160	D	2120
02	22	18	367,632	Vborreiter	4	63	145	D	1943
02	22	18	370,009	Reinhard, A	4	105	165	D	1905
02	22	18	371,873	Stanley, JA	4	-	145	D	1843
02	22	18	373,292	Dehart, Wil	4	84	180	D	1276
02	22	18	351,662	Fields, Hen	4	84	140	D	1905
02	22	18	346,750	Carter, Mor	4	-	-	D	1905
02	22	18	347,288	Carter, Fos	4	-	-	D	1100
02	22	18	333,392	Bolster, H	3	84	102	D	1843
02	22	18	324,571	Stewart, H	4	30	230	D	1276
02	22	18	327,641	Schweigert	4	63	150	D	1346
02	22	18	320,563	Kacavic, AP	4	105	85	D	0043
02	22	18	307,601	-	4	111	155	D	0257
02	22	18	309,744	Davis, C	3	98	130	D	0483
02	22	18	305,171	McDonald, J	3	126	159	D	0026
03	22	18	360,504	Tucker, Jay	4	160	160	D	2132
03	22	18	361,184	Tucker, J.	4	147	160	D	1351
03	22	18	360,898	Bichard, Ed	4	63	130	D	1843
03	22	18	361,770	Putney, Les	4	76	150	D	1843
03	22	18	362,739	Andrews, L	4	84	130	D	1436
03	22	18	365,737	Spangier, P	4	73	120	H	1436
03	22	18	374,410	Hait, Terry	4	53	108	D	2120
03	22	18	375,022	Lull, Charl	4	-	-	D	1905
03	22	18	354,431	Johnson, Ca	4	-	148	D	1843
03	22	18	355,871	Munsell, BR	4	75	158	D	1905
03	22	18	357,494	Burbank, Ro	4	132	160	D	2120
03	22	18	352,000	Sanders, Ro	4	63	110	D	1843
03	22	18	345,521	Beer, P	4	65	135	D	1023
03	22	18	339,727	Buckingham	4	42	120	D	1286
03	22	18	340,888	Warwick, HH	4	63	170	D	1100
03	22	18	331,208	Turner, RE	4	82	130	D	1100
03	22	18	331,246	Ellis, PJ	4	63	135	D	1751
03	22	18	325,286	Williams, C	4	479	489	D	1351
03	22	18	321,439	Lawrence, H	4	74	122	D	1351
03	22	18	323,468	Pazel	3	79	145	D	1100
03	22	18	324,364	Sheeley, D	4	149	185	D	1076
03	22	18	311,382	Hunt, S	3	105	140	D	0512
03	22	18	311,871	Watson, FA	4	63	90	D	0512

Table 2.2.3-3
(cont'd)

FCS WELL INVENTORY (cont'd)

<u>Section</u>	<u>Township (South)</u>	<u>Range (East)</u>	<u>Permit Number</u>	<u>Owner</u>	<u>Diameter of well (Inches)</u>	<u>Depth of casing (Feet)</u>	<u>Depth of Well (Feet)</u>	<u>Water Use</u>	<u>Driller Number</u>
10	22	18	373,185	Mickiewicz,	4	-	-	D	1037
10	22	18	374,218	Straight, S	4	156	204	D	2120
10	22	18	375,978	Mullin, Rho	4	-	-	D	1843
10	22	18	360,008	Cline, Doro	4	105	155	D	1905
10	22	18	352,356	Wehe, Russe	4	80	165	D	2064
10	22	18	332,868	Curkan, H	3	100	120	D	1835
10	22	18	330,228	Campbell, J	4	94	125	D	1226
10	22	18	319,210	Bellmer, R	4	84	120	D	0233
10	22	18	307,071	Richardso, S	3	72	100	D	0106
10	22	18	305,569	Ballard, G G	4	55	107	D	0025
11	22	18	372,793	Cliffs, Sept	6	-	-	I	1351
11	22	18	339,144	Courtney, A	4	84	130	D	1571
12	22	18	332,256	Robertson, W	4	47	120	D	1076
12	22	18	315,443	Odom, J	4	132	180	D	0010
13	22	18	355,146	Johnson, KE	4	105	150	D	2064
13	22	18	333,204	Lykes, Bro I	4	42	95	L	1351
14	22	18	368,810	Kain, Harol	4	98	105	D	2120
14	22	18	372,117	Homan, Les	4	-	-	D	2120
14	22	18	374,216	Bartlett, J	4	-	-	D	2120
14	22	18	373,989	Regan, Alyc	4	84	105	D	1351
14	22	18	350,522	Lucas, Clyd	4	105	121	D	1276
14	22	18	345,194	Tucker, R	4	56	160	D	1100
14	22	18	339,248	Hansen, H	4	84	125	D	1351
14	22	18	331,565	VFW Post HM	4	63	95	D	1314
14	22	18	335,501	Pipes, K R	4	21	120	D	1100
14	22	18	335,747	Langworthy	4	49	115	D	1100
14	22	18	324,828	Kain, N	4	30	125	D	1100
14	22	18	329,039	McDoniel, F	4	63	145	D	1076
14	22	18	319,679	Yglesias, J	4	62	105	D	0086
14	22	18	320,428	Ross, W	4	63	110	D	0233
4	22	18	339,666	Bledsoe, H D	4	91	120	D	1905
4	22	18	320,895	Leonard, R	4	84	175	D	1076
4	22	18	305,095	Moore, W	3	-	155	D	0010
5	22	19	371,601	Epling, Wil	4	-	-	D	2120
5	22	19	356,084	Houdaille, D	4	105	160	I	1351
5	22	19	339,924	Deltona, Cor	4	84	160	I	1351
5	22	19	315,023	FCS	12	46	300	B	0172
5	22	19	315,329	FCS	4	70	255	T	0043
5	22	19	309,839	Mason, F L	3	67	84	D	0025
7	22	19	338,194	Garrett, D	4	63	100	D	1436
7	22	19	333,222	Tucker, E	4	80	145	D	1056

Table 2.2.3-3
(cont'd)

FCS WELL INVENTORY (cont'd)

<u>Section</u>	<u>Township</u> <u>(South)</u>	<u>Range</u> <u>(East)</u>	<u>Permit</u> <u>Number</u>	<u>Owner</u>	<u>Diameter</u> <u>of well</u> <u>(Inches)</u>	<u>Depth of</u> <u>casing</u> <u>(Feet)</u>	<u>Depth of</u> <u>Well</u> <u>(Feet)</u>	<u>Water</u> <u>Use</u>	<u>Driller</u> <u>Number</u>
8	22	19	316,618	Terkovich	4	63	160	D	0025
8	22	19	308,041	Stewart, J G	3	135	160	D	0286
9	22	19	370,462	Gann, John	4	234	250	D	2132
9	22	19	370,973	Bush, B A	4	60	180	D	2132
9	22	19	372,380	Theissen, P	4	141	230	D	1351
9	22	19	358,360	Holliday, J	4	63	200	D	1843
9	22	19	350,415	Weaver, E	6	95	150	B	1351
9	22	19	344,606	Foxworth, H	4	-	-	D	1351
9	22	19	334,072	PH Comm Col	4	87	205	A	1351
9	22	19	334,963	Weeks, H	4	110	240	D	1100
9	22	19	329,383	Elliott, W A	6	120	301	D	1076
9	22	19	320,637	Elliott, W	4	-	281	D	0025
9	22	19	322,300	Bodiford, R	4	63	280	D	0354
9	22	19	313,959	Howard, Nick	4	63	260	D	0025
9	22	19	318,305	Bellamy, W A	4	210	220	D	0043
9	22	19	307,469	Cleavela, J C	3	60	65	D	0065
9	22	19	307,470	-	4	53	103	D	0065
9	22	19	305,829	City Brooks	4	210	315	D	0043
16	22	19	366,909	Snow, Raymo	2	-	-	D	1314
16	22	19	370,842	Johnson, P A	4	243	270	D	1351
16	22	19	358,957	Slaughter,	4	-	80	D	1905
16	22	19	359,401	Stewart, VI	4	61	225	D	1351
16	22	19	339,139	Stewart, V	4	60	175	D	1351
16	22	19	339,979	Newbern, Gro	6	200	440	A	1234
16	22	19	339,990	Newborne, G	6	205	445	A	1232
16	22	19	334,101	Patrick, D	4	38	160	D	1843
16	22	19	328,920	Colburn, D C	4	78	127	A	1751
16	22	19	320,890	Spaulding, S	4	113	169	D	1076
16	22	19	311,562	Nichols, W M	4	105	161	D	0043
17	22	19	364,188	Bishop, W	4	78	116	D	2120
17	22	19	322,768	Sayler	4	-	167	D	1276
17	22	19	316,458	Whitmna	4	52	180	D	0043

Water Use: D-domestic; L-livestock; H-repair or deepen; I-industrial;
B-public supply; T-test

Source: Southwest Florida Water Management District

2.3 REGIONAL HISTORIC, SCENIC, CULTURAL AND NATURAL LANDMARKS

2.3.1 Sensitive Areas

The area in which the power plant and the associated facilities will be sited consists primarily of lands which have been mined or altered during the existing limerock mining operations. No landmarks valued for their historic, scenic, cultural, natural, or ecological significance currently exist on the site.

2.3.2 Archaeological Sites

As stated in Sections 2.2.2 and 2.3.1, the site has previously been mined and currently does not contain any archaeologically significant sites. The Division of Archives, History, and Records Management was consulted to determine if any significant archaeological sites would be impacted by the project. Written confirmation is expected.

2.3.3 Associated Facilities

It is not anticipated that there will be a need for new transmission line corridors associated with this facility. The proposed coal unloading facility will not impact or be contiguous to known historic, cultural, scenic, natural, ecological or archaeologically significant areas. It will be located on an existing Seaboard Coast Line Railroad spur that extends into Florida Crushed Stone property, approximately 200 feet from a mined out pit. Coal will be bottom dumped from a unit train, and stockpiled for use. It will be transported to the plant for use by means of a belt conveyor system. The stockpile area will be designed in such a way as to allow runoff water to be contained in a sealed pond.

2.4 GEOLOGY

Geomorphology

The subject site is situated on the Brooksville Ridge within the Central Highlands physiographic province (White 1970). The Brooksville Ridge in this area is characterized by a very irregular surface with elevations ranging from about 70 to 200 feet NGVD. There are few persistent valleys and there is little surface drainage. Rainfall not lost to evapotranspiration drains through the underlying limestone. The considerable local relief developed along the ridge is a result of numerous sinkholes (Wetterhall, 1964).

A part of the 1954 U.S. Geological Survey topographic map of the site area is presented in Figure 2.2.3-1. It should be noted, however, that portions of the site have been altered by the mining operation since this survey was completed. For example, the proposed power plant site is to be located in an area within the Southwest 1/4 of Section 8, Township 22 South, Range 19 East which was mined subsequent to the USGS survey.

The portion of the tailings pond shown west of County Road 491 on Figure 2.2.3-1 is no longer part of the existing or proposed pond system. The existing 1050 acre treatment pond is between the power plant site and County Road 491. The existing and proposed tailings pond area, shown schematically in Figure 2.4.-1, is for the most part within an area where pre-mining land surface elevations were 80 to 100 feet NGVD. The water level in Pond Section No. 4 was 108 feet NGVD on September 15, 1982. Limerock tailings to some degree cover all of the pond bottom today. At the present time the surface of the limerock tailings in Sections 1, 2, and 3 is exposed at an elevation of approximately 120 feet NGVD. Section 4 is the only portion of the pond system which presently stores a significant volume of water. This section is presently serving as a surge area for rainfall runoff from the other Sections.

Stratigraphy

Hernando County is underlain by several thousand feet of sedimentary rocks, principally limestone overlain by a variable thickness of clastic deposits. The near surface geologic units are summarized in Table 2.4-1 and in geological cross-sections shown in Figure 2.4-2.

The oldest formation to be considered here is the Lake City Limestone of Eocene age. The Lake City Limestone is a soft

to hard, fossiliferous, brown limestone with dark brown beds of dolomitic limestone at irregular intervals. The upper part of the Lake City Limestone is the bottom of the Floridan Aquifer.

The Avon Park Limestone, also of Eocene age, overlies the Lake City Limestone and lithologically is very similar to the Lake City Limestone. The thickness of the Avon Park Limestone in the Brooksville area ranges from about 50 to about 500 feet. The Southwest Florida Water Management District ROMP Site 107 located about 5 miles north of the ponds and shown in Figure 2.4-3 encountered the Avon Park from 210 to 344 feet below land surface.

The Ocala Group of late Eocene age overlies the Avon Park Limestone. The lower zone of approximately 40 to 60 feet is a brown to gray, fossiliferous, hard dolomitic limestone (Inglis Formation). Above this zone is approximately 100 to 150 feet of white to tan, soft, chalky limestone, (Williston and Crystal River Formations) which is composed of the remains of marine organisms. In the ROMP Site 107 well the Ocala Group was encountered from 70 to 210 feet below land surface.

The Suwannee Limestone consists of all beds in Hernando County identified as Oligocene in age that overlie the Crystal River Formation (Ocala Group) and underlie post-Oligocene deposits. Most of Hernando County is underlain by the Suwannee Limestone including the entire treatment pond area (Yon and Hendry, 1972). The altitude and distribution of the Suwannee Limestone in northern Hernando County are depicted on Figure 2.4-4 and in the geologic cross-sections of Figure 2.4-2.

The Suwannee Limestone is a marine, bio-clastic limestone which can be described as follows:

1. Crystalline limestone (calcarenite), very pale orange, very finely crystalline, firmly cemented with calcite, sandy (very fine to fine), slightly silty and clayey and generally very microfossiliferous.
2. Crystalline limestone (calcarenite), very pale orange, very fine crystalline, very firmly cemented with calcite, sandy (very fine to fine), more silty and clayey than described in No. 1, generally very microfossiliferous.

The Suwannee Limestone seen in the quarries at the site has alternating hard and soft beds of varying thicknesses. During weathering the softer material erodes away and the harder beds stand out. Generally, through the quarries,

thin seams and beds of clay occur in the limestone along with chert nodules and thin beds of chert.

Chemical analyses of samples from the Florida Crushed Stone quarry (T22S, R19E, Sec. 8) indicate the Suwannee Limestone contains from 92.5 percent to 98.0 percent calcium carbonate (Yon and Hendry, 1972).

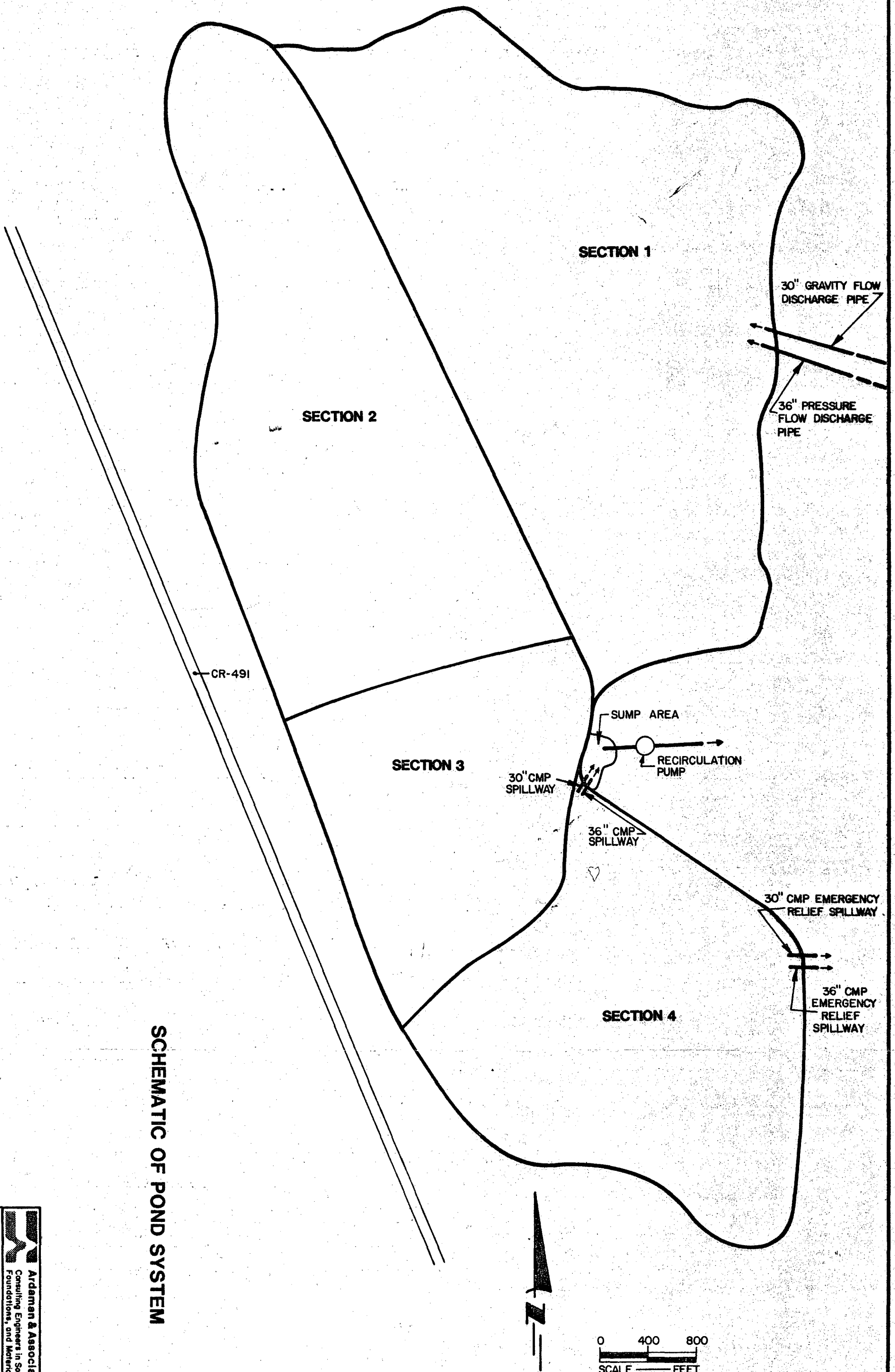
The insoluble residue portion of the samples consisted of quartz sand, silt and clay along with a trace of heavy minerals. In general, the amount of insoluble material decreases with depth in the formation.

The surface of the Suwannee Limestone at the site is irregular (Figure 2.4-4) because of the karst surface developed on its top.

The Tampa Limestone of Miocene age overlies the Suwannee Limestone. The Tampa Limestone is a white to gray, sandy, fossiliferous limestone. Thickness of the formation varies considerably because both the top and bottom surfaces were erosional surfaces.

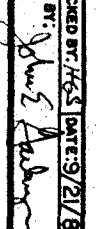
Undifferentiated deposits of sand and clay of Pleistocene and recent ages overlie the Tampa Limestone. These sediments consist of interbedded sands and clays reaching a maximum thickness of less than 10 feet to more than 100 feet on the Florida Crushed Stone property.

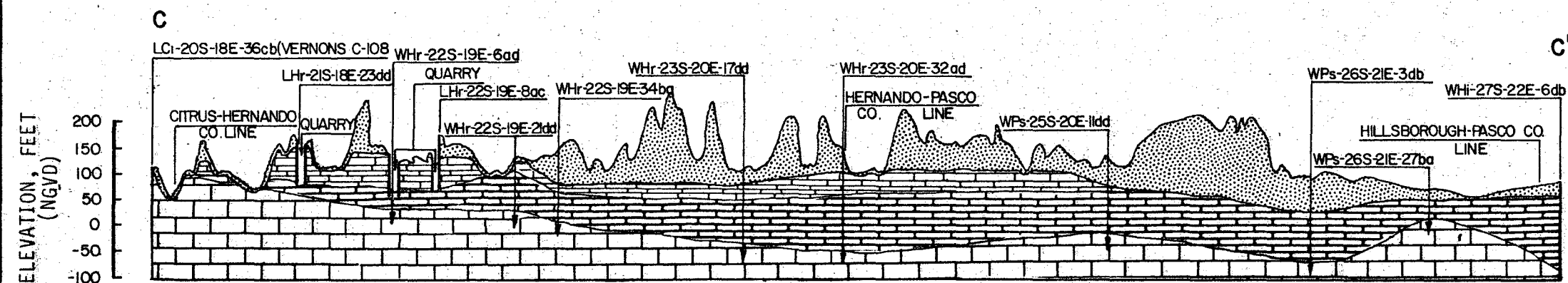
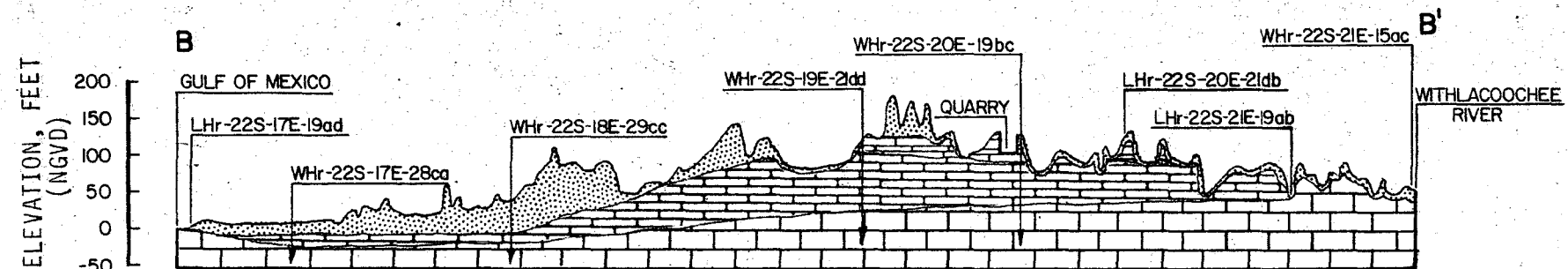
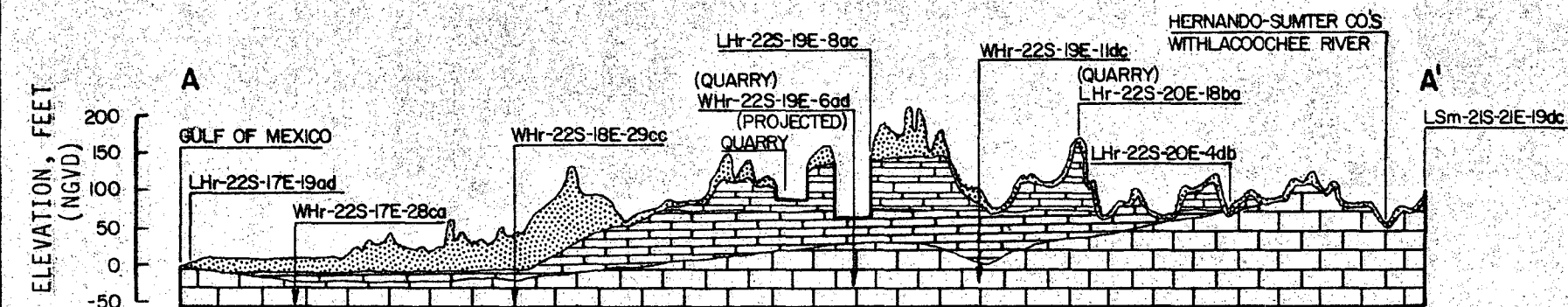
Mining on the Florida Crushed Stone property has been primarily within the Suwannee Limestone and Ocala Group Formations above the top of the Floridan Aquifer.



SCHEMATIC OF POND SYSTEM

FIGURE 2.4-1

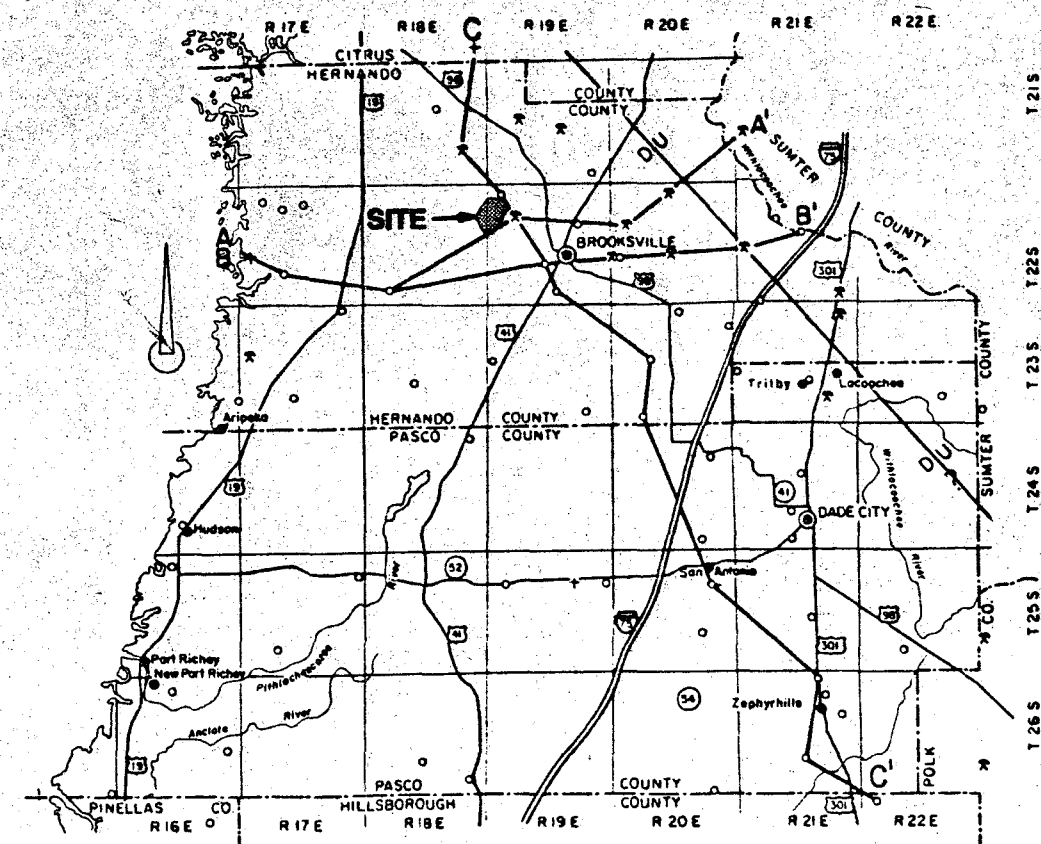
	
Ardaman & Associates, Inc. Consulting Engineers in Soil Mechanics, Foundations, and Material Testing	
GEOHYDROLOGICAL INVESTIGATION HERNANDO COUNTY, FLORIDA FLORIDA CRUSHED STONE CO.	
DESIGNED BY: T. S.	CHECKED BY: H. S.
FILE NO. 82-112	DATE: 9/21/82
APPROVED BY: 	



EXPLANATION

- Post-Suwannee
- Crystalline Limestone (Suwannee Limestone)
- Partially Recrystallized Ls. (Suwannee Limestone)
- Crystal River Formation

0 1 2 Miles
Approx. Scale

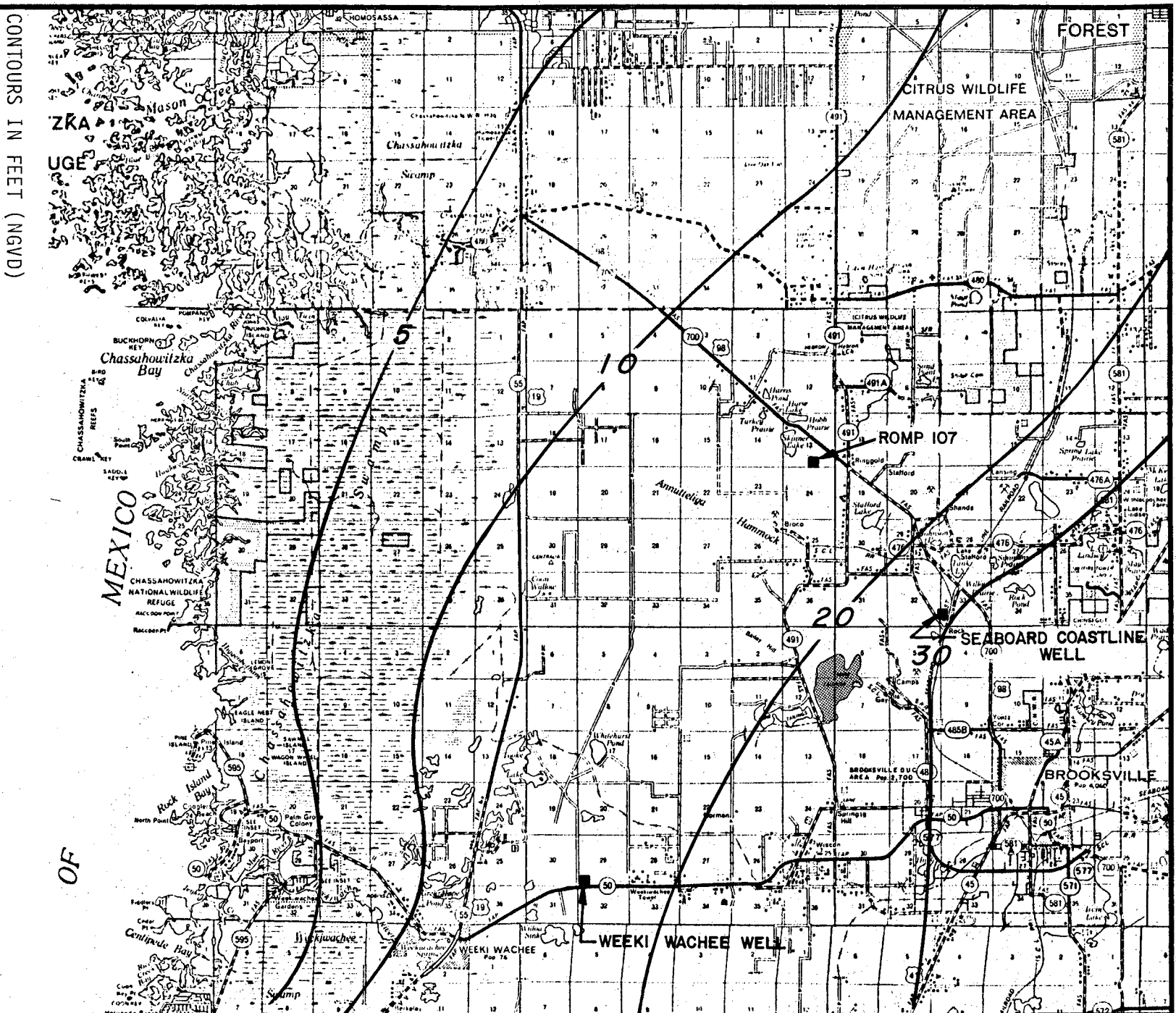


STRATIGRAPHIC CROSS SECTIONS ALONG LINES A-A, B-B AND C-C

MODIFIED FROM YON AND HENDRY, 1972

Ardaman & Associates, Inc. Consulting Engineers in Soil Mechanics, Foundations, and Material Testing	
GEOHYDROLOGICAL INVESTIGATION HERNANDO COUNTY, FLORIDA FLORIDA CRUSHED STONE CO.	
DRAWN BY: T.S.	CHECKED BY: H.S. DATE: 10/14/82
FILE NO. 82-112	APPROVED BY: John E. Ardaman

FIGURE 2.4-2



0 4
SCALE MILES

CONTOURS IN FEET (NGVD)

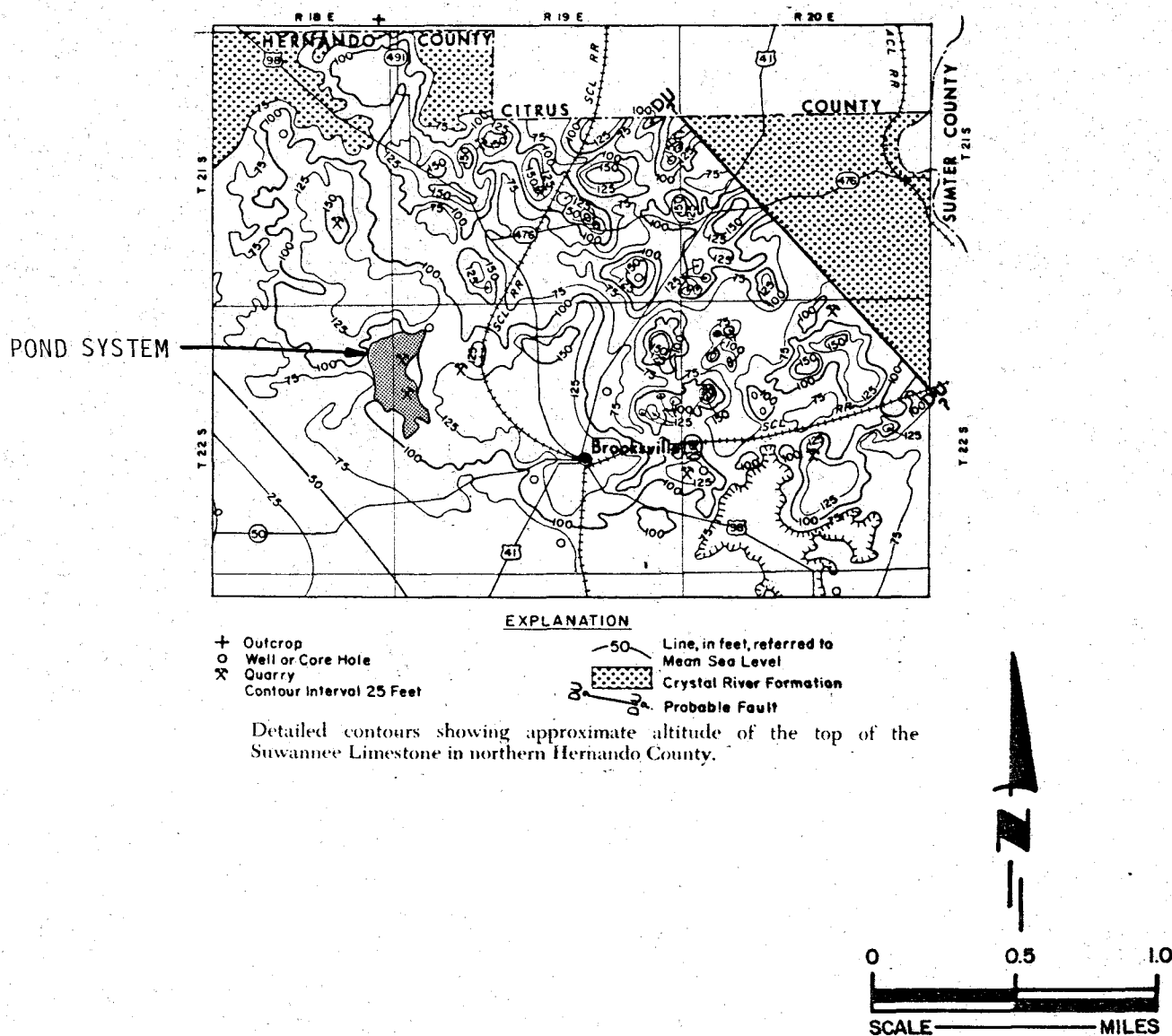
POTENTIOMETRIC SURFACE OF
FLORIDAN AQUIFER, MAY 1982

Ardaman & Associates, Inc.
Consulting Engineers in Soil Mechanics,
Foundations, and Material Testing

GEOHYDROLOGICAL INVESTIGATION
HERNANDO COUNTY, FLORIDA
FLORIDA CRUSHED STONE CO.

DRAWN BY: HAD [checked] BY: HES DATE: 9/22/82
FILE NO. 82-112
APPROVED BY: *[Signature]*

SOURCE: SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
FIGURE 2.4-3



APPROXIMATE ALTITUDE OF THE TOP OF THE SUWANEE LIMESTONE

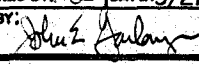
 Ardaman & Associates, Inc. Consulting Engineers in Soil Mechanics, Foundations, and Material Testing		
GEOHYDROLOGICAL INVESTIGATION HERNANDO COUNTY, FLORIDA FLORIDA CRUSHED STONE CO.		
DRAWN BY: T.S.	CHECKED BY: T.S.	DATE: 9/27/82
FILE NO. 82-112	APPROVED BY: 	

FIGURE 2.4-4

Table 2.4-1

GEOLOGIC FORMATIONS AND THEIR WATER-BEARING CHARACTERISTICS¹

<u>Age</u>	<u>Formation</u>	<u>Lithology</u>	<u>Quality of water</u>	<u>Use</u>
Recent and Pleistocene	Undifferentiated sand and clay	Interbedded sand and clay up to 250 feet thick.	Objectionable concentration of iron and high organic color are common.	Only a few small domestic wells
Miocene	Tampa Limestone	White to gray, sandy, fossiliferous limestone.	Generally satisfactory for domestic supplies without treatment.	Most domestic and many irrigations wells produce water from the basal Suwannee Limestone. Some wells in southwestern Pasco County produce water from the Tampa Limestone if the Suwannee Limestone contains salty water.
Oligocene	Suwannee Limestone	Fossiliferous, yellow to white, fine-grained limestone. Hard at bottom.		
	Crystal River Formation		Not well known but probably similar to water from Suwannee Limestone in most of area.	Only a few wells produce water from local cavities.
	Williston Formation	Soft, chalky, white to tan co-quinoid limestone.		
Eocene	Inglis Formation	Hard, fossiliferous, brown to gray dolomitic limestone.	Contains more sulfate than water from overlying formations but probably does not exceed public health limits in most of area.	Most wells that produce more than 1,000 gpm penetrate the Inglis Formation and/or part of the hard brown dolomitic section of the Avon Park and Lake City Limestones.
	Avon Park Limestone Lake City Limestone	Soft to hard, fossiliferous brown limestone with dark brown beds of dolomitic limestone. Some sapropel.		

¹The classification and nomenclature of rock units in this report conform to the usage of the Florida Geological Survey and also, except for the Ocala Group and its subdivisions, with those of the U.S. Geological Survey.

Source: Wetterhall, 1964

2.5 HYDROLOGY

The hydrological system at the proposed site involves primarily a groundwater system. No named streams or natural tributaries will be affected by the proposed project because no named streams or natural tributaries are present in the area. The waste water treatment pond system is located over the surficial and Floridan aquifers.

The difference between rainfall and potential evaporation in the area is an important element of the hydrological system. Potential evaporation is essentially equivalent to lake evaporation. Visher and Hughes, 1969, reports that annual average rainfall exceeds average annual potential evaporation by 10 inches in the Brooksville area. Table 2.5-1 summarizes the approximate average monthly values for this area based on the 1941 to 1970 Weather Bureau rainfall records at Brooksville and from lake evaporation data developed in the U.S. Army Corps of Engineers Four River Basin Report (Geraghty & Miller and Reynolds, Smith & Hills, 1977). Stewart, 1980 reports that the site is within an area of high recharge. These well-drained upland areas are characterized by poorly developed stream drainage systems and many closed depressions. Natural recharge in these type areas is estimated at 10 to 20 inches per year on an average annual basis.

2.5.1 Affected Waters

The hydrological system involves a pond system sitting on unconsolidated deposits on top of post Eocene Age Limestones. The pond system represents a "perched" water table condition over the Floridan Aquifer. A "perched" water table condition also occurs within the surficial aquifer system at other locations in the area. The Floridan Aquifer is under water table conditions throughout much of the study area, because the clay layer(s) separating the Floridan and surficial aquifers is discontinuous. The physical, chemical and hydrological characteristics of affected waters will be discussed within other paragraphs of Section 2.5.

2.5.2 Water Withdrawals

The power plant will require a total water flow of about 100,000 gpm for condenser cooling. This water will be recirculated for evaporative cooling through the existing 1050 acre waste treatment ponds. Evaporation water losses resulting from the increased water temperatures are expected to be approximately 2.25 MGD.

To minimize water withdrawals, the dikes surrounding the existing waste treatment ponds will be elevated by 5 to 10 feet and additional control structures installed between Pond Sections to catch and store rainwater falling on the ponds. This will provide an additional 4.5 MGD of water to the system.

Current water withdrawals are required primarily to make up seepage and solar evaporation losses from the water treatment pond and from seepage losses on the plant site and product shipping.

The combined seepage losses (from the ponds and the plant site) are currently estimated at 14.5 MGD. Solar evaporation is estimated to be 3.75 MGD. The addition of 2.25 MGD of thermal evaporation losses with only slightly increased seepage losses (resulting from the increased water storage levels), even without the addition of 4.5 MGD of rainwater, would not increase withdrawals above the currently permitted value of 26.5 MGD. With the addition of the rainwater, withdrawals are expected to be reduced from current values. Consumptive use will, of course, increase by 2.25 MGD. However, the combined consumptive use of 3.25 MGD is still not a large percentage of the SWFWMD water crop for the Florida Crushed Stone property.

2.5.3 Affected Tributaries

Not Applicable

2.5.4 Surface Water

The site is flanked by the Withlacoochee River Valley approximately 13 miles to the east, the Weekiwachee River 10 miles to the southwest and the Chassahowitzka River 12 miles to the northwest.

Surface drainage in the region is poorly developed with drainage primarily by sinkhole drains. Streams form only where the water level in the limestone is near the land surface or where material of low permeability overlies the limestone.

Naturally occurring streams are not located on the site nor is the site a part of the drainage basin of any stream in the area.

The only surface water feature relevant to this project is an existing man-made wastewater pond system permitted by FDER and SWFWMD. Water is presently withdrawn from this

pond at a rate of 15,000 GPM to wash the crushed rock. Additional water from 13 wells at the rock plant is also needed to wash the rock. The combined flow of the recycled pond water and the wells is returned to the ponds. The additional wash water is used to make up the seepage and evaporative losses discussed in the preceding section.

The existing pond system is divided into 4 interconnected sections as shown in Figure 2.4-1. The total pond size is about 1050 acres. Water from the plant enters the pond in Section 1 and water is recirculated back to the rock plant through the recirculation system pumps connected to Section 4 of the system. Section 4 is the clear water portion of the system, with an average depth of water of about 20 feet. The other three sections are settling basins with available water depths of less than one foot.

Under the proposed project the first three sections of the system would be deepened or the embankments heightened to assure at least 8100 acre feet of water storage capacity. The following table summarizes the approximate area of the improved pond system.

<u>Section</u>	<u>Surface Area in Acres</u>
1	394
2	293
3	145
4	218
	1050

Two emergency spillways are available for use in excessive rainfall periods. The water from these spillways drains several hundred feet into an enclosed depression.

2.5.5 Natural Variation of Surface Waters

Not Applicable.

2.5.6 Groundwater

According to Cherry, et al, 1970, the area has two aquifer systems, the shallow aquifer and the Floridan Aquifer. The shallow aquifer consists of the surficial deposits (upper part of the Hawthorn Formation) overlying the limestone and receives water almost entirely from local precipitation; the exception being recharge from artesian seepage and from various man-made sources such as irrigation. In the shallow

aquifer the depth to water below land surface averages less than 8 feet and can occur at depths less than 3 feet below land surface. The general shape of the water surface in the shallow aquifer follows the topography.

The water level in the shallow aquifer ranges from slightly below to as much as 17 feet above the water level in the Floridan Aquifer according to Cherry et al, 1970. The greatest difference in water level altitudes between the two aquifers occurs in the topographically higher Brooksville area. In this area water moves downward from the shallow aquifer and recharges the Floridan Aquifer.

Undisturbed soil samples were taken by the U.S. Geological Survey (Cherry, et al, 1970) which indicated the coefficient of permeability for the surficial aquifer in the vicinity of the site to be 0.001 gallons per day per square foot. The porosity and specific yield for the same sample (sampling depth 3.0-3.2 feet) were 45.5 and 7.1, respectively. These values indicate that although the shallow aquifer has a relatively low permeability, the storage capacity is large and the volume of water that can drain from the material, given enough time, is large.

The Floridan Aquifer consists of limestone and dolomite from the following formations in descending order from younger to older:

Lower part of the Hawthorn Formation

Tampa Formation

Suwannee Limestone

Ocala Group

Avon Park Limestone

Upper part of the Lake City Limestone

Any confining beds present between the surficial and Floridan aquifers on the Florida Crushed Stone property can be characterized as discontinuous at best. The two aquifer systems are connected such that the Floridan acts as a water table aquifer. Where a confining bed does exist, a perched water table can occur but this condition is isolated.

The depth to the top of the Floridan Aquifer differs according to the water table elevation. The water table is the top of this aquifer system.

The potentiometric surface or the water table for the Floridan Aquifer in this area for May 1982 is shown in Figure 2.4-3. The water level is approximately 30 feet NGVD at the east edge of the property and 20 feet NGVD at the west edge. The direction of groundwater flow in the aquifer, as shown in Figure 2.4-3, is west northwest, with a gradient of between 0.001 and 0.0005.

The volume of water in the aquifer varies with changes in the amount of recharge and discharge. When recharge exceeds discharge, the water in storage increases and the water levels rise; conversely, when discharge exceeds recharge, the water in storage decreases and water levels decline. These seasonal variations can be seen in the hydrographs of Floridan Aquifer wells on the Florida Crushed Stone property for 1982 (Figure 2.5.6-1) and the Seaboard Coast Line Railroad property (Figure 2.5.6-2). The highest water levels generally occur in September and October following the rainy season and the lowest levels occur in May, just preceding the rainy season.

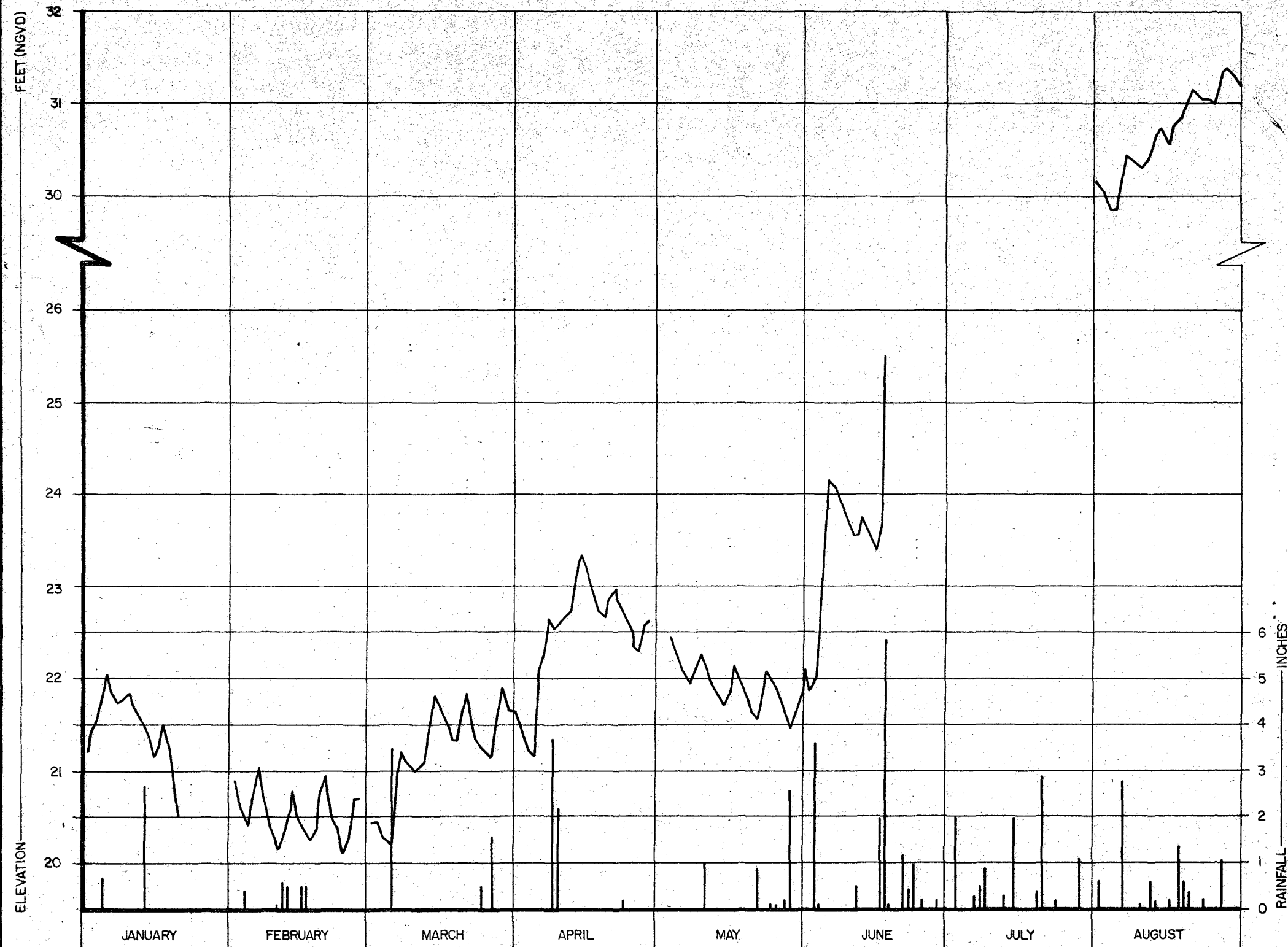
The long-term observation wells in the area (located in Figure 2.5.6-3) indicate that the water level of the Floridan Aquifer varies considerably. The water level in the Seaboard Coastline Railroad well at the east edge of the property has ranged from a high of 48.48 feet NGVD in October 7, 1960 to a low of approximately 27.0 feet NGVD in December 1981, a range of 21.5 feet. The water level in a Weeki Wachee well has a range of 9.4 feet for the period 1974 to 1981 (e.g. 23.8 to 14.4 feet NGVD). On a long term basis (i.e., 1960 to present time) the range in potentiometric surface of the Floridan Aquifer in the area is judged to be 15 to 25 feet.

The potentiometric surface of the Floridan Aquifer at the pond system probably varies between 15 to 35 feet NGVD based on the review of the available monitor well data. Within a relatively short distance west of Brooksville the potentiometric surface of the Floridan Aquifer drops 10 to 20 feet. To the northwest a water level gradient of 4.8 feet per mile has been documented. To the southwest a water level gradient of 1.9 feet per mile has been documented.

Using the two separate areas encompassing Hernando County in Cherry, et al 1970, they calculated transmissivity values for the Floridan Aquifer to be between 5 and 15 million gallons per day per foot. Based on the ratio of rainfall to change in water level in the aquifer from the Florida Crushed Stone monitor well records, a storage coefficient of 0.2 is judged to be representative for this limerock aquifer system.

Water Quality

Chemical analyses of the groundwaters at the site and the treatment pond system waters is presented in Table 2.5.6-1. The groundwater is generally of good quality with total dissolved solids content of less than 300 mg/l. The pH is slightly basic at 7.6. The groundwater would be classified as hard with a total hardness of 156 mg/l. The pond water, because of dilution with rainwater, has a lower dissolved solids content (92 to 116) and is softer (total hardness = 66 to 72 mg/l). No violations of primary drinking water standards for either inorganic or organic contaminants were detected. Radionuclides were also within drinking water standards.



**1982 DAILY WATER LEVEL HYDROGRAPH
FOR FLORIDA CRUSHED STONE
FLORIDAN AQUIFER WELL**

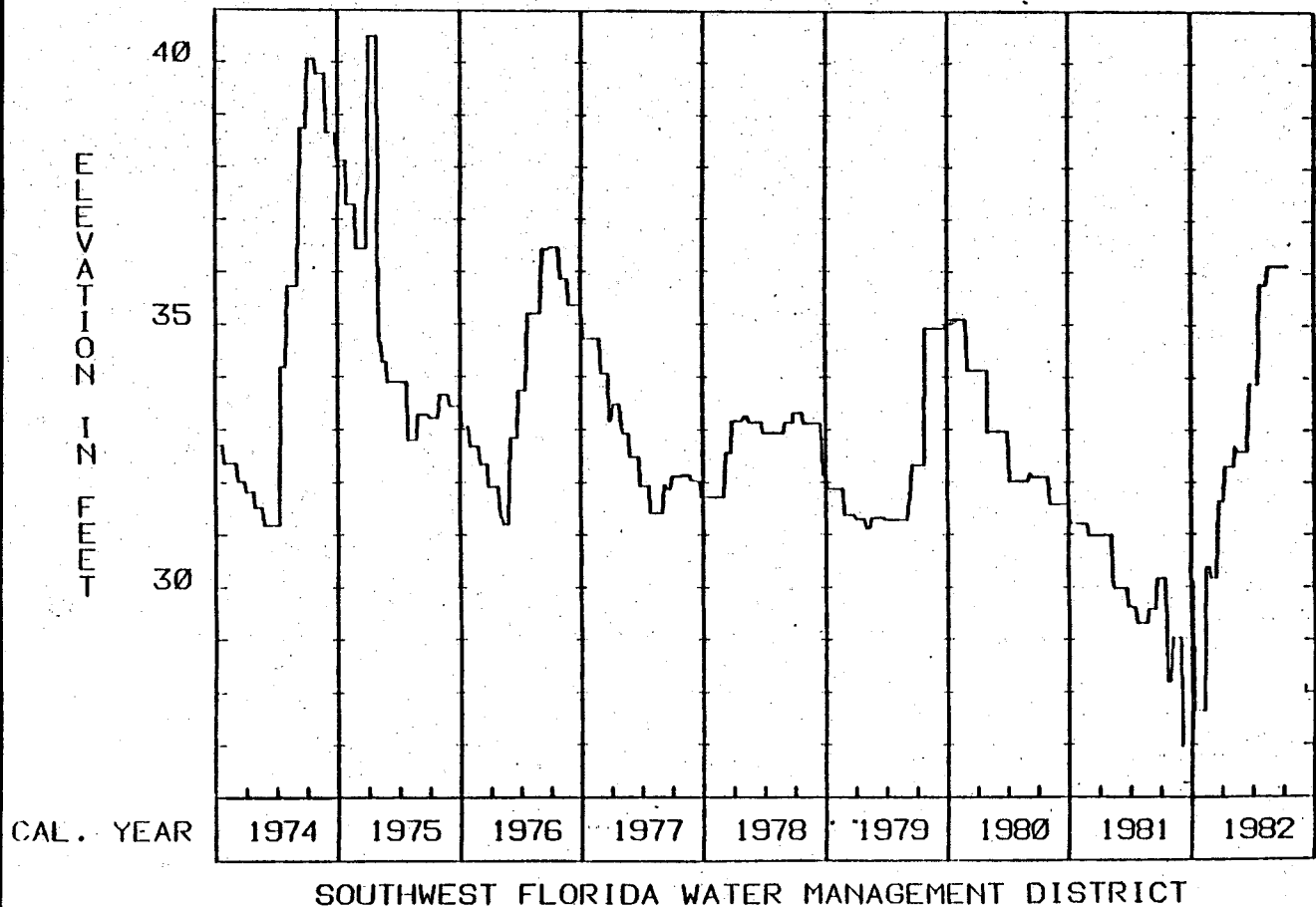
Ardaman & Associates, Inc. Consulting Engineers in Soil Mechanics, Foundations, and Material Testing		
GEOHYDROLOGICAL INVESTIGATION HERNANDO COUNTY, FLORIDA FLORIDA CRUSHED STONE CO.		
DRAWN BY: T.S.	CHECKED BY: JES	DATE: 10/12/82
FILE NO. 82-112	APPROVED BY: <i>John E. Ardaman</i>	

FIGURE 2.5.6-1

SEABOARD COASTLINE RAILROAD WELL NR BROOKSVILLE, FL
COASTAL RIVERS BASIN

WATER LEVEL, FEET ABOVE NGVD

REPORT DATE 23 AUG 82



SEABOARD COASTLINE FLORIDAN AQUIFER
WELL WATER LEVEL HYDROGRAPH

		Ardaman & Associates, Inc.	
		Consulting Engineers in Soil Mechanics, Foundations, and Material Testing	
GEOHYDROLOGICAL INVESTIGATION HERNANDO COUNTY, FLORIDA FLORIDA CRUSHED STONE CO.			
DRAWN BY: T.S.		CHECKED BY: <i>464</i>	DATE: 10/7/82
FILE NO. 82-112		APPROVED BY: <i>John S. Ardaman</i>	

FIGURE 2.5.6-2

WELL NUMBER.--283924082272301. RMP 107 Deep Well near Brooksville, FL.

LOCATION.--Lat 28°39'24", long 82°27'23", in SW¼SW¼ sec.13, T.21 S., R.18 E., Hydrologic Unit 03100207, 75 ft (23 m) southwest of U. S. Highway 98, and 9.2 mi (15 km) northwest of Brooksville.

AQUIFER.--Floridan aquifer of the Tertiary System, Geologic Unit 120 FLRD.

WELL CHARACTERISTICS.--Drilled, observation, artesian well, diameter 8 in (20 cm), depth 240 ft (73 m), cased to 140 ft (43 m).

INSTRUMENTATION.--Water-level recorder. Measuring point: Top of nipple, 2.83 ft (0.86 m) above land-surface datum.

DATUM.--Land-surface datum is 116.03 ft (35.37 m) National Geodetic Vertical Datum of 1929.

PERIOD OF RECORD.--April 1977 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest daily maximum water level, 15.58 ft (4.75 m) NGVD, Sept. 10, 1978; lowest, 11.65 ft (3.55 m) NGVD, Aug. 13, 15, 1977.

WELL NUMBER.--283632082245101. Seaboard Coast Line Railroad Well near Brooksville, FL.

LOCATION.--Lat 28°36'32", long 82°24'51", in SW¼SW¼ sec.33, T.21 S., R.19 E., Hydrologic Unit 03100208, 0.2 mi (0.3 km) south of U. S. Highway 98, and 4.0 mi (6.4 km) northwest of Brooksville.

AQUIFER.--Floridan aquifer of the Tertiary System, Geologic Unit 120 FLRD.

WELL CHARACTERISTICS.--Drilled, domestic, artesian well, diameter 6 in (15 cm), depth 231 ft (70 m).

INSTRUMENTATION.--Tape measured. Measuring point: Top of 0.5 in (1.3 cm) access pipe, 0.25 ft (0.08 m) above land-surface datum. Prior to Jan. 4, 1974, top of access hole, 0.10 ft (0.03 m) below land-surface datum.

DATUM.--Land-surface datum is 96.67 ft (29.47 m) National Geodetic Vertical Datum of 1929.

PERIOD OF RECORD.--August 1960 to September 1977 (monthly); October 1977 to current year (bimonthly). Records of water levels prior to January 1974 are available in files of the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 48.48 ft (14.78 m) NGVD, Oct. 7, 1960; lowest measured, 31.11 ft (9.48 m) NGVD, May 1, 1979.

WELL NUMBER.--283201082315601. Weeki Wachee Well near Weeki Wachee, FL.

LOCATION.--Lat 28°32'01", long 82°31'56", in SW¼SW¼ sec.29, T.22 S., R.18 E., Hydrologic Unit 03100207, 25 ft (8 m) north of State Highway 50, and 2.6 mi (4.2 km) east of Weeki Wachee.

AQUIFER.--Floridan aquifer of the Tertiary System, Geologic Unit 120 FLRD.

WELL CHARACTERISTICS.--Drilled, observation, artesian well, diameter 4 in (10 cm), depth 259 ft (79 m), cased to 176 ft (54 m).

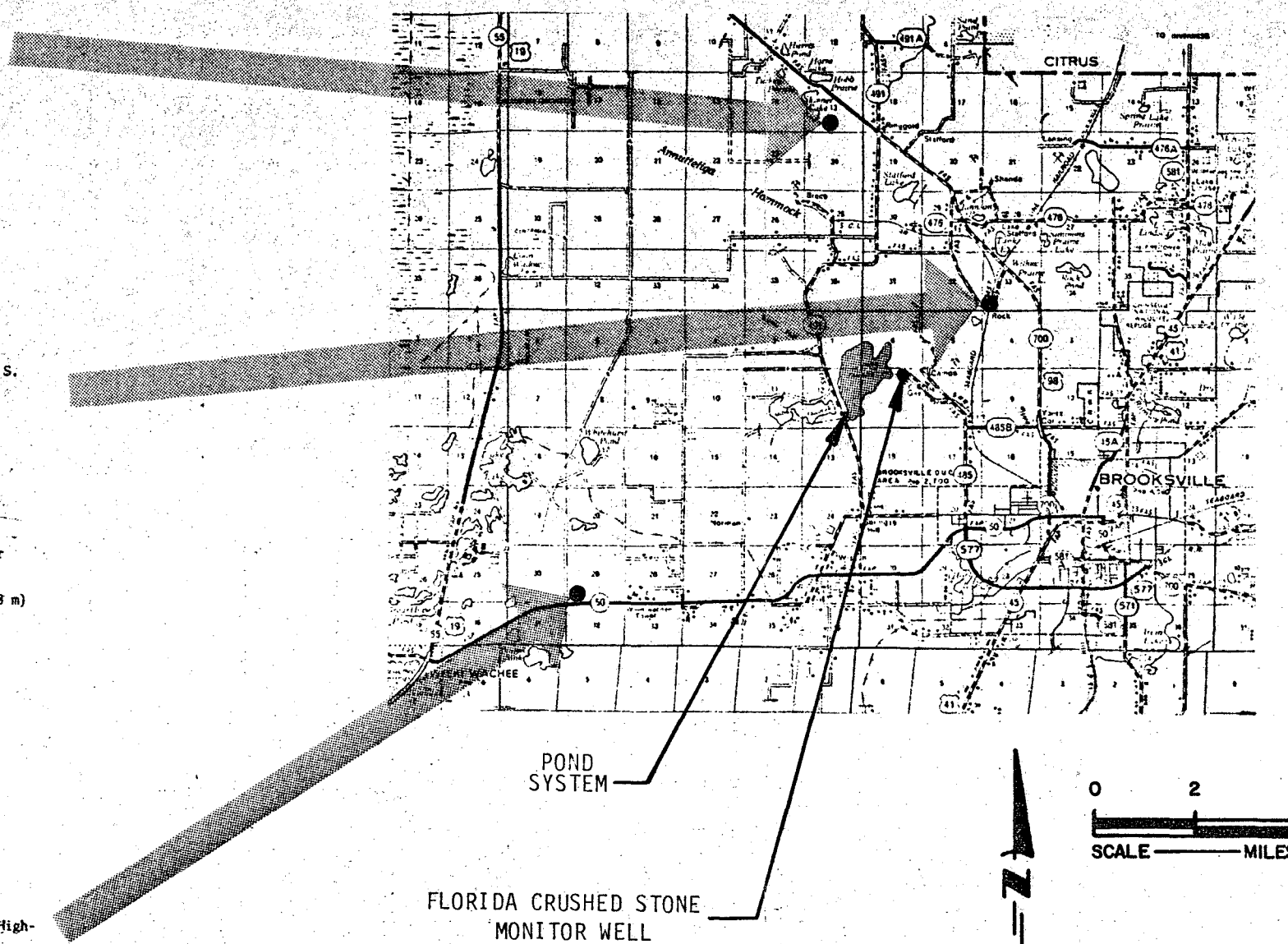
INSTRUMENTATION.--Water-level recorder. Measuring point: Top of casing, 2.60 ft (0.79 m) above land-surface datum.

DATUM.--Land-surface datum is 35.97 ft (10.96 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Extremes may have been exceeded during periods of missing record.

PERIOD OF RECORD.--August 1966 to current year, incomplete. Records of water levels prior to January 1974 are available in files of the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Highest daily maximum water level, 23.79 ft (7.25 m) NGVD, Sept. 17, 1974; lowest, 14.44 ft (4.40 m) NGVD, June 3, 1974.



REGIONAL FLORIDAN AQUIFER WATER LEVEL RECORDS SUMMARY

 Ardaman & Associates, Inc. Consulting Engineers in Soil Mechanics, Foundations, and Material Testing	
GEOHYDROLOGICAL INVESTIGATION HERNANDO COUNTY, FLORIDA FLORIDA CRUSHED STONE CO.	
DRAWN BY: T.K.S. FILE NO. 82-112	CHECKED BY: H.S. APPROVED BY: <i>John E. Bailey</i>
DATE: 9/22/82	

FIGURE 2.5.6-3

Table 2.5-1

**Average Monthly Rainfall and Lake Evaporation Rates
in Brooksville Area in inches**

<u>Month</u>	<u>Rainfall¹</u>	<u>Lake Evaporation²</u>	<u>Difference</u>
January	2.7	2.0	+7.0 + 0.7
February	3.4	3.0	+4.0 + 0.4
March	4.4	3.5	+0.9
April	2.7	4.5	-1.8
May	3.5	6.0	-2.5
June	7.6	5.7	+1.9
July	9.0	5.2	+3.8
August	9.6	4.8	+4.8
September	7.3	4.1	+3.2
October	3.1	4.0	-0.9
November	1.8	2.9	-1.1
<u>December</u>	<u>2.5</u>	<u>2.5</u>	<u>0</u>
Annual	57.6	48.2	+9.4

1 U.S. Weather Bureau, 1941-70.

2 Geraghty and Miller and Reynolds, Smith & Hills, March 1977

ANALYSIS FOR NATIONAL PRIMARY DRINKING WATER REGULATIONS

**Orlando Laboratories, Inc.**

P. O. Box 19127 • Orlando, Florida 32814 • 305/896-6645

TO:

Ardaman & Associates, Inc.
 Attention: Herb Stangland
 Post Office Box 13003
 Orlando, Florida 32809

Report # 27180 (9524-1)

Sampled by: Client

Date Sampled: 09/15/82 @ 1:20 pm

Date Received: 09/16/82

Date Reported: 10/12/82

Page 1 of 8

IDENTIFICATION: Re: Florida Crushed Stone Project- Brooksville Site.
 Sample #1 (Well #2 and #3), water temperature: 26.5°C.
 Water clear.

INORGANIC

CONTAMINANT	MCL*	FOUND	CONTAMINANT	MCL*	FOUND
Arsenic, As	0.05	<0.01	Lead, Pb	0.05	<0.01
Barium, Ba	1.0	<0.10	Mercury, Hg	0.002	<0.0005
Cadmium, Cd	0.010	<0.005	Nitrate, NO ₃ -N	10	0.21
Chromium, Cr	0.05	0.01	Selenium, Se	0.01	<0.005
Fluoride, F	1.4-2.4	0.60	Silver, Ag	0.05	<0.01
Turbidity, NTU		10.9			

ORGANIC

Endrin	0.0002	<0.0001	Toxaphene	0.005	<0.001
Lindane	0.004	<0.001	2, 4-D	0.1	<0.01
Methoxychlor	0.1	<0.01	2, 4, 5-TP (Silvex)	0.01	<0.001

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED *MCL — MAXIMUM CONTAMINANT LEVELS

Respectfully submitted,

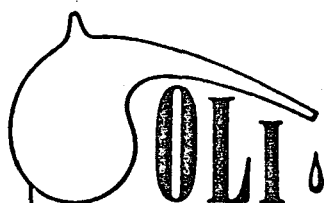
ORLANDO LABORATORIES, INC.

Chemist

Our Florida Department of Health & Rehabilitative
 Services Laboratory Identification No. is #83141

Methods & Limits: In accordance with Federal Register - Vol. 40, No. 248,
 Part IV - Wednesday, December 24, 1975. U.S. Environmental Protection
 Agency, National Interim Primary Drinking Water Regulations.

METHOD: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved
 methods unless otherwise designated.



Orlando Laboratories, Inc.

P.O. Box 19127 • Orlando, Florida 32814 • 305/896-6645

TO:

Ardaman & Associates
Attention: Herb Stangland
Post Office Box 13003
Orlando, Florida 32809

Report # 27180 (9524-1)
Sampled by: Client
Date Sampled: 09/15/82
Date Received: 09/16/82
Date Reported: 10/12/82

Page 6 of 8

IDENTIFICATION:

Re: Florida Crushed Stone Project- Brooksville Site.
Sample #1 (Well #2 and #3), water temperature 26.5°C, water clear,
sampled @ 1:20 pm.

RESULTS OF ANALYSIS:

Storet #

Sample

Gross Alpha, pCi/l	01501	0.9
Counting error, pCi/l	01502	± 1.2
Gross Beta, pCi/l	03501	8.6
Counting error, pCi/l	03502	± 6.1
Radium 226, pCi/l	09501	<0.2
Counting error, pCi/l	09502	± 0.2
Radium 228, pCi/l	11501	2.3
Counting error, pCi/l	11502	± 0.4
Tritium, pCi/l	07000	<750
Counting error, pCi/l	07001	± 750

RESULTS EXPRESSED IN mg/l UNLESS OTHERWISE DESIGNATED

< = Less Than

Respectfully submitted,

Our Florida Department of Health & Rehabilitative
Services Identification Number is 83141.

ORLANDO LABORATORIES, INC.

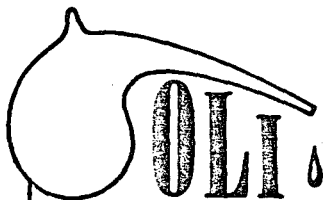
Chemist/Biologist/Bacteriologist

Chemist/Biologist/Bacteriologist

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF
and/or other EPA approved methods unless otherwise designated.

Table 2.5.6-1 (Con't)
REPORT OF ANALYSIS



Orlando Laboratories, Inc.

P.O. Box 19127 • Orlando, Florida 32814 • 305/896-6645

TO:

Ardaman & Associates
Attention: Herb Stangland
Post Office Box 13003
Orlando, Florida 32809

Report # 27180 (9524)
Sampled by: Client
Date Sampled: 09/15/82
Date Received: 09/16/82
Date Reported: 10/12/82
Page 4 of 8

IDENTIFICATION: Re: Florida Crushed Stone Project- Brooksville Site.

Sample #1 (Well #2 and #3), water temp. 26.5°C, water clear. sampled @ 1:20 pm
Sample #2 (Pond at dike pump), water temp. 30.5°C. 15.9 feet, sampled @ 1:45 pm
water has a less milky appearance.
Sample #3 (Pond at CR491), water temp. 32.5°C, sampled @ 2:20 p.m. Water has
a milky appearance.

RESULTS OF ANALYSIS:

	Sample #1	Sample #2	Sample #3
Chloride, Cl	14	14	14
Color, PCU	10	10	10
Copper, Cu	<0.01	<0.01	<0.01
Corrosivity	-0.1	-0.3	-0.4
Foaming Agents (MBAS)	<0.01	<0.01	<0.01
Iron, Fe	<0.05	<0.05	<0.05
Manganese, Mn	<0.05	<0.05	<0.05
Odor	0	0	0
pH (Laboratory)	7.6	8.1	8.1
Sulfate, SO ₄	15	16	15
Total Dissolved Solids, TDS	152	92	116
Calcium, Ca	57	24	21
Magnesium, Mg	2.9	2.9	2.9
Total Phosphate, P	0.12	0.22	0.71
Total Organic Carbon, TOC	6.8	4.15	11.4
Total Suspended Solids, TSS	15	34	288
Total Hardness, CaCO ₃	156	72	66
Turbidity, NTU	10.9	29	143
Nitrate Nitrogen, N	0.21	0.02	0.02
Fluoride, F	0.60	0.96	0.99
Sodium, Na	11	14	12

RESULTS EXPRESSED IN mg/l UNLESS OTHERWISE DESIGNATED

< = Less Than

Respectfully submitted,

Our Florida Department of Health & Rehabilitative
Services Identification Number is 83141.

ORLANDO LABORATORIES, INC.

[Signature]

Chemist/Biologist/Bacteriologist

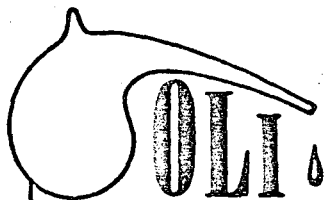
[Signature]

Chemist/Biologist/Bacteriologist

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF
and/or other EPA approved methods unless otherwise designated.

REPORT OF ANALYSIS

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305/896-6645

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 water has a less milky appearance.
 Sample #3 (Pond at CR491), water temp. 32.5°C, sampled @ 2:20 p.m. Water has
 a milky appearance.

RESULTS OF ANALYSIS:

	Sample #1	Sample #2	Sample #3
Potassium, K	0.72	1.08	2.16
Calcium Hardness, CaCO ₃	144	60	54
Magnesium Hardness, CaCO ₃	12	12	12
Total Coliform/100ml (MFT)	5	18	2
Zinc, Zn	<0.01	<0.01	<0.08
Aluminum, Al	<1.00	1.72	5.21

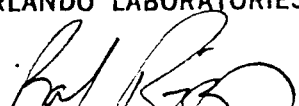
RESULTS EXPRESSED IN mg/l UNLESS OTHERWISE DESIGNATED

< = Less Than

Respectfully submitted,

Our Florida Department of Health & Rehabilitative
 Services Identification Number is 83141.

ORLANDO LABORATORIES, INC.


 Chemist/Biologist/Bacteriologist


 Chemist/Biologist/Bacteriologist


 Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF
 and/or other EPA approved methods unless otherwise designated.

ANALYSIS FOR NATIONAL PRIMARY DRINKING WATER REGULATIONS

Orlando Laboratories, Inc.

P. O. Box 19127 • Orlando, Florida 32814 • 305/ 896-6645

TO:

Ardaman & Associates, Inc.
 Attention: Herb Stangland
 Post Office Box 13003
 Orlando, Florida 32809

Report # 27180 (9524-2)

Sampled by: Client

Date Sampled: 09/15/82 @ 1:45 pm

Date Received: 09/16/82

Date Reported: 10/12/82

Page 2 of 8

IDENTIFICATION: Re: Florida Crushed Stone Project- Brooksville Site.
 Sample #2 (Pond at dike pump), water temperature: 30.5°C.
 15.9 feet, water has a less milky appearance.

INORGANIC

CONTAMINANT	MCL*	FOUND	CONTAMINANT	MCL*	FOUND
Arsenic, As	0.05	<0.01	Lead, Pb	0.05	<0.01
Barium, Ba	1.0	<0.10	Mercury, Hg	0.002	<0.0005
Cadmium, Cd	0.010	<0.005	Nitrate, NO ₃ -N	10	0.02
Chromium, Cr	0.05	0.01	Selenium, Se	0.01	<0.005
Fluoride, F	1.4-2.4	0.96	Silver, Ag	0.05	<0.01
Turbidity, NTU		29			

ORGANIC

Endrin	0.0002	<0.0001	Toxaphene	0.005	<0.001
Lindane	0.004	<0.001	2, 4-D	0.1	<0.01
Methoxychlor	0.1	<0.01	2, 4, 5-TP (Silvex)	0.01	<0.001

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED *MCL - MAXIMUM CONTAMINANT LEVELS

Respectfully submitted,

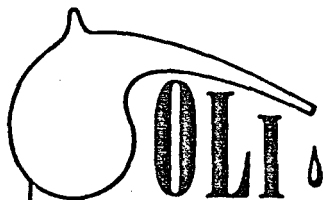
ORLANDO LABORATORIES, INC.

Chemist

Our Florida Department of Health & Rehabilitative
 Services Laboratory Identification No. is #83141

Methods & Limits: In accordance with Federal Register - Vol. 40, No. 248,
 Part IV - Wednesday, December 24, 1975. U.S. Environmental Protection
 Agency, National Interim Primary Drinking Water Regulations.

METHOD: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved
 methods unless otherwise designated.



Orlando Laboratories, Inc.

P.O. Box 19127 • Orlando, Florida 32814 • 305/896-6645

TO:

Ardaman & Associates
Attention: Herb Stangland
Post Office Box 13003
Orlando, Florida 32809

Report # 27180 (9524-2)
Sampled by: Client
Date Sampled: 09/15/82
Date Received: 09/16/82
Date Reported: 10/12/82

Page 7 of 8

IDENTIFICATION:

Re: Florida Crushed Stone Project- Brooksville Site.
Sample #2 (Pond at dike pump), water temperature 30.5 °C.
sampled @ 1:45 pm. at 15.9 feet.

RESULTS OF ANALYSIS:

Storet #

Sample

Gross Alpha, pCi/l
Counting error, pCi/l

01501
01502

0.2
± 0.6

Gross Beta, pCi/l
Counting error, pCi/l

03501
03502

0.1
± 2.5

Radium 226, pCi/l
Counting error, pCi/l

09501
09502

<0.2
± 0.2

Radium 228, pCi/l
Counting error, pCi/l

11501
11502

0.5
± 0.2

Tritium, pCi/l
Counting error, pCi/l

07000
07001

<750
± 750

RESULTS EXPRESSED IN mg/l UNLESS OTHERWISE DESIGNATED

< = Less Than

Respectfully submitted,

Our Florida Department of Health & Rehabilitative
Services Identification Number is 83141.

ORLANDO LABORATORIES, INC.

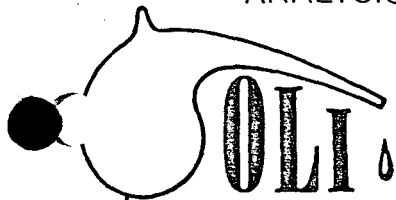
Chemist/Biologist/Bacteriologist

Chemist/Biologist/Bacteriologist

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF
and/or other EPA approved methods unless otherwise designated.

ANALYSIS FOR NATIONAL PRIMARY DRINKING WATER REGULATIONS

**Orlando Laboratories, Inc.**

P. O. Box 19127 • Orlando, Florida 32814 • 305/ 896-6645

TO:

Ardaman & Associates, Inc.
 Attention: Herb Stangland
 Post Office Box 13003
 Orlando, Florida 32809

Report # 27180 (9524-3)

Sampled by: Client

Date Sampled: 09/15/82 @ 2:20 pm

Date Received: 09/16/82

Date Reported: 10/12/82

Page 3 of 8

IDENTIFICATION: Re: Florida Crushed Stone Project- Brooksville Site.
 Sample #3 (Pond at CR491), water temperature: 32.5°C.
 Water has milky appearance.

INORGANIC

CONTAMINANT	MCL*	FOUND	CONTAMINANT	MCL*	FOUND
Arsenic, As	0.05	<0.01	Lead, Pb	0.05	<0.01
Barium, Ba	1.0	<0.10	Mercury, Hg	0.002	<0.0005
Cadmium, Cd	0.010	<0.005	Nitrate, NO ₃ -N	10	0.02
Chromium, Cr	0.05	0.01	Selenium, Se	0.01	<0.005
Fluoride, F	1.4-2.4	0.99	Silver, Ag	0.05	<0.01
Turbidity, NTU		143			

ORGANIC

Endrin	0.0002	<0.0001	Toxaphene	0.005	<0.001
Lindane	0.004	<0.001	2, 4-D	0.1	<0.01
Methoxychlor	0.1	<0.01	2, 4, 5-TP (Silvex)	0.01	<0.001

RESULTS EXPRESSED IN mg/l (ppm) UNLESS OTHERWISE DESIGNATED *MCL — MAXIMUM CONTAMINANT LEVELS

Respectfully submitted,

ORLANDO LABORATORIES, INC.

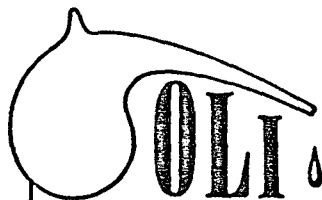
[Signature]
 Chemist

Our Florida Department of Health & Rehabilitative
 Services Laboratory Identification No. is #83141

Methods & Limits: In accordance with Federal Register - Vol. 40, No. 248,
 Part IV - Wednesday, December 24, 1975. U.S. Environmental Protection
 Agency, National Interim Primary Drinking Water Regulations.

METHOD: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF and/or other EPA approved
 methods unless otherwise designated.

REPORT OF ANALYSIS

**Orlando Laboratories, Inc.**

P.O. Box 19127 •

Orlando, Florida 32814 •

305/896-6645

TO:

Ardaman & Associates
 Attention: Herb Stangland
 Post Office Box 13003
 Orlando, Florida 32809

Report # 27180 (9524-3)

Sampled by: Client

Date Sampled: 09/15/82 @2:20pm

Date Received: 09/16/82

Date Reported: 10/12/82

Page 8 of 8

IDENTIFICATION:

Re: Florida Crushed Stone Project- Brooksville Site.

Sample #3 (Pond at CR 491) water temperature 32.5°C.

Water milky appearance.

RESULTS OF ANALYSIS:

Storet #

Sample

Gross Alpha, pCi/l
 Counting error, pCi/l

01501
 01502

3.3
 $\pm$ 2.7

Gross Beta, pCi/l
 Counting error, pCi/l

03501
 03502

25.1
 $\pm$ 6.6

Radium 226, pCi/l
 Counting error, pCi/l

09501
 09502

<0.2
 $\pm$ 0.2

Radium 228, pCi/l
 Counting error, pCi/l

11501
 11502

<0.2
 $\pm$ 0.2

Tritium, pCi/l
 Counting error, pCi/l

07000
 07001

<750
 $\pm$ 750

RESULTS EXPRESSED IN mg/l UNLESS OTHERWISE DESIGNATED

< = Less Than

Respectfully submitted,

Our Florida Department of Health & Rehabilitative
 Services Identification Number is 83141.

ORLANDO LABORATORIES, INC.

Chemist/Biologist/Bacteriologist

Chemist/Biologist/Bacteriologist

Chemist/Biologist/Bacteriologist

METHODS: "Standard Methods for the Examination of Water and Wastewater," Latest Edition, APHA, AWWA and WPCF
 and/or other EPA approved methods unless otherwise designated.

2.6 METEOROLOGY

The Florida Crushed Stone site is located in West Central Florida approximately 70 kilometers north of Tampa and 20 kilometers east of the Gulf Coast. The climate of the site is characterized by relatively dry winters and rainy summers, a high annual percentage of sunshine and high humidities. Rainfall averages about 57 inches per year with more than 65 percent of the total occurring as thundershowers during the months of June-September. Temperatures in the area seldom exceed 95°F or fall below 32°F.

Annually, the prevailing winds are easterly; however, there is some seasonal variation. During the winter months the predominant winds are from the north, during the spring from the east, during the summer from the southeast and during the fall from the northeast. The annual average wind speed for the site is approximately eight miles per hour.

A detailed analysis of site climatology and meteorology is presented in the attached Air Quality Review.

2.7 ECOLOGY

Field surveys on the proposed plant site were conducted by representatives of Breedlove Associates, Inc., 22 October 1982 and again 3 November 1982.

The proposed site is located in a former limerock mine pit and adjacent overburden spoil area. The pit in which the plant will be located is essentially bare and devoid of vegetation due to past mining activities and on-going mining activities in the general area. The adjacent overburden areas were vegetated by species typical of disturbed sites, including Baccharis, Salix, Andropogon, Imperata, Solidago, Verbena, Triplasis, and Crotalaria. The occurrence of this vegetation was patchy in distribution, with a significant portion of the overburden piles devoid of vegetation. Vegetation height was approximately 0.5-1.0 m. No wetlands exist on the proposed plant site, and there will be no discharge to off-site water bodies.

2.7.1 Important Species

No species protected as endangered, threatened, or of special concern by the U.S. Fish and Wildlife Service or the Florida Game and Fresh Water Fish Commission were observed during the two field surveys. Due to the extremely disturbed nature of the site, on-going mining activities in adjacent areas, and lack of wetland areas on site, the possibility of occurrence of these protected species is extremely remote. Game species and fur-bearing species such as deer, squirrel, fox, wild hog, and turkey were not observed on the project site during the field surveys. Evidence (tracks) of raccoon (Procyon lotor), a fur-bearing species, was found on the site, but population levels are probably extremely low due to limited food resources and escape cover. The possibility of occurrence of the other fur-bearers mentioned is highly unlikely due also to limited food resources and lack of escape cover.

2.7.2 Abundance of Organisms

Due to the extremely disturbed nature of the proposed power plant site, occurrence of fauna on the area is extremely limited. Those species which will readily inhabit disturbed lands include the hispid cotton rat, house mouse, and southeastern toad. Only two bird species were observed during the field survey: the turkey vulture, which was flying over the site, and red-winged blackbirds. No other avian species were seen or calls heard. What fauna does occur on site probably is limited to those species which are on local

migrations through the general area. The lack of adequate nesting, food resources, and escape cover limits the number and abundance of species occurring on the site.

2.7.3 Pre-existing Stresses

See Sections 2.2.2, 2.3.1, and 2.7.

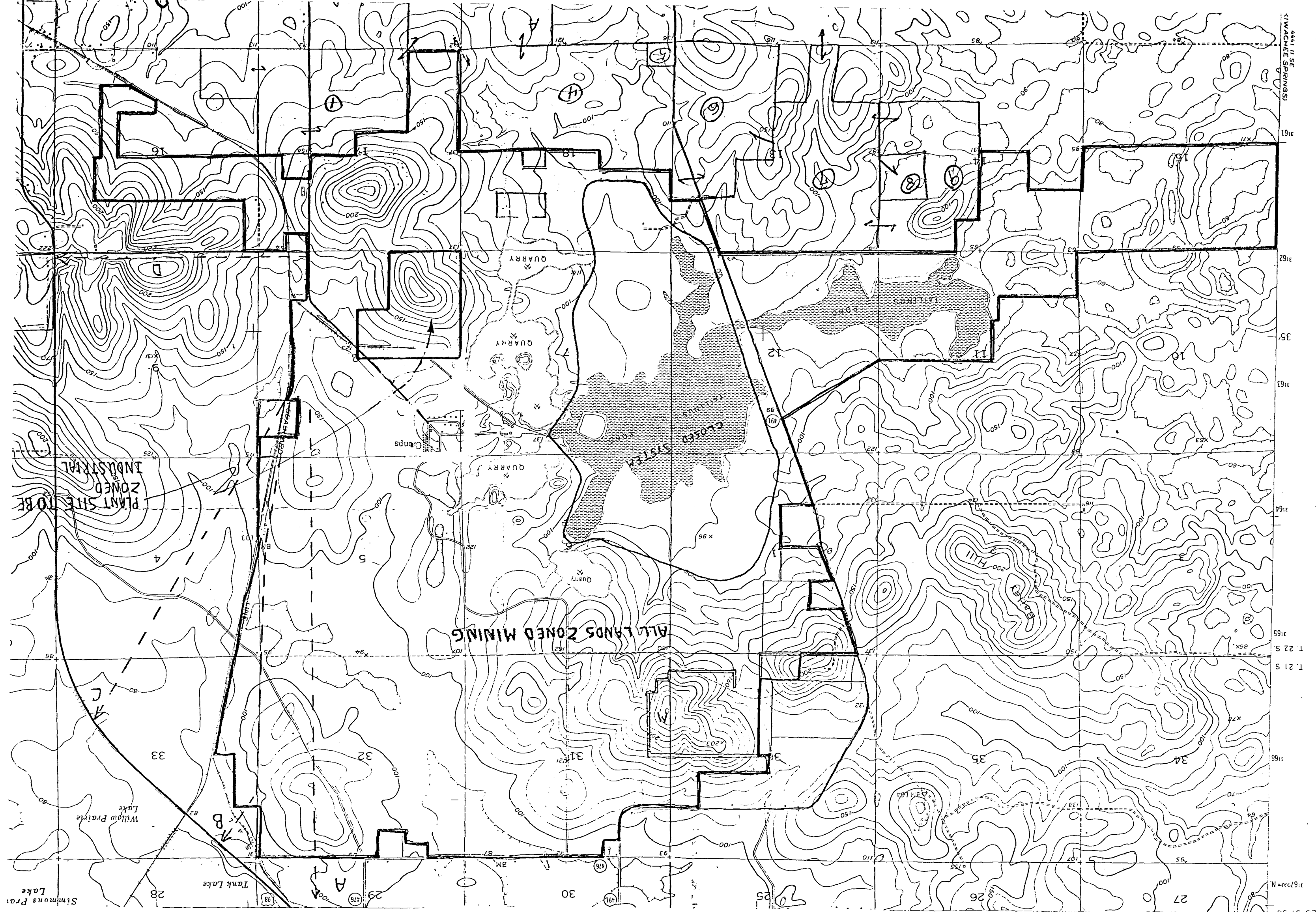
2.8 AMBIENT AIR

Ambient air quality monitoring is required by State and Federal Prevention of Significant Deterioration (PSD) regulations for air pollutants emitted from a proposed facility that will result in a significant ambient impact. The significant, or de minimis, impact levels are defined in State (Chapter 17-2.500, Florida Administrative Code) and Federal (40 CFR 52.21) PSD regulations for all regulated pollutants.

Air quality modeling has shown that the expected emissions of particulate matter and sulfur dioxide from the proposed Florida Crushed Stone power plant will result in impacts which will exceed the de minimis ambient impact levels for these pollutants. The modeling has further shown that the impacts of nitrogen oxides and carbon monoxide emitted from the proposed power plant will result in impacts which are less than the de minimis impact levels defined for these pollutants.

The modeling results were discussed with the staff of the Florida Department of Environmental Regulation, Bureau of Air Quality Management. It was decided that, because of the remote nature of the site, four months of monitoring data for sulfur dioxide and four months of monitoring data for particulate matter would be sufficient to define the existing air quality at the proposed site. Monitoring for these pollutants was conducted during the period May 25, 1982 through September 26, 1982.

The results of the air quality monitoring are presented in the attached Air Quality Review.



UTM GRID AND 1954 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARD
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR WASHINGTON, D.C. 20242
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

BROOKVILLE SE, FLA.
N2830-W8215/7.5

1954

AMS 4541 III SE-SERIES VB47

2.1-1-1

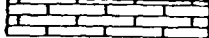
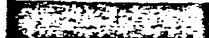
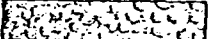
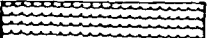
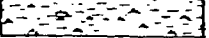
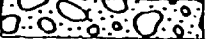
TABLE LU-1: Description of land use classification system used in
Hernando County Land Use Maps (adapted from FLUCCS)

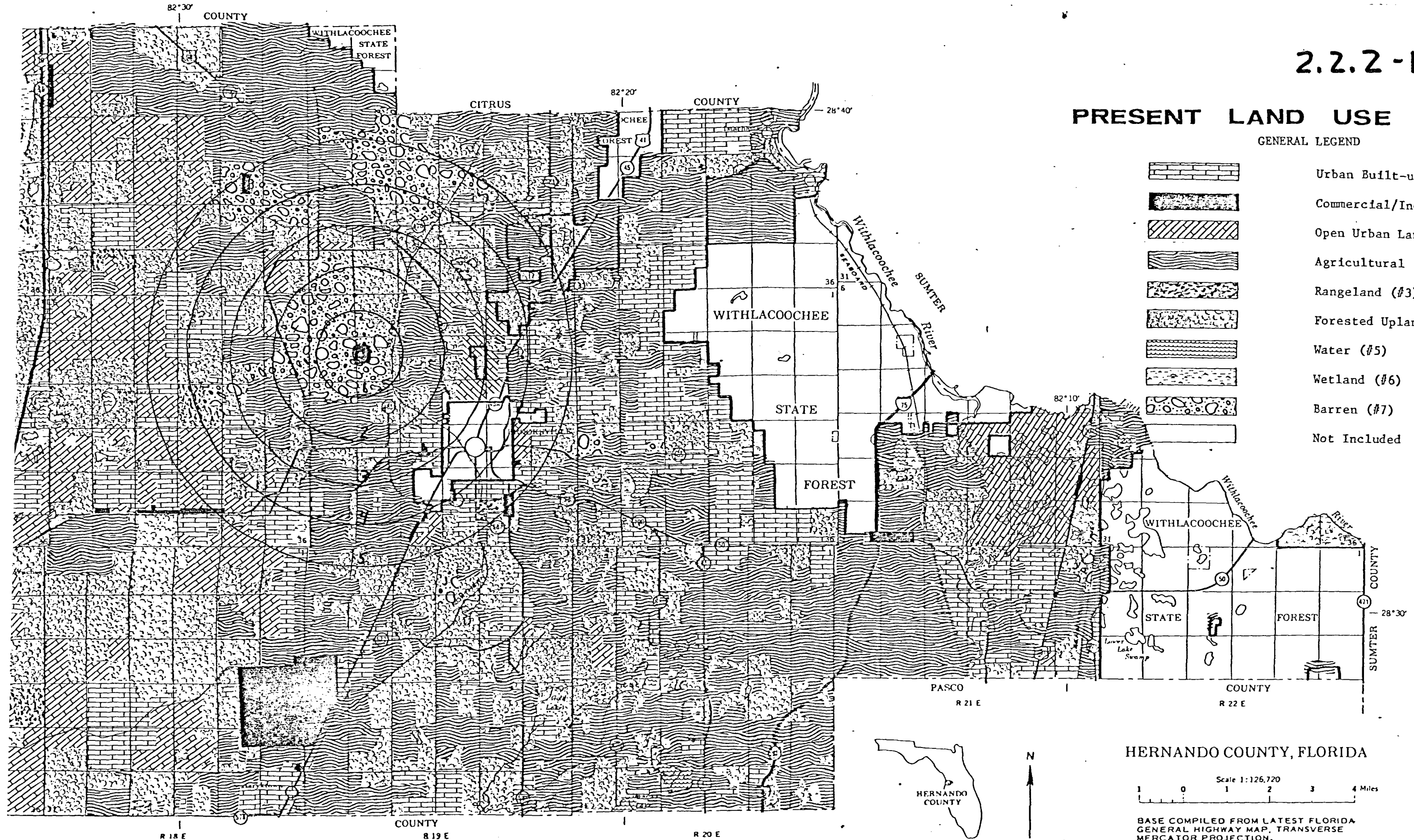
<u>Land Use Number</u>	<u>Category</u>	<u>Description/Examples</u>
1	I. Urban Build-up	Areas of intensive land use including sub-categories A-H.
Included in 1	A. Residential	Residential areas range in density from multifamily apartments to single family residences on ten acre parcels.
Included in 1	B. Transportation	Encompasses airports and rail oriented facilities including terminals, maneuvering areas, parking lots, fuel storage and maintenance areas.
Included in 1	C. Communications & Utilities	Embraces electrical power generating and transmission facilities, water treatment plants, water and sewage pumping stations, electric substations, antennas for radio, radar or television, and facilities to transport water, oil, gas and air wave communications.
Included in 1	D. Institution	Includes schools, government buildings, churches, correctional institutions, and hospitals.
Included in 1	E. Recreational	Areas with facilities that indicate active user oriented recreation. Includes a golf course, parks, swimming beaches, shores, marinas, fairgrounds and similar facilities.
Included in 1	F. Mixed Uses	This category is used where no single use predominates. Development along transportation routes and in cities where residential, commercial and industrial uses occur together typify this category.
13/14	G. Commercial/Industrial	Includes sheds, warehouses, office buildings, manufacturing operations, assembly and processing plants, research facilities, retail and wholesale stores, and shopping centers.
19	H. Open Urban Land	Includes undeveloped land in urban areas and developed lands with street patterns but without structures. Also lands in transition from one land use to another are included here.
2	II. Agriculture	Areas where lands are cultivated to produce crops or livestock.
3	III. Rangeland	Land where natural vegetation is predominantly low growing species of grasses and shrubs. Includes land not intensively managed, but containing native plants with potential forage value.
4	IV. Forested Uplands	Dry areas stocked with trees capable of producing lumber or other wood products. Also includes areas not presently managed for tree production nor developed for other use.
5	V. Water	Includes all surface water areas of significant size such as lakes, large ponds, rivers, large creeks, and the Gulf of Mexico.
6	VI. Wetlands	Consists of areas where water table is at or near land surface for a significant part of each year. Includes forested wetlands, marshes, prairies and tidal flats.
7	VII. Barren Land	Areas mostly free of vegetation and have a limited ability to support life. Includes surface mines and borrow pits.

2.2.2-1

PRESENT LAND USE

GENERAL LEGEND

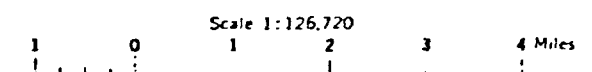
-  Urban Built-up (#1)
-  Commercial/Industrial (#13/14)
-  Open Urban Land (#19)
-  Agricultural (#2)
-  Rangeland (#3)
-  Forested Upland (#4)
-  Water (#5)
-  Wetland (#6)
-  Barren (#7)
-  Not Included



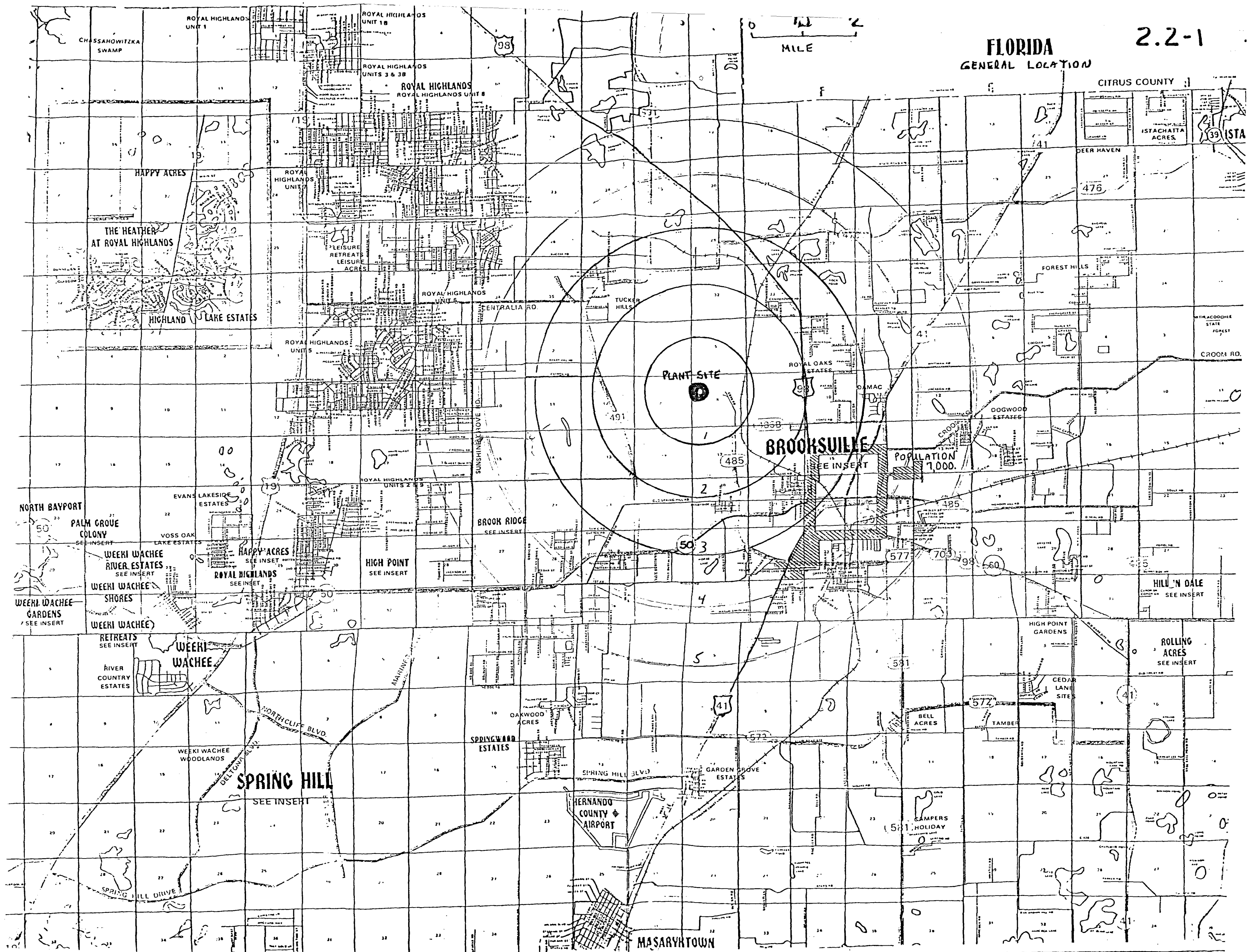
VINCINITY MAP

This map is intended for general planning.

HERNANDO COUNTY, FLORIDA



BASE COMPILED FROM LATEST FLORIDA GENERAL HIGHWAY MAP, TRANSVERSE MERCATOR PROJECTION.



CHAPTER 3

THE PLANT

3.1 EXTERNAL APPEARANCE

Figure 3.1-1 shows the plant layout, including the coal pile, coal unloading area and coal conveyor.

FIGURE 3.1-1 IS LOCATED IN THE BACK OF THE APPLICATION.

[Handwritten signature]

3.2 FUEL

This is a coal fired facility. Coal with a sulfur content of 0.75 percent will be purchased in Kentucky and shipped to the Brooksville unloading site at an average rate of approximately one unit train every five or six days. Unloading time is expected to be one hour -- not to exceed four hours -- per train. The coal will be bottom dumped from a raised railroad trestle to the stockpile area. A water spraying system will be used when necessary to control dust. The coal will be transported to the cement and power plants by a belt conveyor system. The stockpile area will be designed in such a way as to allow run-off to be contained in a lined pond. Typical coal analysis is shown on Table 3.2-1.

469,000 Tons/Yr.

From: Interstate Coal Company, Inc.
Route 9, Box 15
London, Kentucky 40741



P. O. BOX 4187, 2323 SYCAMORE DR., KNOXVILLE, TENNESSEE 37921 / 615 546-1335

CERTIFICATE OF ANALYSIS

Mr. Darryl Moreland
Page 4
October 8, 1980

Your Sample No. Hazard #7 seam Our No. M-8443 gave the following results:

Ultimate Analysis,	As Received,	Dry Basis,	Mineral Analysis,	Ignited Basis,
% Moisture	4.38		% Phos. pentoxide, P_2O_5	0.14
% Carbon	68.29	71.42	% Silica, SiO_2	58.24
% Hydrogen	4.44	4.64	% Ferric Oxide, Fe_2O_3	4.98
% Nitrogen	1.48	1.55	% Alumina, Al_2O_3	27.41
% Chlorine	0.09	0.09	% Titania, TiO_2	1.36
% Sulfur	0.78	0.82	% Lime, CaO	1.35
% Ash	12.27	12.83	% Magnesia, MgO	0.83
% Oxygen (by diff.)			% Sulfur Trioxide, SO_3	0.45
			% Potassium Oxide, K_2O	1.80
			% Sodium Oxide, Na_2O	0.48
			% Undetermined	
Proximate Analysis,	As Received,	Dry Basis,		
% Moisture	4.38			
% Ash	12.27 ✓	12.83		
% Volatile Matter	30.71	32.12		
% Fixed Carbon	52.64	55.05		
			BTU/lb.	
			As Received	Dry Basis,
			12,329	12,894
Sulfur Forms,	As Received,	Dry Basis,		
% Pyritic Sulfur	0.14	0.15		
% Sulfate Sulfur	0.01	0.01		
% Organic Sulfur	0.63	0.66		
% Total Sulfur	0.78 ✓	0.82		

3.3 PLANT WATER USE

The plant system water use is summarized in Figure 3.3-1. The flows shown on Figure 3.3-1 are average annual values. Sufficient storage areas will be provided within the cooling pond/waste treatment pond system to contain most of the rainfall. Discharge from the system will occur only under extremely heavy, long-term rainfall conditions. As shown on the Figure, 144 MGD of water will be continuously pumped from the cooling pond to the condensers. During periods when the pond level is declining, an average flow of 16.5 MGD will be pumped through the condensers from the existing wells.

Approximately 40 MGD of the heated water from the condensers will be diverted to the crushed stone plant for utilization in the washing operations. Approximately 36 MGD of this water will be returned to the cooling pond, with the remainder lost to seepage and entrapment in the shipping product.

Losses from the cooling pond include 3.75 MGD of solar evaporation, 2.25 MGD of thermal evaporation and 11 MGD of seepage. Average annual rainfall will provide an additional 4.5 MGD of water to the system.

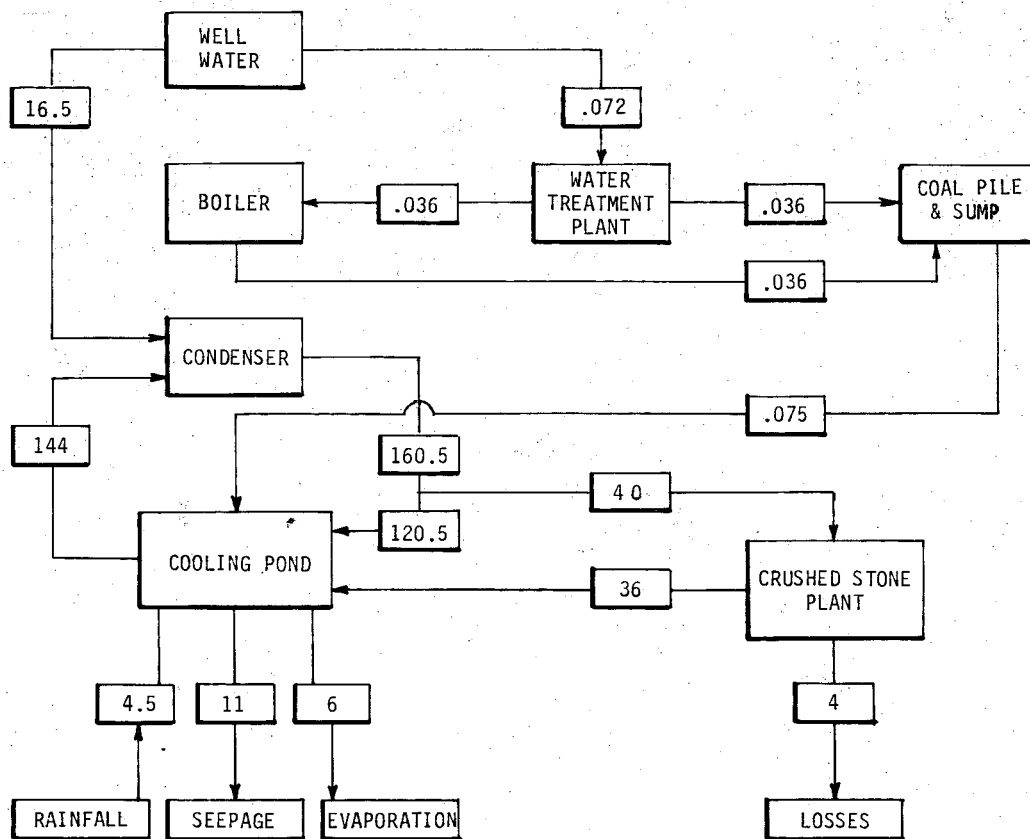
Approximately 72,000 gpd (50 gpm) of well water will be used to provide 36,000 gpd of treated water to the boiler. The 36,000 gpd of concentrated treatment plant effluent along with 36,000 gpd treated water discharged from the boiler will be discharged to the coal pile runoff collection sump. The 100,000 gallons per year of boiler blowdown will also be discharged to the coal pile runoff collection sump. Runoff from the coal pile will be used to spray the coal pile to minimize fugitive dust problems. Excess rainfall runoff (i.e. the difference between rainfall and evaporation losses) will be filtered to remove suspended solids and pumped to the cooling ponds. The annual average excess runoff is estimated at 3000 gpd.

To prevent potential groundwater contamination the coal pile and coal pile runoff collection sump will be lined. Preliminary plans call for lining the 2-acre coal pile with Florida Crushed Stone Durarock, which is a mixture of lime-rock, cement and sand.

The quality of the runoff from a coal pile with a considerably higher sulfur content than that proposed for use by Florida Crushed Stone is presented in Table 3.3-1. Also presented in this table is the concentration of contaminants in a hypothetical mixture of uncontaminated rainfall and coal pile runoff proportioned in accordance with the antici-

ipated values for the subject cooling pond, ie.. 4.5 MGD and 0.003 MGD, respectively.

Recombining the treated boiler water with the concentrated effluent from the water treatment plant should result in a water similar in character to the original well water with the exception that it will contain elevated levels of sodium and sulfate. As with the coal pile run-off, dilution of this 0.072 MGD of treated water with the uncontaminated 4.5 MGD of rainfall on the cooling pond will reduce these levels to less than 2 percent of their original concentration. The sources and consumers of water in the water distribution system for the power plant and crushed stone plant are presented in Table 3.3-2. Where applicable, maximum and minimum flows are presented along with the average flows. The maximum rainfall used the calculations was 12 inches in 24 hours. Maximum and minimum evaporation was taken as 0.25 and .06 inches per day, respectively. All flows are in million gallons per day.



WATER USE PLAN
(ALL FLOW IN MGD)
AVERAGE ANNUAL BASIS

 Ardaman & Associates, Inc. Consulting Engineers in Soil Mechanics, Foundations, and Material Testing		
GEOHYDROLOGICAL INVESTIGATION HERNANDO COUNTY, FLORIDA FLORIDA CRUSHED STONE CO.		
DRAWN BY: KA	CHECKED BY: <i>KS</i>	DATE: 10/14/82
FILE NO. 82-112	APPROVED BY: <i>James E. Ardaman</i>	

FIGURE 3.3-1

Table 3.3-1

CONCENTRATION OF CONTAMINANTS

	<u>Coal Pile Runoff</u>	<u>Rainfall</u>	<u>Diluted Coal Pile Runoff</u>
pH	2.7	5-7	6
Acidity (mg/l of CaCO_3)	1360.0	6.3	7.2
Sulfate (mg/l)	2780.0	1.2	3.1
Dissolved Solids (mg/l)	3600.0	9.0	11.4
Suspended Solids (mg/l)	190.0	0	0.13
Iron (mg/l)	380.0	0.05	0.30
Manganese (mg/l)	4.13	0.005	0.008
Copper (mg/l)	0.23	0.009	0.009
Zinc (mg/l)	2.18	0.05	0.05
Cadmium (mg/l)	0.002	0	0.000001
Aluminum (mg/l)	43.3	0.04	0.07
Nickel (mg/l)	0.33	0.007	0.007
Chromium (mg/l)	0.007	0	0.000005
Mercury (mg/l)	0.004	0.0002	0.0002
Arsenic (mg/l)	0.02	0	0.00001
Selenium (mg/l)	0.001	0	0.0000007
Beryllium (mg/l)	0.014	0	0.000009

TABLE 3.3-2

Water Balance
(Combined Power Plant and Crushed Stone Plant)

	Water Input				Water Output		
	Max.	Avg.	Min.		Max.	Avg.	Min.
Rainfall	345.00	4.50	0	Evaporation	9.40	6.00	3.95
Deep Well	33.50	16.50	0	Cooling Pond Seepage	--	11.00	--
		--		Rock Plant Losses	--	4.00	--
				(mainly seepage)			
Total		21.00		Total		21.00	

Water Balance
(Power Plant Only)

	Water Input				Water Output		
	Max.	Avg.	Min.		Max.	Avg.	Min.
Rainfall	345.00	4.50	0	Evaporation	9.40	6.00	3.95
Wells	30.30	12.50	0	Cooling Pond Seepage	--	11.00	--
Total		17.00		Total		17.00	

Water Balance
(Crushed Stone Plant Only)

	Water Input				Water Output		
	Max.	Avg.	Min.		Max.	Avg.	Min.
Rainfall	345.00	4.50	0	Evaporation	7.15	3.75	1.70
Wells	29.30	14.25	0	Cooling Pond Seepage	--	11.00	--
				Rock Plant Losses	--	4.00	--
Total		18.75		Total		18.75	

Water Balance
(System Shutdown)

	Water Input				Water Output		
	Max.	Avg.	Min.		Max.	Avg.	Min.
Rainfall	345.00	4.50	0	Evaporation	7.15	3.75	1.70
Wells	25.30	10.25	0	Cooling Pond Seepage	--	11.00	--
Total		14.75		Total		14.75	

Average and maximum consumptive water use for the cement plant is estimated at .30 MGD and .36 MGD, respectively. Continuing deep well withdrawals by Florida Crushed Stone for other uses are estimated as follows:

Wash Rack 1.00 MGD
Lime Plant 1.45 MGD

All but 0.01 MGD of these withdrawals are considered to be non-consumptive. Essentially, all of this water returns to the groundwater system through seepage.

Amend 1

3.4 HEAT DISSIPATION SYSTEM

The basic heat dissipation system will be evaporation cooling using the 1050 acre cooling pond. Water will be pumped from the cooling pond through the power plant condensers. Before the water is piped back to the pond for final cooling, approximately one-third of the heated water from the plant will be circulated to the aggregate operation within the mine area of the site. Water will be cooled as it is used at the aggregate operation. Groundwater will provide makeup water for the heat dissipation system.

3.4.1 Intake and Outfall

Not Applicable.

3.4.2 Source of Cooling Water

The cooling water will be pumped at a rate of 100,000 GPM from the modified waste treatment pond.

3.4.3 System Design

The quantity of heat dissipated will be 6.0×10^8 BTU/hour. The quantity of water withdrawn will be less than 26.5 MGD. Consumptive use expected will be approximately 2.25 MGD.

The cooling system will be an existing 1050 acre settling pond and fresh water holding area modified to store over 8000 acre-feet of water. The rate of discharge to cooling ponds will be approximately 100,000 GPM.

Boiler Blowdown volume is expected to be approximately 25 GPM. The physical and chemical characteristics of the pond water are discussed in Section 5.3.3.

The temperature changes across condenser are expected to be 12°F, with the maximum predicted discharge temperature of 101°F at the entrance to the pond.

The rate of thermal evaporation of water from the ponds is expected to be about 1500 GPM.

Travel time from the condenser inlet to the entrance to the pond is 8.5 minutes. The seepage rate from the cooling ponds is 11 MGD.

3.4.4 Dissolution System

Not Applicable

3.4.5 Blowdown and Trash Disposal

There is not expected to be any trash build-up at the intake structure.

3.4.6 Injection Wells

Not Applicable

3.5 CHEMICAL AND BIOCIDES WASTE

Wastewaters from a coal-fired power plant with cooling pond typically include:

- *Fly ash transport discharge
- *Bottom ash transport discharge
- *Metal cleaning wastes
- *Low volume wastes
- *Ash pile, chemical handling and construction area runoff
- *Coal pile runoff
- *Wet flue gas cleaning blowdown

For the Florida Crushed Stone project several important design elements minimize potential pollution of the environment from the proposed coal-fired power plant.

- *All ash will be collected in a dry form; thus there will be no water discharge(s) associated with the ash handling.
- *All ash generated will be used as a raw material needed for the cement plant.
- *All ash will be stored in closed bins not subject to contact with water.
- *No scrubbers are deemed necessary for this facility.
- *The coal is a low sulfur, low volatile bituminous coal from Eastern Kentucky.

Coal pile runoff will be collected in a lined retention pond. The retention pond will be sized to contain the runoff from the 10-year, 24-hour rainfall event. Overflow from the retention pond(s) will be filtered and pumped to the 1050 acre wastewater cooling pond. The metal cleaning wastes will also be discharged to this lined retention pond.

3.6 SANITARY AND OTHER WASTE SYSTEMS

3.6.1 and 3.6.2 Volumes, Quality, Treatment & Disposal

Wastes generated at the plant will be on the order of 5000 gpd. A septic tank system to be located near the plant will treat these sanitary wastes. The system will be designed and built in accordance with the appropriate DER rules and regulations.

3.6.3 Solid Wastes

Minor quantities of solid waste will be subject to disposal from this project. An area of approximately 10 acres within the property will be set aside and operated for solid waste disposal, as needed. A small lined disposal area will be located within the 6000+ acre site for ultimate disposal of miscellaneous small quantities of leachable solid wastes. Another area will be required to dispose of inert construction materials at a different site from the leachable solid wastes. The ash generated from the power plant will be used as raw material for the cement plant.

- Coal Pile
Runoff
solids

3.7 AIR EMISSIONS

The power plant proposed by Florida Crushed Stone is a 125 megawatt coal fired steam-electric generating facility. Both the boiler and the turbine generator that will be installed in the power plant were constructed prior to 1971 and were capable of burning coal at the time of construction.

The boiler and turbine generator will be purchased by Florida Crushed Stone and moved to the proposed site. The relocation and installation of the boiler and turbine generator will require some reconstruction to the units. The reconstruction will not be of the magnitude, however, to result in the classification of the unit as reconstructed source as defined in 40 CFR 52.21 and Chapter 17-2.500, Florida Administrative Code.

The fact that the boiler and turbine generator were constructed prior to 1971, the effective date of the original Federal New Source Performance Standards for electric power plants, means that the proposed Florida Crushed Stone power plant is not subject to Federal New Source Performance Standards. The purchase of the boiler and turbine generator by Florida Crushed Stone and the relocation of these units does not constitute construction or modification in accordance with state and federal regulations and the reconstruction necessary to install the boiler and turbine at the Florida Crushed Stone site also is not of a magnitude to result in the classification of the source as a reconstructed source; hence the source is not subject to federal New Source Performance Standards, as a result of change of ownership, relocation, or reconstruction.

The control technology which will be applicable to the proposed power plant will be the technology determined through a Best Available Control Technology (BACT) review conducted by the Florida Department of Environmental Regulation, Bureau of Air Quality Management. Florida Crushed Stone's proposal for Best Available Control Technology will limit particulate matter emissions to 0.1 pounds per million BTU heat input, sulfur dioxide emissions to 1.2 pounds per million BTU heat input and nitrogen oxides to 0.7 pounds per million BTU of heat input. The heat input, from coal, to the proposed power plant will be 1,234 million BTU per hour. The basis for this proposal is set forth below.

BEST AVAILABLE CONTROL TECHNOLOGY FOR POWER PLANT AIR POLLUTANT EMISSION CONTROL

The Florida Crushed Stone Company is proposing to construct a 125 megawatt coal-fired electric power generating plant in conjunction with a 600,000 ton per year Portland Cement plant. Both the power plant and the cement plant kiln will be coal-fired. Emissions from the power plant and the cement plant, as previously described, will pass through a common air pollution control system and will be discharged through a common stack.

The total gas flow through the air pollution control system will be 417,520 standard cubic feet per minute at a temperature of 226°F when both the power plant and the cement plant are operating. When the power plant only is operating the gas flow through the air pollution control system will be 275,415 standard cubic feet per minute at 330°F and when the cement plant only is operating the gas flow will be 242,400 standard cubic feet per minute at 220°F. In addition to the wide variation in gas flow rate through the air pollution control system, Florida Crushed Stone plans to use the particulate matter removed from the gas stream as a raw material in the cement plant. Thus, both the variations in gas flow rate and the characteristics of the particulate matter removed from the gas stream must be taken into consideration when evaluating Best Available Control Technology for emissions from the combined power plant and the cement plant.

BEST AVAILABLE CONTROL TECHNOLOGY FOR PARTICULATE MATTER

Florida Crushed Stone is proposing to use a fabric filter to control particulate matter from the combined power plant/cement kiln exhaust gas stream. The emission limit proposed for the power plant is 0.1 pounds of particulate matter per million BTU heat input and from the cement kiln, 0.3 pounds per ton of kiln feed. The alternatives to a fabric filter include wet scrubbers, electrostatic precipitators and dry filters (gravel bed filters).

Fabric filters have the advantage of being able to operate independently of the gas flow rate and, will be able to operate effectively over the wide range of gas flows expected in the Florida Crushed Stone system. Other advantages include a high removal efficiency for particulate matter, a high efficiency for removing particles with a high resistivity, the collection of particulate matter in a dry form and a relatively low operation cost (low pressure drop).

Disadvantages of the fabric filter include a relatively high capital cost and a relatively high maintenance cost due to bag replacement.

Wet scrubbers that would be effective for meeting the particulate matter emission rate required for the combined power plant/cement kiln emissions would have to operate with an 18-24 inch, water guage, pressure drop. This pressure drop will result in a high system operating cost. The high operating cost will more than offset the low capital cost of the scrubber.

Advantages of a scrubber include relatively small space requirements, and a system that will accommodate variations in the gas temperature and moisture content.

The disadvantages of a scrubber system are that they will not accommodate the variations in the stack gas flow expected through the cement kiln/power plant system, potential corrosion problems, a high operating cost, the requirement of a scrubber water treatment system and the fact that the particulate matter from the gas stream will be recovered wet. If the particulate matter is recovered wet, it will have to be dried prior to being used as a raw material in the cement plant. The drying of this material will consume energy and increase the overall operating cost of the scrubber system.

The electrostatic precipitator would be of questionable efficiency on the cement/power plant system because of the nature of the particles being collected. The particles will consist primarily of calcium salts and fly ash from a low sulfur coal. Both types of particles are expected to have a relatively high resistivity and, as a result, cannot be effectively removed by an electrostatic precipitator. Another disadvantage of the electrostatic precipitator is that it would have the highest installed capital cost.

Advantages to the electrostatic precipitator are that it would collect the particles in a dry state and that it has the lowest system operating cost. The only other possible alternative control system would be a dry filter such as a gravel bed filter. A gravel bed filter has not been demonstrated to control emissions from a power plant to the range of 0.1 pounds per million BTU heat input. In addition, the pressure drop across the gravel bed filter is considerably greater than the pressure drop across a fabric filter, thus, the operating cost of the gravel bed filter would be considerably greater than the operating cost of the fabric filter.

Taking into consideration the demonstrated performance of control systems, the variations in flow rate expected

through the control system, capital costs, operating costs and the necessity of using the collected particulate matter in a dry form, Florida Crushed Stone is of the opinion that the fabric filter is by far the most cost-effective control system for controlling and recovering particulate matter emissions from the power plant/cement kiln gas system.

BEST AVAILABLE CONTROL TECHNOLOGY FOR SULFUR DIOXIDE

The power plant proposed by Florida Crushed Stone was constructed prior to 1971 and, therefore, is not subject to Federal New Source Performance Standards. The electric power generating system, however, is subject to a Best Available Control Technology determination by the Florida Department of Environmental Regulation.

Florida Crushed Stone is proposing a sulfur dioxide emission rate of 1.2 pounds of sulfur dioxide per million BTU heat input to the power plant as Best Available Control Technology. Alternatives for achieving this emission rate include the use of low sulfur fuel, the use of cleaned high sulfur coal, the use of high sulfur coal with limestone injection, and the use of high sulfur coal with a flue gas desulfurization system.

Florida Crushed Stone is proposing the use of low sulfur coal to achieve the proposed sulfur dioxide emission rate of 1.2 pounds per million BTU heat input. The coal proposed by Florida Crushed Stone will have an equivalent sulfur content of 0.75 percent. The use of low sulfur is proposed since it is the most cost-effective means of achieving the emission standard, because it will not change the characteristics of the fly ash generated in the power plant such that the fly ash will be unusable in the production of Portland Cement and because this alternative does not entail the necessity of additional hardware and the operating problems associated with this hardware.

Alternatives to the use of low sulfur coal include coal cleaning, limestone injection and flue gas desulfurization. Coal cleaning involves either the physical or chemical removal of sulfur from high sulfur coal prior to its combustion. It has been reported that neither process has been commercially proven at this time. Estimates, based on pilot studies, have indicated that both coal cleaning processes will add approximately \$20.00 per ton to the cost of coal. Since the cost differential between high sulfur and low sulfur coal delivered to the Florida Crushed Stone site is approximately \$13.30 per ton (\$42.30 per ton for low sulfur coal and \$29.00 per ton for high sulfur coal), it is readily apparent that the use of cleaned high sulfur coal is

not a cost-effective alternative to controlling sulfur dioxide emissions.

A potentially attractive alternative, considering the availability of limestone at the site, is that of limestone injection. With this process, limestone is ground with the coal and injected into the fire box at twice stoichiometric quantities. This technique will result in a 40 to 50 percent sulfur dioxide absorption.

The disadvantages of this method are the relatively low sulfur dioxide removal efficiency and the fact that the injected limestone will change the characteristics of the fly ash. With the fly ash characteristics changed, there is a question as to whether the fly ash will be usable in the production of Portland Cement. If the characteristics of the fly ash are changed so that it cannot be used for the production of cement, a major fly ash disposal problem will be encountered.

The remaining sulfur dioxide control alternative is that of flue gas desulfurization. This alternative includes several possibilities such as the throw-away flue gas desulfurization system, the regenerable flue gas desulfurization system and the dry scrubbing flue gas desulfurization system.

The throw-away systems include lime/limestone scrubbing, a sodium carbonate scrubbing and the double alkali (sodium carbonate/lime) system. These systems have been installed on over 200 boilers as of 1979.

The lime or limestone scrubbing systems would be the most attractive throw-away flue gas desulfurization system to Florida Crushed Stone because of the availability of both lime and limestone at the site. With these systems, lime or limestone is slurried and the slurry is used in a scrubbing system. The slurry can be recirculated through a clarifier where the insoluble calcium salts can be removed. The insoluble calcium salts could probably be disposed in the existing Florida Crushed Stone settling area without creating a potential for ground water contamination.

The other two throw-away flue gas desulfurization systems involve the use of sodium; in the form of sodium carbonate. Both of these systems would be more costly because of the necessity to import the more costly sodium carbonate to the site. In addition, the disposal of sodium salts in the existing settling system would create a definite potential for ground water contamination by the soluble sodium ion.

It has been estimated that the capital cost of a throw-away lime/limestone flue gas desulfurization system will be

\$100.00 per kilowatt of electricity generated; or \$12.50 million for the Florida Crushed Stone power plant system. The operating cost has been estimated at 25 percent of the capital cost or \$3.12 million per year. In addition to these costs, there is approximately a five percent penalty in the generating capacity as a result of the operation of the desulfurization system. At \$0.06 per kilowatt hour and a 90 percent operating factor, this penalty amounts to approximately \$2.96 million per year. The cost of high sulfur coal which can be used with this system will be \$13.60 million per year; 469,000 tons of coal at \$29.00 per ton. The total annual cost for this system, assuming amortization of 10 percent of the capital cost per year, would be \$20.93 million per year for the throw-away flue gas desulfurization system. In comparison the cost of 469,000 tons of low sulfur coal at \$42.30 per ton would be \$19.84 million per year.

The regenerable flue gas desulfurization systems include the magnesium oxide system and the sodium sulfite system. In the magnesium oxide system a magnesium oxide slurry is used to scrub the sulfur dioxide from the gas stream. This results in a magnesium sulfite precipitate which is removed, dried and regenerated by calcining. During the calcining process magnesium oxide and sulfur dioxide are generated. This system would then necessitate a sulfur dioxide recovery system and the development of a market for the recovered sulfur dioxide.

The sodium sulfite system operates in much the same way as the magnesium oxide system. A sodium sulfite slurry is used to scrub the sulfur dioxide from the stack gas; producing a sodium bisulfite solution. This solution is evaporated to regenerate the sodium sulfite. During regeneration, sulfur dioxide and water vapor are driven off. Again, the sulfur dioxide must be recovered and a market for the recovered sulfur dioxide generated.

It has been estimated that the capital cost of a regenerable flue gas desulfurization system will be \$175 per kilowatt of electricity generated and the operating cost of the system has been estimated to be 21 percent of the capital cost. These costs will result in a \$21.88 million capital cost and \$4.59 million per year operating cost for a system capable of handling emissions from the Florida Crushed Stone Company power plant. The cost of high sulfur coal which can be used with the flue gas desulfurization system will be \$13.60 million per year. In addition to these costs there will be approximately a 10 percent penalty on the power plant generating capacity due to the operation of the system. This penalty will result in a \$5.92 million per year cost to Florida Crushed Stone Company. The total annual cost, including the amortization of 10 percent of the capital cost,

will be \$26.30 million per year. This is significantly greater than the \$19.84 million per year cost for low sulfur coal.

The remaining flue gas desulfurization alternative is the dry scrubbing method. With the system a lime slurry, for example, is injected into a spray tower through which the gases from the power plant pass. The sensible heat in the gas stream evaporates the water from the slurry. The resulting lime particles absorb the sulfur dioxide and are subsequently removed by the fabric filter which is proposed for particulate matter control. This system has the potential for removing approximately 75 percent of the sulfur dioxide when 20 percent excess lime is used. This system will result in a change in the characteristics of the fly ash from the power plant and could potentially render the material unacceptable as a raw material in the production of Portland Cement. Additionally, the cooling of the gas stream that would result from the evaporation of the slurry water could potentially lower the temperature of the gas stream below the dew point and resulting in blinding of the fabric filter.

Even if the technical difficulties of a dry scrubbing system were overcome, the cost of such a system would make it an unattractive alternative for sulfur dioxide control. The capital cost of a dry flue gas desulfurization system has been estimated to be \$85 per kilowatt of electricity generated or \$10.60 million for the Florida Crushed Stone system. The operating cost, at 29 percent of the capital cost, would be \$3.08 million per year. Coal costs would again be \$13.60 million per year for high sulfur coal. In addition to these costs it has been estimated that there will be approximately a five percent penalty on power generation because of the operation of the system. This penalty will result in a cost to Florida Crushed Stone of \$2.96 million per year. The total annualized cost of a dry flue gas desulfurization system, assuming amortization of 10 percent of the capital cost, would be \$20.70 million per year; compared with \$19.84 million per year for the cost of low sulfur coal.

Considering the costs of the various sulfur dioxide control systems, the problems encountered with operating additional systems, and the potential problems generated by wastewater treatment systems and the disposal of solid materials, Florida Crushed Stone is of the opinion that the use of low sulfur coal is the most cost-effective method for controlling sulfur dioxide emissions to the range of 1.2 pounds per million BTU heat input.

BEST AVAILABLE CONTROL TECHNOLOGY FOR NITROGEN OXIDES

Nitrogen oxides emissions can be controlled by furnace design, varying the furnace operating parameters or by flue gas nitrogen oxides removal systems. The boiler proposed by Florida Crushed Stone is equipment which has been previously used. Because the equipment is existing, little can be done in the way of modifying the design of the furnace and boiler without major expenditures.

An add on system for removing nitrogen oxides from the stack gas could include the Shell/UOP process or the EXXON Thermal DeNOx system. The Shell/UOP process involves scrubbing technology which has not been commercially applied on full scale systems in the United States. Further, the costs, energy penalties and environmental impacts associated with this system are not well defined. The EXXON system involves the injection of ammonia into the stack gas to convert the nitrogen oxides to nitrogen. This system would have the advantage of not generating a waste by-product but it would be quite costly to operate effectively.

The third alternative, and the alternative proposed by Florida Crushed Stone, is that of balancing boiler operating parameters. This will be accomplished through the use of low-NOx burners to control the combustion process and to minimize nitrogen oxides emissions. It is expected that with the use of low-NOx burners, that nitrogen oxides emissions from the proposed Florida Crushed Stone power plant will be equal to or less than 0.7 pounds of nitrogen oxides per million BTU heat input.

BEST AVAILABLE CONTROL TECHNOLOGY FOR HYDROCARBONS AND CARBON MONOXIDE

Hydrocarbon and carbon monoxide emissions from the proposed power plant will result from the incomplete combustion of the fuel. These emissions will be minimized by balancing boiler operating parameters to achieve an optimum balance between complete combustion and excessive nitrogen oxides emissions.

BEST AVAILABLE CONTROL TECHNOLOGY SUMMARY

Based on the proposed BACT determination and the heat input to the proposed power plant, the following emission rates were calculated: Particulate matter - 486 tons per year, sulfur dioxide - 5,837 tons per year, nitrogen oxides - 3,405 tons per year, carbon monoxide - 197 tons per year and hydrocarbons - 59 tons per year.

The emissions of particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide and hydrocarbons will be controlled to the most cost-effective level possible. Emission limits for particulate matter, sulfur dioxide and nitrogen oxides will be equivalent to the original Federal New Source Performance Standards for electric power generating plants with a heat input of more than 250 million BTU per hour. Carbon monoxide and hydrocarbon emissions will be controlled using state-of-the-art combustion technology.

The particulate matter emissions from the power plant will be controlled to a level equivalent to 0.1 pounds per million BTU heat input through the use of a fabric filter. Sulfur dioxide emissions will be controlled to a level equivalent to 1.2 pounds per million BTU heat input through the use of low sulfur coal and nitrogen oxides emission will be controlled to a level of 0.7 pounds per million BTU heat input through the use of low-NOx burners. These emission limits will reduce the mass emission rate of particulate matter, sulfur dioxide and nitrogen oxides to levels that will not cause violations of ambient air quality standards or PSD increments.

In addition to the emissions from the power plant, secondary air pollutant emissions will be generated due to associated activities. These emission rates have been estimated to range from 0.6 tons per year for particulate matter to 8.7 tons per year for nitrogen oxides.

The calculation of the air pollutant emissions and the technology which will be used to control the emissions are presented in the attached Air Quality Review. Estimates of fugitive particulated emissions from coal handling operations and the proposed method of control are shown in Table 3.7-1.

Table 3.7-1

Coal Handling Fugitive Particulate
Matter Emission Estimates*

FLORIDA CRUSHED STONE COMPANY

1. Unloading

Uncontrolled emission - 0.4 lb/ton of coal

Control - Use of water sprays with wetting agent as required

Control Efficiency - Assume 85% based on factors stated for use of water sprays with wetting agent on storage piles

Emission Factor = $0.4 (1-0.85)$, = 0.060 lb/ton, controlled

2. Storage Pile

A. Loading Onto Pile

Loading by dozer (no lifting and dropping), active 7 days/week, 9.6 hours/day

Assume - activity factors = 0.5 for loading
and = 7/5 for 7 day/week operation
- silt content of coal = 3%
- PE index for Brooksville = 99

Control - use of water sprays with wetting agent as required

Control efficiency - assume 85%

Emission factor = $(0.04) (0.5) (3/1.5) (7/5) / (99/100)^2 (1-0.85)$
= 0.008 lb/ton, controlled

Technical guidance for control of industrial process fugitive particulate emissions, U.S. EPA, EPA 450/3-77-101, RTP, NC, March, 1977.

Amend No 2

B. Vehicle Traffic

Traffic will be limited to the dozer and a rubber tired front end loader

Assume - activity factor = 0.75 for combination of dozer and front end loader
- silt = 3%
- PE index = 99

Control - use of water sprays with wetting agent as required

2. Storage Pile (con't)

B. Vehicle Traffic (con't)

Control efficiency - assume 90%

Emission factor = $(0.13) (0.75) (3/1.5) (7/5) / (99/100)^2 (1-0.9)$
= 0.027 lb/ton, controlled

C. Loadout From Pile

Loadout by front end loader

Assume - activity factor = 1.0
- silt = 3%
- PE index = 99

Control - use of bag collector at discharge hopper

Control efficiency - assume 95%

Emission factor = $(0.05) (1.0) (3/1.5) (7/5) / (99/100)^2 (1-0.95)$
= 0.007 lb/ton, controlled

D. Wind Erosion

Assume - silt = 3%
- duration in storage = 5 days

Control - water sprays with wetting agent, as required, and compaction

Control efficiency - assume 90%

Emission factor = $(0.11) (3/1.5) (5/90) / (99/100)^2 (1-0.90)$
= 0.001 lb/ton, controlled

Amend No 2

3. Transfer to Coal Bin

Covered conveyor with bag collector at recurring
hopper and storage silo

Control efficiency - assume 90%

Emission factor = 0.20 lb/ton, uncontrolled
= 0.20 (1-0.9)
= 0.020 lb/ton, controlled

4. Total Controlled Fugitive Coal Dust Emission Factor

Unloading	- 0.060 lb/ton
Storage Pile	
Load pile	- 0.008
Traffic	- 0.027
Off-load	- 0.007
Wind	- 0.001
<u>Transfer</u>	<u>- 0.020</u>

Total - 0.123 lb/ton of coal received

5. Mass Emission of Fugitive Coal Dust

Coal received - 469,000 tons/year

Emission factor - 0.123 lb/ton, controlled

Annual emissions = 469,000 (0.123) (1/2000 ton/lb)
= 28.8 tons/year

Because of the size of the fugitive dust particles, the particles will be expected to fall out and be deposited before they reach the FCS property line.

28.8
365

Amend No 2

3.8 DIRECTLY ASSOCIATED TRANSMISSION LINE

After evaluation, it has been determined that the existing on-site transmission line does not have sufficient capacity to handle the power from the proposed power plant and a reconstruction of the existing line to accommodate the load is not economically feasible. A new 115 KV transmission line will be constructed to connect the proposed power plant to the existing Florida Power Corporation main Brooksville West Substation.

A corridor is required to construct the transmission line to connect the proposed plant located in Section 8 T22S R19E to existing Florida Power Corporation lines which parallel Sunshine Grove Road in Section 15 T22S R18E. The transmission line will require a 125 foot right-of-way. The towers will be approximately 65 feet tall and of an H-frame construction. The span width for the towers will be 600 to 800 feet.

The proposed location of the corridor extends from the power plant site west through the southern third of Section 8 and 7, and parallels a portion of the dike system between settling ponds 3 and 4. It crosses Highway 491 and the extreme southern portion of Section 12, continues, almost paralleling the southern section line of Section 11, and ultimately crosses into and parallels the northern section line of Section 15, where it intersects the existing Florida Power Corporation transmission lines. Figure 3.8-1 shows the location of the proposed transmission line corridor.

3.8.1 Route and Size

Figure 3.8-1 shows the route of the proposed transmission line corridor. The corridor will be approximately 125 feet wide and the tower span width will be approximately 600 to 800 feet.

3.8.2 Land Use Impacts

The corridor extending from the power plant site to Highway 491 is severely impacted as a result of continuing limerock mining operations. The land in this segment (Sections 7, 9, and 12 in part) consists of mined lands, overburden, settling ponds, and access roads used in the mining operations. Several small patches of secondary growth hardwoods have not been cleared. These patches are composed of sweetgum, water oak, laurel oak, American ash, hackberry, and elm. Average tree diameter at breast height is less than 6 in.

The corridor west of Highway 491 in Sections 11, 12, 14, and 15 extending to the existing Florida Power Corporation transmission lines consists of a small oak hammock, longleaf pine/turkey oak woodland, open pasture, and an old, vegetated sand tailings area. All of this segment is currently grazed by cattle. Grazing has been the active land use for at least the past twenty years. The oak hammock is dominated by live oak, laurel oak, hickory, and sweetgum. The subcanopy layer is sparse and is composed of saw palmetto, beauty bush, and greenbrier. The longleaf pine/turkey oak woodland is vegetated by longleaf pine, turkey oak, sand live oak, bluejack oak, and shrub species, such as huckleberry, beauty bush, and winged sumac. Herbaceous ground cover consists of wire grass, broomsedge, goldenrod, old man's beard, and golden aster. Due to removal of merchantable timber and pressure from cattle grazing, the canopy and subcanopy are sparse. The remainder of this segment of the corridor consists of an area of old sand tailings vegetated by grasses and scattered small trees; and improved pastureland.

Considering the level of past disturbance and current land use, siting the transmission line along the proposed corridor should have no adverse environmental impacts. The segment of the corridor east of Highway 491 crosses lands previously cleared or disturbed by limerock mining operations. The segment west of Highway 491 is either improved pastureland or grazed woodland with sparse tree cover. The selected corridor will neither necessitate the removal of any structure nor impact existing housing. The crossing at Highway 491 will be almost at a right angle, thus offering minimal visual impact. No streams, rivers, or natural wetland areas will be crossed. The only water body crossed will be a portion of one settling pond. No environmentally sensitive lands will be impacted.

The longleaf pine/turkey oak woodland does provide habitat for the gopher tortoise and Sherman's fox squirrel, which are listed as species of special concern by the State of Florida (FAC Chapter 39-27.05). The presence of the gopher tortoise increases the probability of occurrence of other commensual species, such as the Florida gopher frog, listed as a species of special concern by the State of Florida (FAC Chapter 39-27.05), the Florida mouse, listed by the State as threatened (FAC Chapter 39-27.04), and the indigo snake, which is listed as threatened by the U.S. Fish and Wildlife Service and the State of Florida (FAC Chapter 39-27.04).

All of these species are wide-ranging, occurring throughout this region of Florida. Siting the transmission line along this proposed corridor should have no adverse impact on local or regional populations of these species.

3.8.3 Beneficial Uses

Multiple uses are not currently planned for the transmission line corridor right-of-way. However, the applicant will make use of existing access roads for the mining operations to the extent possible.

3.8.4 Visibility

The transmission lines will be visible by persons traveling Highway 491. However, since the crossing at Highway 491 will be almost at a right angle, minimal visual impact is expected.

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SEPARATELY.

3.9 ASSOCIATED FACILITIES

3.9.1 Purpose, Location and Characteristics

A coal unloading and handling facility will be constructed in conjunction with the proposed power plant. The coal unloading facility will be located on an existing Seaboard Coast Line Railroad spur that extends into Florida Crushed Stone property, approximately 200 feet from a mined out pit. The coal will be bottom dumped from a unit train, and stockpiled for use. The stockpile area will be designed to allow run-off water to be contained in a sealed pond. The coal will be transported to the plant for use by means of a belt conveyor system.

The coal unloading and handling facility will not impact or be contiguous to any known historic, cultural, scenic, natural, ecological or archaeologically significant areas.

3.9.2 Maps

Figures 3.9.2-1 and 2 depict the proposed plot plan and aerial view of the site.

3.9.3 Land Type and Uses

This facility is located on a 6,400 acre tract of land owned by Florida Crushed Stone.

The site area and surrounding lands are currently zoned mining. Application for appropriate zoning to accommodate the power plant has been made. Zoning classifications are shown in Figure 2.2.2-2.

FIGURES 3.9.2-1 AND 2 ARE LOCATED IN THE BACK OF THE APPLICATION.

3.10 ON-SITE DRAINAGE SYSTEM

The on-site drainage system will be designed to take advantage of the naturally high infiltration capacities of the native soils. The entire site area will be surrounded by a retention basin (see Figure 3.1-1). No surface waters will be discharged from the Florida Crushed Stone property. Sediment traps such as straw bales or small sedimentation ponds will be utilized, if needed, to minimize the quantities of sediment entering the retention basins during construction.

A plan view and typical cross section of the retention basin is presented in Figure 3.10-1. As shown, the retention basin completely surrounds the plant site. There is no outfall from the retention basins.

The total capacity of the retention basin is approximately 76 acre-feet. However, it is not anticipated that the retention basin will even be filled to capacity. The enclosed plant site provides a catchment area of only 22.5 acres. In addition, seepage out the bottom and sides of the basins is expected to empty the basins within a few days after each rainfall event.

PERIMETER RETENTION BASIN

TYPICAL CROSS SECTION

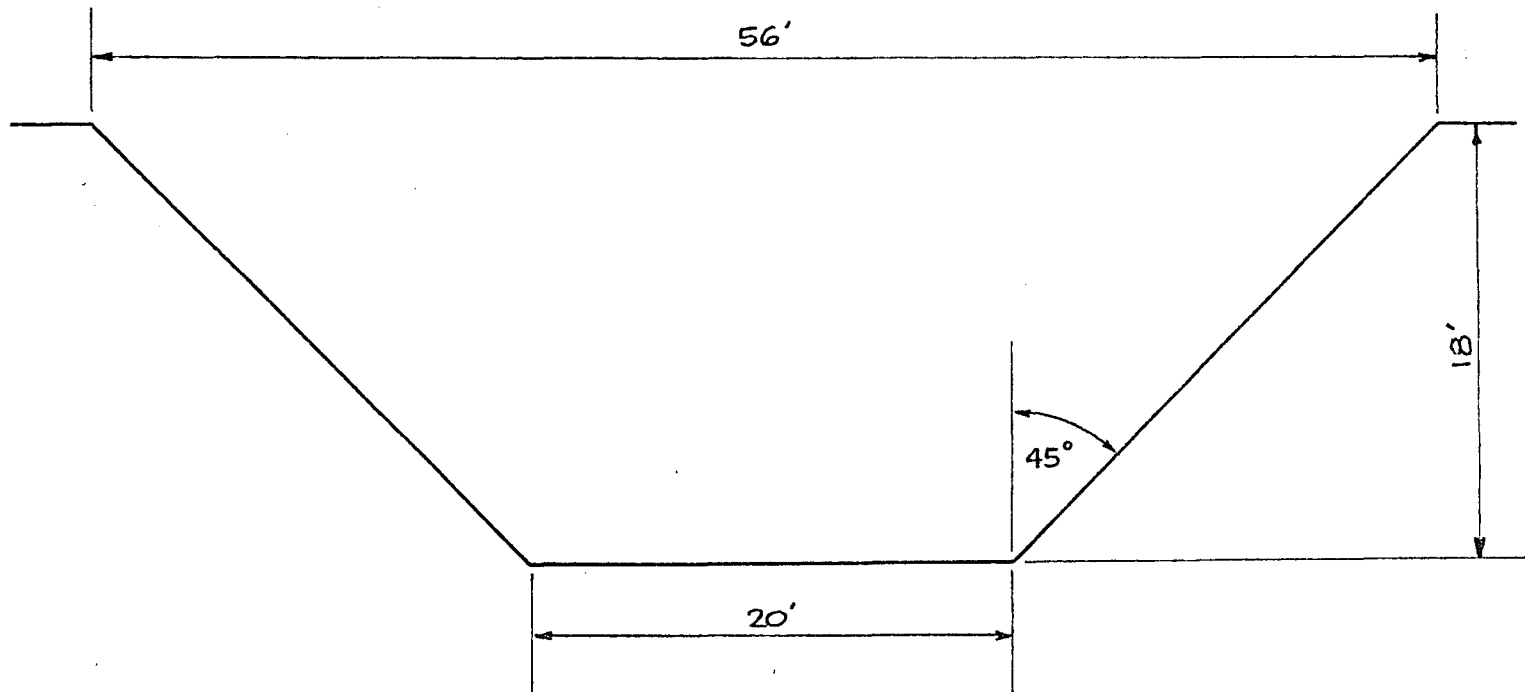


Figure 3.10-1

3.11 DESIGN ALTERNATIVES

Not Applicable.

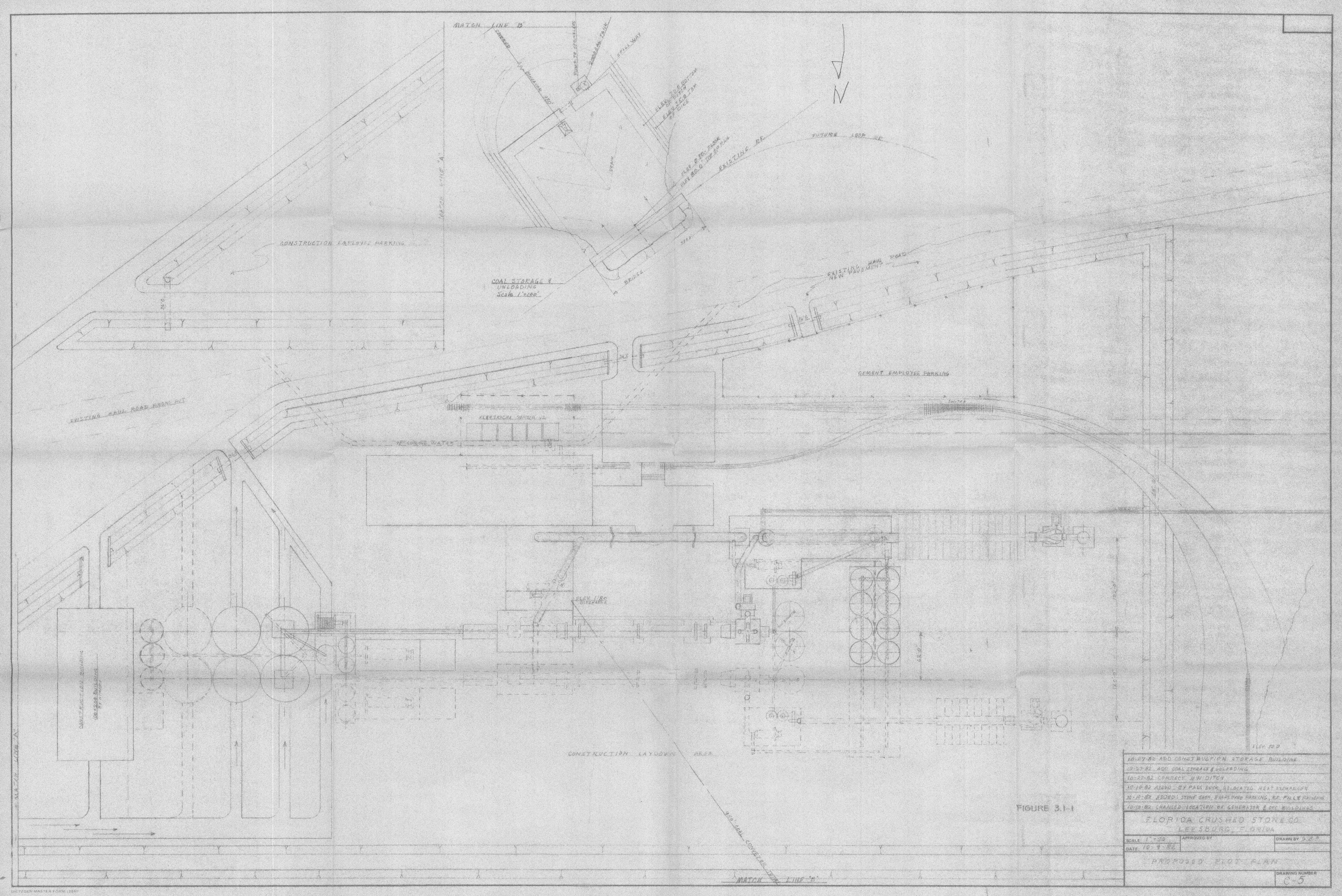
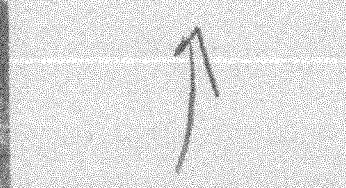
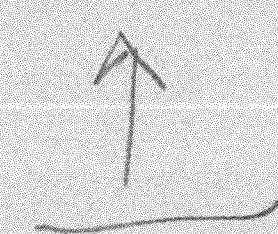


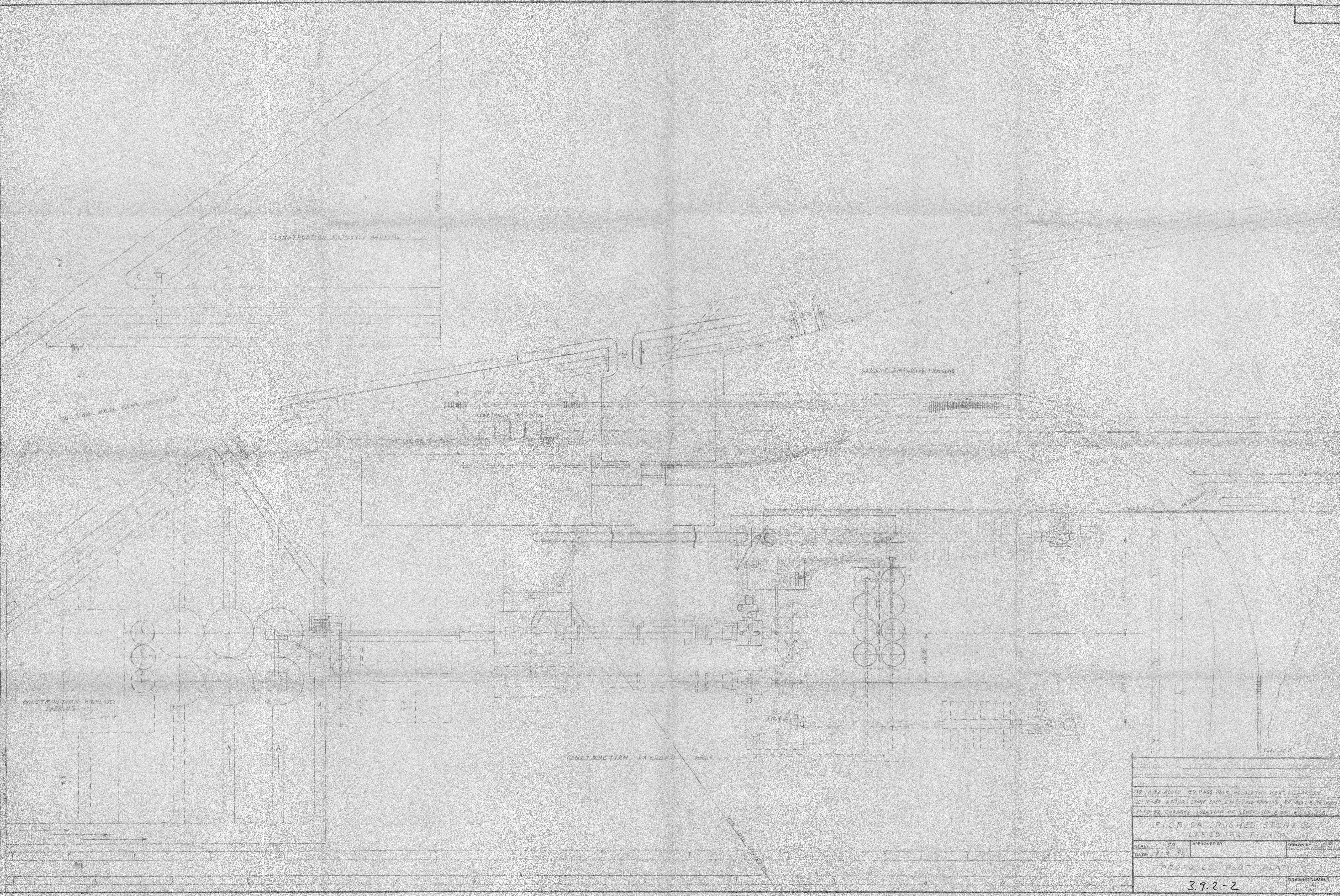
FIGURE 3.1-1

10-27-82 ADD CONSTRUCTION STORAGE BUILDING		
10-27-82 ADD COAL STORAGE & UNLOADING		
10-27-82 CORRECT NW DITCH		
10-10-82 ADD - BY PASS DUCK, ELONGATED, HEAT EXCHANGER		
10-18-82 ADDED STONE SHED, EMPLOYEE PARKING, RE. FILL & PAVING		
10-10-82 CHANGED LOCATION OF GENERATOR & OPC BUILDINGS		
FLORIDA CRUSHED STONE CO.		
LEESBURG, FLORIDA		
SCALE: 1" = 20'	APPROVED BY:	DRAWN BY: J.C.S.
DATE: 10-9-82		
PROPOSED PLOT PLAN		
		DRAWING NUMBER
		C-5



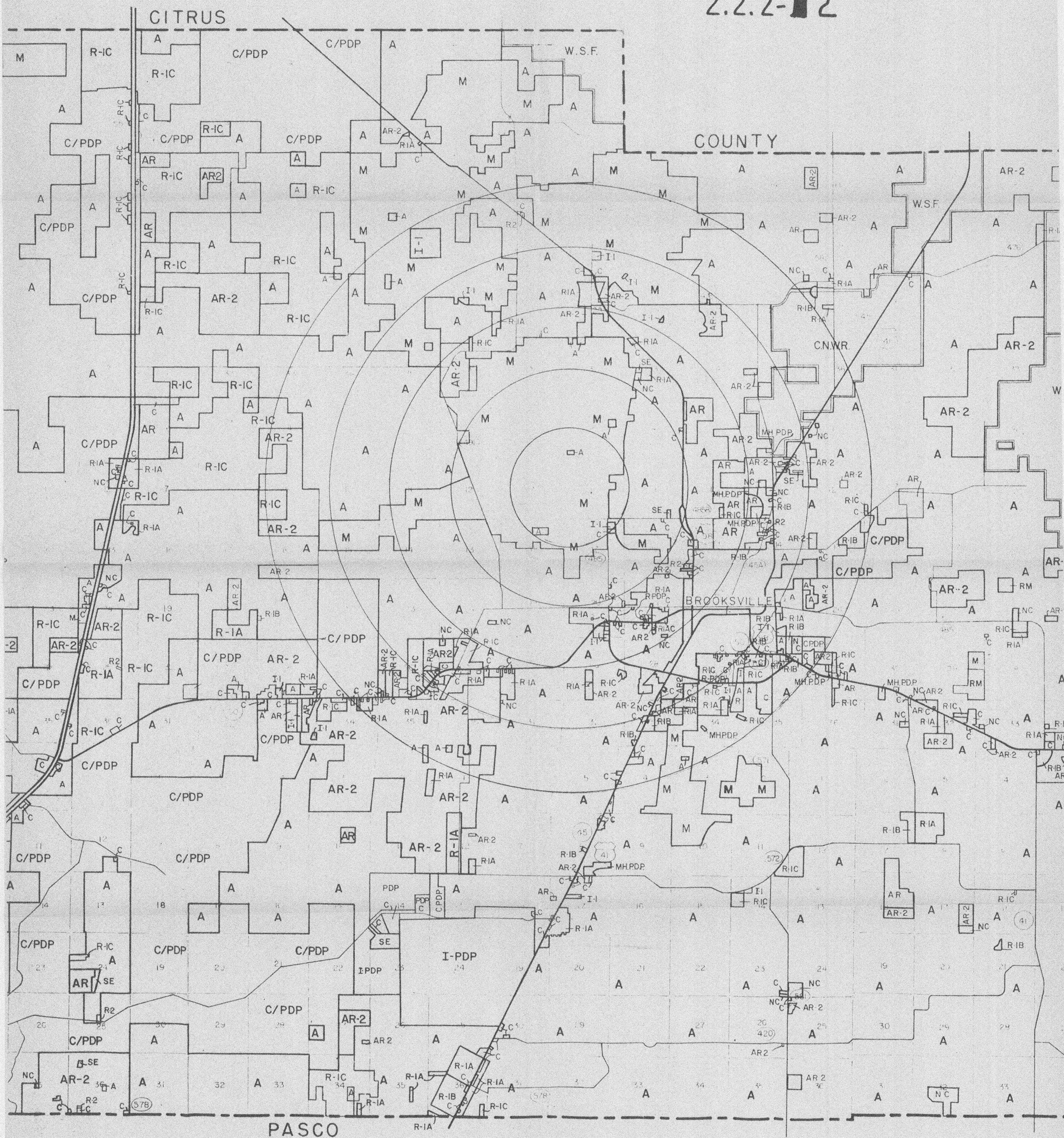
3.9.2-1





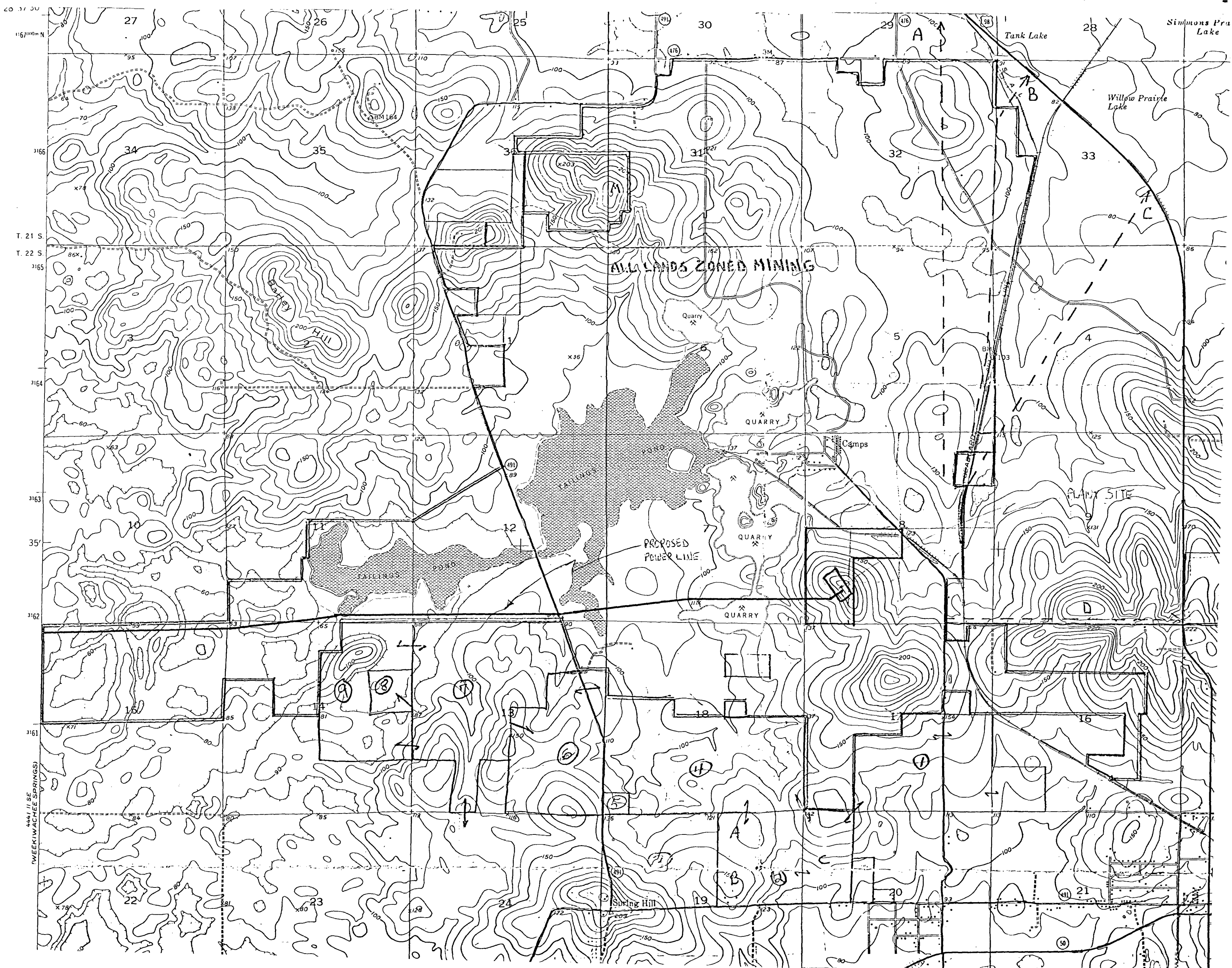
10-10-82 ADDED: BY PASS DUCK, RELOCATED: HEAT EXCHANGER		
10-10-82 ADDED: STONE SHOP, EMPLOYEE PARKING, RP, FILL & PAVING		
10-10-82 CHANGED: LOCATION OF GENERATOR & OPC BUILDINGS		
FLORIDA CRUSHED STONE CO. LEESBURG, FLORIDA		
SCALE: 1"=50'	APPROVED BY:	DRAWN BY: J.E.S.
DATE: 10-9-82		
PROPOSED PLOT PLAN		
3.9.2-2		DRAWING NUMBER C-5

2.2.2- 2



OFFICIAL ZONING MAPS ON RECORD IN THE HERNANDO CO.
PLANNING AND ZONING DEPARTMENT OFFICE. 5-3-76

Figure 3.8-1



CHAPTER 4

ENVIRONMENTAL EFFECTS OF SITE PREPARATION

4.1 SITE PREPARATION AND PLANT CONSTRUCTION

The effects of site preparation and plant construction on land use are expected to be minimal since the plant is proposed to be located on a previously mined area which will be zoned to accommodate the power plant use. Very little land clearing activities are expected to be required to accommodate the construction activities.

Impacts on water use are expected to be minimal since no new water sources will be required for the power plant facility. Water quality in the area will not be affected by site preparation or plant construction.

Site preparation and construction of the power plant will result in minimal impacts on ambient air quality.

The fact that the proposed site had been previously mined means that there will be virtually no land clearing associated with the proposed project and hence air pollutant emissions associated with disposable organic trash will not be significant.

The construction activities and the traffic associated with the construction work force will result in the generation of some fugitive particulate matter. These emissions will be short-term and the effects of the emissions will be reversible. Florida Crushed Stone proposes to employ adequate measures to control fugitive particulate matter emissions associated with the site preparation and plant construction. The measures will include good construction practices and the use of dust suppressants as necessary.

The air pollution emissions associated with the site preparation and plant construction activities are discussed in more detail in the attached Air Quality Review.

Solid waste generation and disposal are discussed in Section 3.6.3.

4.1.1 Construction Areas

There should be no adverse effects to the construction site since it is a previously mined out area. The dikes around all four existing settling ponds will be raised about six feet using material which is overburden in the aggregate

operations. This clay and limestone material is stripped and hauled onto the existing dikes where it is compacted. There is expected to be no impact since only waste materials will be used.

4.1.2 Land Impact

Approximately 30 acres of mined out land will be utilized for the plant site, although the entire site will be comprised of approximately 100 acres. The actual construction site is a mined out pit. It is not anticipated that there will be any construction-related dust or smoke problems in the area. No explosives will be used during construction.

4.1.3 Impact on Human Population

The nearest residential structure is approximately 3/5 miles from the construction site. There would be no undesirable impacts on residents from noise or inconveniences due to movement of material, men, or machines.

The construction workforce will be drawn largely from the local population in Hernando County; therefore, there will be little or no impact on housing, transportation, and educational facilities due to influx of new workers. Of the proposed 90 permanent positions at the project, only 5-10 will be filled by skilled workers from outside areas. Housing, educational facilities, and other community services in the area should be adequate to support this nominal addition.

Area traffic should increase slightly as a result of the construction and operation of the new plant. The two access roads for the site, Cobb Road and Yontz Road, are presently at approximately 83% and 73% capacity, respectively, in the area. The increased traffic due to construction and plant operations is estimated to be approximately 4% for the Cobb Road area and 3% for the Yontz Road area, well within the available use-capacity of the existing roads. The increased traffic should not affect downtown Brooksville, as alternate by-pass routes are available.

4.1.4 Work Force

Construction work will cover a period of 24 months and the work force will peak at about 500 employees, including the cement plant work force.

4.1.5 Impact on Landmarks and Sensitive Areas

No construction-related environmental impacts are anticipated.

4.1.6 Mitigating Measures

Best management practices will be employed to control erosion and dust.

4.1.7 Benefits from Construction

This is an excellent example of how a mined out area can be put to a reclaimed use. A now barren area will be used as an industrial site which will provide approximately 90 full time jobs for at least 30 to 40 years.

4.1.8 Impact on Water Bodies and Uses

Site preparation and construction activities for the power plant should not adversely impact water resources. The only potential impacts envisioned would be temporary increases in turbidity and or suspended solids content in the retention pond. Because no surface discharges from the pond system are contemplated, surface run-off from construction sites will be minimal, and erosion control measures will be utilized in case of surface run-off, this potential impact is not anticipated.

4.2 SPECIAL FEATURES

There should be no unusual products, raw materials, garbage disposal services, incinerator effluents or residues produced during construction that may have an influence on the environment and ecology.

4.3 CONSTRUCTION OF DIRECTLY ASSOCIATED TRANSMISSION FACILITIES

It is not anticipated that the construction and installation of the transmission line towers and facilities will have any adverse impact on the land, adjoining land owners or traffic.

4.3.1 Permanent Changes to Vegetation, Wildlife and Aquatic Life

Due to the level of past disturbance and the current land use along the transmission line corridor route, siting the transmission line in this area should produce no adverse environmental impacts. The segment of the corridor east of Highway 91 shown on Figure 3.8.1 crosses lands previously cleared or disturbed by limerock mining operations. The segment west of Highway 491 is either improved pasture land or grazed woodland with sparse tree cover. No streams, rivers, or natural wetland areas will be crossed. The only "water body" crossed will be a portion of one of the settling areas.

The longleaf pine/turkey oak woodland does provide habitat for the gopher tortoise and Sherman's fox squirrel, which are listed as species of special concern by the State of Florida. The presence of the gopher tortoise increases the probability of occurrence of other commensal species, such as the Florida gopher frog, listed as a species of special concern by the State of Florida, the Florida mouse, listed by the State as threatened, and the indigo snake, which is listed as threatened by the U.S. Fish and Wildlife Service and the State of Florida.

All of these species are wide-ranging, occurring throughout this region of Florida. Construction of the transmission line along the proposed corridor is expected to have no adverse impact on local or regional populations of these species.

4.3.2 Extent of Impact on Sensitive Areas

The transmission line corridor does not pass through any visually sensitive land on the site.

4.3.3 New Roads

Detailed descriptions of access and service roads will be provided as soon as available.

4.3.4 Erosion

It is not expected that erosion caused by construction activities will present a problem on this already disturbed mining site.

4.3.5 Impact on Land Use

The construction of the transmission line is not expected to impact any historic, cultural, or archaeologically significant areas.

4.3 CONSTRUCTION OF DIRECTLY ASSOCIATED TRANSMISSION FACILITIES

Not Applicable.

4.4 RESOURCES COMMITTED

Not Applicable.

4.5 CONSTRUCTION OF OTHER ASSOCIATED FACILITIES

The coal unloading facility will be located on an existing Seaboard Coast Line Railroad spur that extends into Florida Crushed Stone property, approximately 200 feet from a mined out pit. The coal stockpile area will be designed in such a way as to allow run-off to be contained in a pond lined with Durarock. Laboratory testing of Durarock is not complete. ~~If~~ test data indicates that performance of a Durarock liner will be unsatisfactory under anticipated low pH conditions, then an alternate liner material, e.g., a high density polyethylene liner, will be specified. Coal will be transported to the plant by means of a belt conveyor system. Construction of this facility should have no impacts on environmentally sensitive, historic, cultural, or archaeologically significant areas in this area.

CHAPTER 5

ENVIRONMENTAL EFFECTS OF PLANT OPERATION

5.1 EFFECTS OF THE OPERATION OF THE HEAT DISSIPATION SYSTEM, SECTION 5.3.5.

5.1.1 Temperature Effect on Receiving Body of Water

No adverse effects of the heated effluent on the temperature of the receiving body of water is anticipated. The receiving body of water is the modified waste treatment ponds currently used in the rock washing operations. No surface waters of the State will be involved with this project.

5.1.2 Thermal Limits

Not Applicable.

5.1.3 Effect on Aquatic Life

Not Applicable.

5.1.4 Biological Effects of Modified Circulation

Not Applicable.

5.1.5 Effects of Offstream Cooling

It has been estimated that the thermal evaporation resulting from the cooling of this water in the pond systems will be approximately 2.25 million gallons per day. This moisture will be added to the atmosphere and will increase the potential of fog within a limited area around the pond system. Fog is not expected to have an adverse impact on aircraft in the area. The incidence of fogging conditions during the year could increase along CR491 adjacent to the pond system.

The potential for the increased occurrence of fog is discussed in detail in the attached Air Quality Review.

5.2 EFFECTS OF CHEMICAL AND BIOCIDES DISCHARGES

Effects will be discussed below under environmental effects on groundwaters.

5.2.1 Industrial Wastewater Discharges

All industrial waste effluent from the subject power plant will be discharged to the existing 1050-acre waste treatment pond which will be modified as described previously to serve as cooling ponds for the condenser cooling waters. The introduction of this relatively small quantity of effluent to the treatment/cooling ponds will not adversely affect the water quality within the pond system. As discussed in Section 3.3, the dilution ratio for these industrial discharges considering only the rainfall component of the cooling pond make-up waters is on the order of 60:1. Cooling/treatment pond water quality is discussed in Section 5.3.3, Effects on Groundwater.

5.2.2 Leachate

Leachate plumes are not anticipated at the site for several reasons:

- *A small (e.g. 10± acres) area for intermittent small quantities of solid waste will be managed in a lined landfill area on-site.

- *Open air ash disposal does not occur at this facility. (Ash is used as raw material in the cement manufacturing facility.)

- *The coal pile and the coal pile runoff collection sump will be lined to prevent leachate from entering the groundwater.

No adverse impacts are anticipated to waters of the State from operation of the landfill operations.

5.2.3 Cooling Tower Blowdown

Not Applicable.

Bottom ash

5.3 IMPACTS ON WATER SUPPLIES

It is expected that there will be no detectable effect on surface or groundwater supplies beyond the FCS property from these facilities. As discussed earlier, withdrawal of groundwater is not expected to increase, and will probably decrease, as a result of the proposed project. Consumptive use of groundwater, although higher than for the rock plant, is still well within the SWFWMD water crop for the property. As discussed below, under the groundwater section, seepage of water from the cooling ponds will not cause violations of existing groundwater standards.

5.3.1 Drinking Water

It is expected that there will be no changes due to the plant water use, either by withdrawal or discharges, on the drinking water source.

5.3.2 Surface Water

No changes in hydrologic and/or water quality characteristics of off site surface waters will occur from this project because the project will not divert or intercept waters from any surface water and will not add contaminants or water to any surface waters of the State.

5.3.3 Groundwater

The operation of the facility should not have any adverse impacts on groundwaters. Total suspended solids and turbidity are considered to be the only potential pollutants in the cooling/treatment pond waters. Sufficient unconsolidated materials, i.e., fine limerock tailings, are available within the bottom of the pond system to filter the suspended solids and mitigate any potential adverse impacts of seepage from the system.

The dissolved materials within the pond water are not expected to exceed applicable standards for groundwater. Because the ponds will be operated as a closed system and evaporation losses exceed rainfall, there will be some build up of dissolved solids with time. However, because of the relatively large seepage quantities through the pond bottom, equilibrium occurs at relatively low values of the parameters. Table 5.3.3-1 presents predicted concentration for contaminants within the pond system at equilibrium for the parameters listed in Chapter 17-3.101 F.A.C. As shown, no violations of groundwater standards are anticipated for

the cooling pond water. It should be noted that water quality parameters for rainwater used in developing Table 5.3.3-1 are for rainwater contaminated with excess coal pile run-off as described in Section 3.3.

Although groundwater discharges are not expected to contain contaminants in excess of current groundwater standards, it should also be noted that the aquifer transmissivities in the area have been documented at between 5 and 15 million gallons per day per foot, which are very high transmissivity values. Dispersion of pond and plant seepage into this system is expected to result in a water quality close to background levels.

Table 5.3.3-1

COOLING POND WATER QUALITY

	<u>Current</u> <u>Standard</u>	<u>Well Water</u>	<u>Existing</u> <u>Pond Water</u>	<u>Pond Water at</u> <u>Equilibrium</u>
Arsenic (mg/l)	0.05	<0.01	<0.01	<0.01
Barium (mg/l)	1.0	<0.10	<0.10	<0.10
Cadmium (mg/l)	.05	<0.005	<0.005	<0.005
Chromium (mg/l)	.05	0.010	0.010	0.011
Endrin (mg/l)	0.0002	<0.0001	<0.0001	<0.0001
Fluoride (mg/l)	1.5	0.60	0.98	0.654
Lindane (mg/l)	.004	<0.001	<0.001	<0.001
Lead (mg/l)	.05	<0.01	<0.01	<0.01
Mercury (mg/l)	0.002	<0.0005	<0.0005	<0.0005
Methoxychlor (mg/l)	0.10	<0.01	<0.01	<0.01
Nitrate (N) (mg/l)	10.0	0.21	0.02	0.23
Radium 226 & 228 (pCi/l)	5	2.5	0.55	2.74
Selenium (mg/l)	.01	<0.005	<0.005	<0.005
Silver (mg/l)	.05	<0.01	<0.01	<0.01
2, 4-D (mg/l)	0.1	<0.01	<0.01	<0.01
2, 4, 5-TP (mg/l)	.01	<0.001	<0.001	<0.001
Toxaphene (mg/l)	.005	<0.001	<0.001	<0.001

5.4 SANITARY AND OTHER WASTE DISCHARGES

A septic tank system will handle sanitary waste for this facility.

5.5 AIR QUALITY IMPACTS

An air quality review was conducted to evaluate the impact of emission from the proposed power plant on ambient air quality. The modeling was conducted in accordance with guidelines set forth in Guideline On Air Quality Models, U.S. Environmental Protection Agency, EPA-450/2-78-027, April 1978.

The air quality modeling was conducted to evaluate the impacts of particulate matter, sulfur dioxide, nitrogen oxides and carbon monoxide. Impacts of emissions from the proposed power plant were calculated and compared, when applicable, with incremental increases permitted under state and federal PSD regulations. Additionally, the impacts of emission from the proposed power plant on the Chassahowitzka National Wildlife Refuge, the particulate matter non-attainment area in Hillsborough County and the sulfur dioxide non-attainment area in Pinellas County were assessed. Impacts of emissions from the proposed power plant and from other air pollution sources having a significant impact at the Florida Crushed Stone site were calculated and compared with applicable air quality standards.

As a result of the air quality review, it was concluded that the proposed power plant could be constructed and operated without causing or contributing to an exceedance of ambient air quality standards, without exceeding the incremental impacts permitted under state and federal PSD regulations and without having a significant impact on Class I PSD areas or sulfur dioxide or particulate matter non-attainment areas. The air quality review is discussed in the attached Air Quality Review.

The flyash and bottom ash generated during the combustion of coal in the power plant will be collected and pneumatically conveyed to a flyash silo associated with the cement plant that Florida Crushed Stone is constructing adjacent to the power plant. The flyash will be consumed in the cement plant and will therefore not create a disposal problem. The collection, transfer and storage system for the flyash will be enclosed and all gases vented from the system will be vented through fabric filters to control particulate matter emissions.

Two 1,000 ton silos have been designated to take fly ash if required. This provides storage capacity of two weeks with the power plant running without the cement plant. If required, this fly ash will be loaded into enclosed tankers for shipment to buyers.

5.7.2 Other Plant Operation Effects

Entry and exit is off of Cobb Road. It is expected that the cement plant operation will generate an average of 90 trucks per day, five days per week. Eighty-five for shipping product out and five for raw material (gypsum) in. Presently, the Florida State Department of Transportation is studying the routes for the completion of the Brooksville By-Pass. This By-Pass is expected to reduce any additional impact caused by traffic from this operation.

5.8 RESOURCES COMMITTED

Not Applicable.

5.8.1 Lost Resources

Not Applicable.

5.8.2 Changes in Species Populations

No changes in populations of any important species are anticipated. See Section 2.7.1.

5.9 VARIANCES

At this time, it is not anticipated that any variances will be required. If it develops during the review process that variance relief is necessary, Florida Crushed Stone will make application and file appropriate notifications in accordance with Chapter 403, Florida Statutes, and Chapters 17-1 and 17-17, Florida Administrative Code.

CHAPTER 6

ENVIRONMENTAL MEASUREMENTS AND MONITORING PROGRAMS

6.1 GENERAL

Baseline water resources and geology data for this application were collected from a thorough literature review and a field program. The literature review included the U.S. Geological Survey, Florida Bureau of Geology and Southwest Florida Management District sources. These sources provided geologic and hydrologic data for the Brooksville area including specific data collected from within the FCS property. More specific data were collected during the field program which included test borings, water balance measurements, site inspection and installation/operation of observation wells. In addition, water quality data characteristics were documented from samples taken within the field program.

The following paragraphs enumerate specific preapplication monitoring for the water resources, air resources, geology and ecology disciplines.

6.2 PREAPPLICATION MONITORING FOR WATER RESOURCE DATA AND AIR DATA

Preapplication monitoring has been a combination of visual on-site inspections, thorough literature review, a four day water balance survey, test borings, water level data reduction and analysis, and water quality sampling and analyses. These activities are described in the following paragraphs.

Preapplication monitoring for particulate matter and sulfur dioxide have been conducted in accordance with an agreement with the Florida Department of Environmental Regulation, Bureau of Air Quality Management. Monitoring was conducted during the period May 25, 1982 through September 26, 1982. The data collected during this monitoring program are presented in the attached Air Quality Review.

6.2.1 Sampling Techniques

The preapplication monitoring sites are located in Figures 6.2.1-1 and 6.2.1-2 for water data. The specific techniques for the surface water and groundwater sampling are discussed in paragraphs 6.2.4 and 6.2.5. See Air Quality Review for air sampling.

6.2.2 Use of Published Data

The following bibliography was used to analyze the water resources and geology of the site:

- *Cherry, R.N., Stewart, J.W. and Mann, J.A., 1970. General Hydrology of the Middle Gulf Area, Florida. Florida Bureau of Geology Report of Investigation No. 56. Tallahassee, Florida.
- *Geraghty and Miller, Inc. and Reynolds, Smith and Hills, Inc., 1977. Hydrologic and Engineering Evaluation of the Four River Basins Area, West Central Florida, for the U.S. Army Corps of Engineers, Jacksonville District.
- *Schmidt, Walter, and other, 1979. The Limestone, Dolomite and Coquina Resources of Florida. Florida Bureau of Geology Report of Investigation No. 88. Tallahassee, Florida.
- *Stewart, J.W., 1980. Areas of Natural Recharge to the Floridan Aquifer in Florida. Florida Bureau of Geology Map Series No. 98. Tallahassee, Florida.

*Visher, F.N. and Hughes, G.H., 1969. The Difference Between Rainfall and Potential Evaporation in Florida. Florida Bureau of Geology Map Series No. 32. Tallahassee, Florida.

*Wetterhall, W.S., 1964. Geohydrologic Reconnaissance of Pasco and Southern Hernando Counties, Florida. Florida Geological Survey Report of Investigation No. 34. Tallahassee, Florida.

*White, W.A., 1970. The Geomorphology of the Florida Peninsula. Florida Bureau of Geology Bulletin No. 51. Tallahassee, Florida.

*Yon, J.W. and Hendry, C.W. 1972. Suwannee Limestone in Hernando and Pasco Counties, Florida. Florida Bureau of Geology Bulletin No. 54. Tallahassee, Florida.

6.2.3 Use of Reports Developed by the Applicant

The Air Quality Review report is discussed in Section 6.2.6.

6.2.4 Surface Waters

The only surface waters evaluated as part of this project is the existing 1050 acre man-made pond system. No surface waters beyond the property boundaries were evaluated, because no surface waters will be impacted.

6.2.4.1 Physical and Chemical Parameters

The physical parameters evaluated as part of the pre-application monitoring include the pond system surface areas, pond system water losses through a 4 day water balance survey, and daily rainfall observations. The pond system surface areas were planimetered from a splicing together and photo reduction of four 1"= 400' scale recent aeriels of the site. The pond system seepage losses were computed as the single unknown term in the water balance equation between inflows and outflows to the pond. Rainfall, surface water inflow, and change in water storage were documented from field measurements conducted daily by the plant personnel.

The chemical parameters evaluated were obtained from grab samples taken from the pond system. The following procedures were utilized to collect and handle samples.

- *Obtain the sample bottles and preservatives from the water analysis laboratory. These containers are usually furnished in an ice chest to store the samples during collecting and transporting. An example of laboratory instructions is included as Table 6.2.4-1. Samples will be unfiltered and grab samples.
- *Ideally, water quality samples should be taken below the surface of the water body.
- *Avoid rapidly changing gage height periods or unsteady flow conditions for collecting water quality samples. Rapid changing gage height periods generally are defined as 0.1 foot change per one hour. If impossible to avoid these periods, it is imperative that the sample be collected when the stream discharge is known (e.g. approximately during the discharge measurements).
- *Sample out of the influence from man's activities along roads. Typically the best sampling site is out of roadway right-of-way and upstream of the roadway.
- *The sampling location and procedures should be similar each time a sample is taken at an individual site.
- *Each container should be carried to the point of sampling in the stream. The containers are usually pre-cleaned and/or sterilized as necessary. Each sample bottle should be submerged until the bottle is completely full and should be capped underwater, to eliminate as much air in the bottle as possible.
- *Record water level reading, time, and date for all water quality sampling on a form similar to Table 6.2.4-2.
- *Measure water temperature, pH and field conductivity. Data should be noted on a form similar to Table 6.2.4-2.
- *Samples should be obtained at each site, iced down and transported to the laboratory responsible for analysis within 24 hours of sampling. The field data form should be supplied to the testing laboratory with the water samples. A chain of custody form should also be completed at the laboratory. Table 6.2.4-3 shows this form.

*Please note and document for the record the period that the recirculation system has been in operation prior to start of sampling. Also, any interruptions in operating system during sampling period must be noted.

6.2.4.2 Ecological Parameters

Not Applicable.

6.2.5 Groundwater

Groundwater was evaluated from field tests and literature review. Two test holes downgradient of the 1050 acre pond system were drilled in October 1982. An observation well was installed in one of the holes. Since the summer of 1980, Florida Crushed Stone constructed and has operated a Floridan Aquifer monitor well between Camps and the 1050 acre pond. These monitor well data were reduced to altitudes NGVD and used in our analyses. The 1982 daily water level records from this well with daily rainfall on the site were plotted and shown as Figure 2.5.6-1 in Chapter 2 of this application. The water level record for this well is from a continuous Stevens Type F recorder. The top of the well casing is 86.01 feet NGVD according to levels run by personnel from FCS.

The Seaboard Coastline Well at the east edge of the FCS property is part of the long term observation well network of the U.S. Geological Survey. This record was utilized for the same period as the FCS monitor well in addition to the period since its startup in 1960, to assess long term trends in groundwater levels. The SWFWMD publishes this well water level record in their monthly hydrologic summary report.

Water use data are another important element in the groundwater investigation. Consumptive use permits for water use were evaluated within the following area around the site:

<u>Latitude</u>	<u>Longitude</u>
284000	823230
284000	822000
283000	822000
283000	823230

This area approximately represents a 5+ mile radius around the pond site. The data were obtained from the SFWMD. Florida Crushed Stone water use records were evaluated from January 1981 through September 1982 and utilized in analyses of relations between groundwater levels, pumpage rates, and rainfall.

Grab water samples from several operating wells on site were analyzed by Orlando Laboratories for primary drinking water parameters. Laboratory methodologies specified in Chapter 17-22, F.A.C. were utilized. The in situ readings of temperature, specific conductance, and pH were obtained using a YSI Model 33 temperature and conductivity meter and a Horizon Ecology Company Model No. 5995-30 pH meter. Sample locations are located in Figure 6.2.1-2.

6.2.6 Air

An on-site air quality monitoring network was established by Florida Crushed Stone to develop background sulfur dioxide and particulate matter ambient air quality data. This network was operated during the period May 25, 1982 through September 26, 1982. The network is described in detail in the attached Air Quality Review. Meteorological data representative of the site were obtained from the National Weather Service for Tampa, Florida. Other climatological data were obtained from various published sources. All of the meteorological and climatological data used in describing the site meteorology and in preparing the air quality review are described in the attached Air Quality Review.

The air quality models used in preparing the air quality review were developed by or for the U.S. Environmental Protection Agency. The modeling was conducted in accordance with guidelines set forth in the document, Guideline On Air Quality Models, U.S. Environmental Protection Agency, EPA-450/2-78-027, April 1978. The air pollutant emission rates from the proposed power plant and other air pollution sources that significantly impact the air quality at the site of the proposed power plant were calculated based on emission limiting standards and operating parameters or were obtained from the Florida Department of Environmental Regulation, Air Pollution Source Permits. The models and the emission data used in the air quality review are discussed in detail in the attached Air Quality Review.

6.2.7 Geology

The geology for the site was evaluated from visual observations, field testing, and literature review. Two standard penetration test holes were drilled adjacent to the pond system along CR 491. Procedures for this testing are summarized in Table 6.2.7-1. In addition, the geologic and/or drillers logs on file with Florida Bureau of Geology and the SWFWMD wells under their ROMP program were utilized in our data analyses. Florida Bureau of Geology well nos. W-2876, W-7422, W-14628, W-14661 and SWFWMD ROMP Well Nos. Centralia, 105 and 107 were specific data reviewed in our geology program.

6.2.8 Archaeology

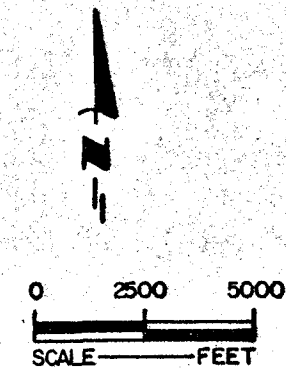
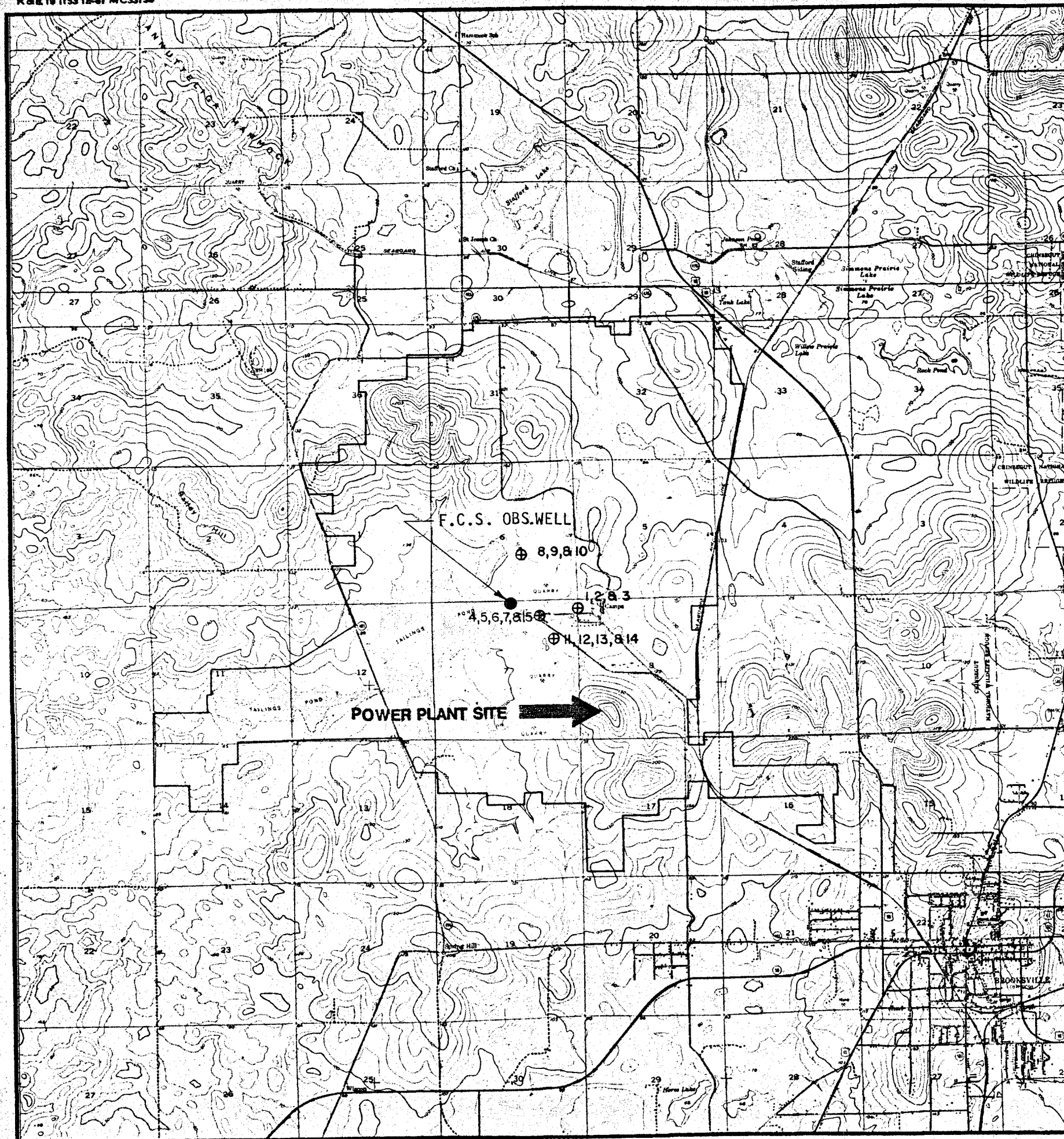
The Division of Archives, History, and Records Management was consulted to determine if any significant archaeological sites occurred on the project site.

6.2.9 Noise

Not Applicable.

6.2.10 Terrestrial Biota

The proposed power plant site and locations of associated facilities were studied through photointerpretation of aerial photography and ground surveys to determine vegetation, habitat value, presence of rare, threatened, endangered, or protected species, and degree of past disturbance.



WELL WATER QUALITY SAMPLING SITES

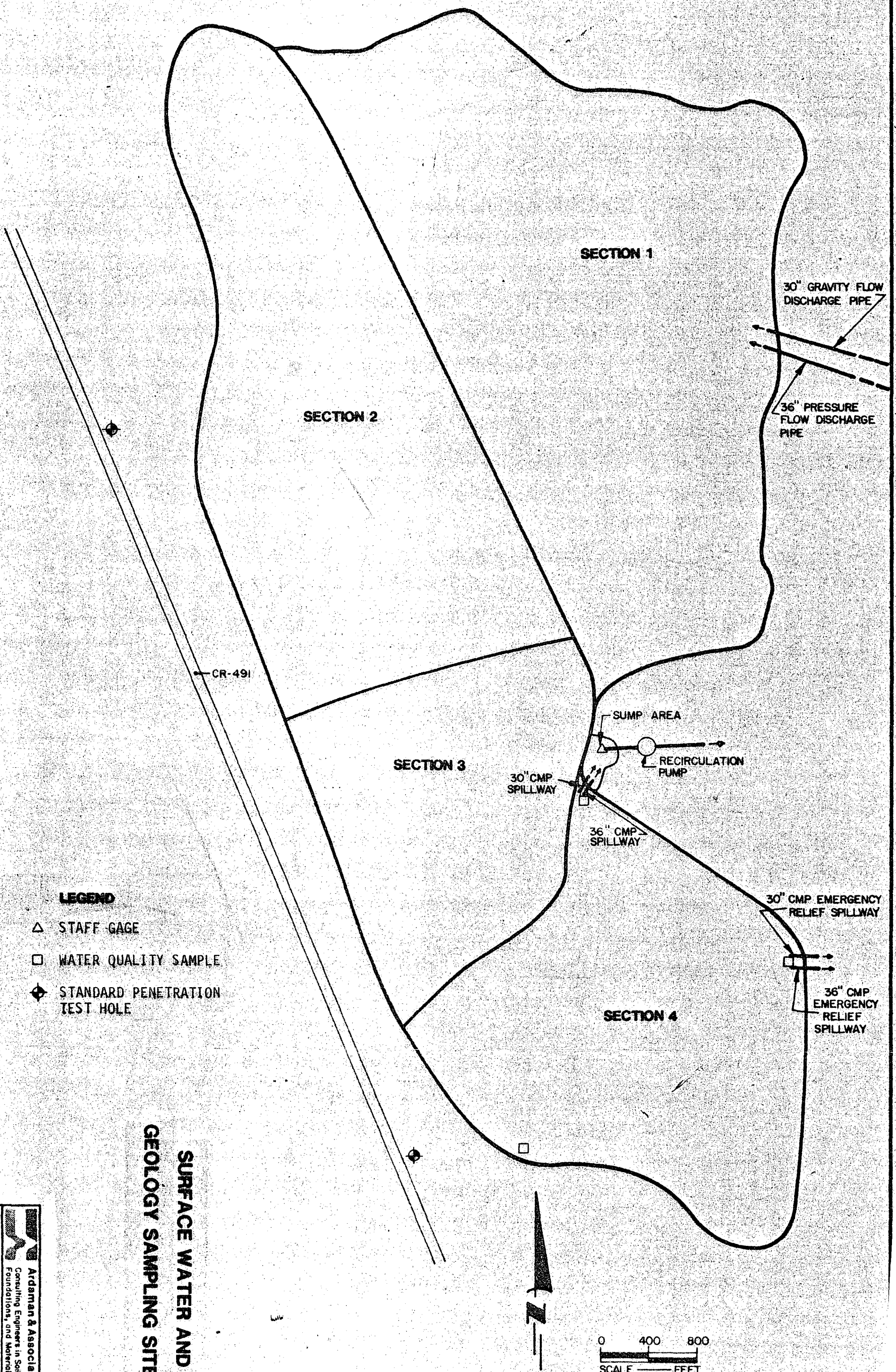
FROM USGS QUAD MAPS BROOKSVILLE
AND BROOKSVILLE NW. T21, 22S, R18, 19E

FIGURE 6.2.1-2

Ardaman & Associates, Inc.
Consulting Engineers in Soil Mechanics,
Foundations, and Material Testing

**GEOHYDROLOGICAL INVESTIGATION
HERNANDO COUNTY, FLORIDA
FLORIDA CRUSHED STONE CO.**

DRAWN BY: T.S. CHECKED BY: HGS DATE: 9/30/82
FILE NO. 82-112 APPROVED BY: *John E. Ardaman*



**SURFACE WATER AND
GEOLOGY SAMPLING SITES**

LEGEND

- △ STAFF GAGE
- WATER QUALITY SAMPLE
- ◆ STANDARD PENETRATION TEST HOLE

0 400 800
SCALE — FEET



Ardaman & Associates, Inc. Consulting Engineers in Soil Mechanics, Foundations, and Material Testing	
GEOTECHNICAL INVESTIGATION HERNANDO COUNTY, FLORIDA FLORIDA CRUSHED STONE CO.	
DRAWN BY: J. S. FILE NO.: 82-112	CHECKED BY: H. S. DATE: 9/27/82 APPROVED BY: <i>[Signature]</i>

FIGURE 6.2.1-1

Table 6.2.4-1

LABORATORY INSTRUCTIONS*

<u>Analysis</u>	<u>Sample Containers</u>		<u>Preservative</u>	
Pesticides & Herbicides	16 oz. Glass Bottle		None	Keep Cool
Heavy Metals	Qt. Plastic Bottle	(Green)	Nitric Acid	N/A
NO ₃ -N	6 oz. Plastic Bottle	(Black)	Sulfuric Acid	Keep Cool
Fluoride & Turbidity	8 oz. Plastic Bottle	(Plain)	NONE	Keep Cool
Radium-226 & Gross Alpha & Gross Beta	Gallon Plastic Bottle	(Plain)	NONE	N/A
Total Coliform	8 oz. Plastic Bottle	(Yellow)	NONE	Keep Cool
Chloride & Sulfate & Sodium	8 oz. Plastic Bottle	(Plain)	NONE	Keep Cool
Iron & Manganese	4 oz. Plastic Bottle	(Green)	Nitric Acid	N/A
Phenols	4 oz. Glass Bottle	(Gold)	Copper Sulfate & Phosphoric Acid	Keep Cool
pH & Spec/Conductance	4 oz. Plastic Bottle	(Plain)	NONE	Keep Cool
TOC	4 oz. Plastic Bottle	(Black)	Sulfuric Acid	Keep Cool
Ammonia Nitrogen & Nitrate Nitrogen & O-Phosphorus, P	8 oz. Plastic Bottle	(Plain)	NONE	Keep Cool
T-Phosphorus, P	8 oz. Plastic Bottle	(Black)	Sulfuric Acid	Keep Cool
Sulfate & Fluoride	8 oz. Plastic Bottle	(Plain)	NONE	Keep Cool

*Orlando Laboratories

Water Sample Log Sheet

Table 6.2.4-2

FLORIDA CRUSHED STONE WATER QUALITY STUDIES

Project No. _____ Sample No. _____
Location _____ Well No. _____
Sampled By _____ Date _____ Time _____
Water Depth _____ Field pH _____
Volume Removed Before Sampling _____ Field Cond. _____
Preservative/Handling _____ Field Temp. _____
Sampling Comments _____

Required Analyses _____
Notes: _____

Received by _____ Lab _____
Date _____ Time _____
Comments _____

Lab Results Rec. & Attached By _____ Date _____
Comments on Results: _____

Comments By _____ Date _____

Table 6.2.4-3
TRANSFER OF CUSTODY

I, _____ of _____
(Signature) (Company)

hereby transfer the items listed below to

_____ of _____
(Name) (Company)

Items Transferred

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Receipt of above listed items acknowledged by

(Signature) (Date) (Time)

Table 6.2.7-1

STANDARD PENETRATION TEST

The standard penetration test is a widely accepted method of *in situ* testing of foundation soils (ASTM D-1586). A 2-foot long, 2-inch O.D. split-barrel sampler attached to the end of a string of drilling rods is driven 18 inches into the ground by successive blows of a 140-pound hammer freely dropping 30 inches. The number of blows needed for each 6 inches of penetration is recorded. The sum of the blows required for penetration of the second and third 6-inch increments of penetration constitutes the test result or N-value. After the test, the sampler is extracted from the ground and opened to allow visual examination and classification of the retained soil sample. The N-value has been empirically correlated with various soil properties allowing a conservative estimate of the behavior of soils under load.

The tests are usually performed at 5-foot intervals. However, more frequent or continuous testing is done by our firm through depths where a more accurate definition of the soils is required. The test holes are advanced to the test elevations by rotary drilling with a cutting bit, using circulating fluid to remove the cuttings and hold the fine grains in suspension. The circulating fluid, which is a bentonitic drilling mud, is also used to keep the hole open below the water table by maintaining an excess hydrostatic pressure inside the hole. In some soil deposits, particularly highly pervious ones, NX-size flush-coupled casing must be driven to just above the testing depth to keep the hole open and/or to prevent the loss of circulating fluid.

Representative split-spoon samples from soils at every 5 feet of drilled depth and from every different stratum are brought to our laboratory in air-tight jars for further evaluation and testing, if necessary. Samples not used in testing are stored for at least six months prior to being discarded. After completion of a test boring, the hole is kept open until a steady state groundwater level is recorded. The hole is then sealed, if necessary, and backfilled.

6.3 CONSTRUCTION AND OPERATIONAL MONITORING

6.3.1 Sampling Techniques

Post construction air quality monitoring, if required, will be conducted in accordance with state and federal air quality monitoring requirements.

6.3.2 Modifications

The operation of the proposed power plant will increase particulate matter, sulfur dioxide, nitrogen oxides and carbon monoxide emission in Hernando County. The increased emission of these pollutants are not; however, expected to increase the ambient concentrations of the pollutants to levels which even approach applicable ambient air quality standards. If post construction air quality monitoring is required to demonstrate this fact, the monitoring will be conducted in accordance with state and federal air quality monitoring guidelines.

6.3.3 Surface Waters

No surface water monitoring program is proposed since no surface waters of the state are impacted.

6.3.4 Physical and Chemical Parameters

Not Applicable

6.3.5 Ecological Parameters

No ecological monitoring program will be conducted.

6.3.6 Groundwater

No groundwater monitoring program is proposed at this time.

6.3.7 Air

Post construction monitoring requirements will be discussed with the Florida Department of Environmental Regulation, Bureau of Air Quality Management for both ambient monitoring and continuous emission monitoring. If either source or ambient monitoring is required the monitoring will be con-

ducted in accordance with applicable state and federal guidelines.

6.3.8 Geology

No geology monitoring program is anticipated.

6.3.9 Archaeology

See Section 6.2.8.

CHAPTER 7

ECONOMIC AND SOCIAL EFFECTS OF PLANT CONSTRUCTION AND OPERATION

7.1 SOCIO-ECONOMIC BENEFITS

Based on actual results for the past 22 years, the consumption of cement in Florida increased an average of at least 160,000 tons per year. There has been a significant, growing demand for cement which is expected to continue at least into the next century. Cement from this new facility will partly replace cement which is now imported into Florida from other states and foreign countries.

This new facility will employ approximately 90 people with a payroll, including fringe benefits, of nearly \$2.5 million/year. Using a 2.5 multiplier for estimated support needs in the community indicates that related expenditures will be about \$6 million a year.

Annual expenditures for maintenance and operating expenses are expected to approach \$4 million a year, and every effort will be made to purchase these items locally.

A 22 month construction period is scheduled which is planned to commence before the end of 1982. The number of construction personnel will peak at approximately 500.

7.2 SOCIO-ECONOMIC COSTS

Not Applicable.

7.2.1 Plant Costs

Estimated capital costs for the power plant are \$30 million.

CHAPTER 8

ALTERNATIVE ENERGY SOURCES AND SITES

Not Applicable.

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ARTICLE IV
ZONING DISTRICT REGULATIONS

SECTION 1. ESTABLISHMENT OF ZONING DISTRICTS.

- A. ZONING DISTRICT DESIGNATION: The unincorporated area of Hernando County, Florida, is divided into the following zoning districts as shown on the "OFFICIAL ZONING DISTRICT MAP, HERNANDO COUNTY, FLORIDA" and these zoning districts are designated as follows:
1. R-1A Residential District: This district is designed primarily to permit the continued development of established residential areas which include a mixture of conventional single-family dwellings and mobile homes and is therefore not intended to be utilized extensively for future development.
 2. R-1B Residential District: This district is designed to protect medium-density, single family development and is intended to be the district most utilized for regulating single family development located within, or adjacent to, urbanizing areas within the County.
 3. R-1C Residential District: This district is designed to encourage and protect low-density, single family development and is intended to be the district most utilized for regulating future single-family development within the County.
 4. RM Residential Mobile Home District: This district is designed to allow the development of low density mobile home subdivisions.
 5. R-2 Residential District: This district is designed to permit medium-density residential development consisting of both single-family and two-family dwellings.
 6. R-3 Residential District: This district is designed to permit higher density single lot-principal building residential development consisting of both single-family and multi-family dwellings.
 7. C-1 General Commercial District: This district is designed to encourage and facilitate general commercial areas intended to serve a relatively large trade area and include major shopping facilities and goods oriented to pedestrian shoppers on a site sufficiently large enough to meet the needs of several types and varieties of general commercial activities.
 8. C-2 Highway Commercial District: This district is designed to permit the development of commercial areas at appropriate locations on major highways and is intended to meet the needs of

motorists and other consumers through the provision of automobile oriented commercial activities located in a desirable grouping rather than in a strip or linear fashion along the highway.

9. C-3 Neighborhood Commercial District: This District is designed to permit the development of local commercial areas which are properly located in regard to both adjacent streets and surrounding residential areas and intended to serve local neighborhood needs through the provision of easily accessible convenience goods and personal services.
10. I-1 Industrial District: This district is designed to encourage and promote the development of a coordinated and related industrial complex in a general area that is large enough to meet the needs of several types and varieties of industrial activities.
11. PDP Planned Development Project District: This district is designed to encompass an area that is to be developed as an integral and planned complex of structures and uses rather than through the conventional principal building-single lot development approach, and is intended to be the district most used as a means of providing for land use changes and amendment of the zoning district map, especially in regard to the agricultural zoning district.
12. A/R Agricultural/Residential District: This district is designed to allow the utilization of tracts of land for single-family dwellings while preserving the open character of the land. This zoning district is designed for use in areas which by virtue of their location, physical characteristics, and/or relationship to other land use areas, should be developed carefully and at a low density to maintain their overall character within the County.
13. A/R-1 Agricultural/Residential District: This district is designed to allow the utilization of land for single-family mobile home dwellings while preserving the open character of the land. This zoning district is designed for use in areas which by virtue of their location, physical characteristics, and/or relationship to other land use areas, should be developed carefully and at a low density to maintain their overall character within the County.
14. A/R-2 Agricultural/Residential District: This district is designed to allow the continued development of low-density single-family housing, characterized by an established mixture of both

conventional single-family dwellings and mobile homes. The A/R-2 district is not to be utilized for future development.

15. Ag Agricultural District: This district is designed to promote and encourage the conservation and utilization of prime and productive agricultural land, as well as the preservation of the open character of certain lands, which, by virtue of their topography, soil types, natural resources, and/or relationship to other land use areas, should be carefully reviewed and evaluated prior to their possible development or else should continue to be developed at a relatively low density to maintain their overall natural environment and unique character with the County.
- B. INTERPRETATION OF ZONING DISTRICT BOUNDARIES: The following rules shall be used to interpret the exact location of the zoning district boundaries shown on the Zoning Map:
 1. Where a zoning district boundary follows a street or railroad the center line of the street or railroad right-of-way is the boundary of the zoning district.
 2. Where a zoning district boundary approximately follows a lot or property line, that line is the boundary of the zoning district.
 3. Where a zoning district boundary follows a stream or shore of a body of water, that stream or shoreline is the boundary of the zoning district.
 4. Where a zoning district boundary does not clearly follow any of the features mentioned above, its exact location on the ground shall be determined by measurement according to map scale.
 5. In any case, the exact location of a zoning district boundary is not clear, the Administrative Official shall appeal to the Board for an interpretation and administrative decision.
- C. AREAS UNASSIGNED TO A ZONING DISTRICT: In case any area within the unincorporated area of Hernando County, Florida, is not included within a designated zoning district, the Commission shall initiate the zoning amendment procedure within thirty (30) days after notification of such fact in order to assign such area to a zoning district. Zoning permits shall not be issued for such area until it is assigned to a zoning district.

SECTION 2. RESIDENTIAL DISTRICTS.

A. PERMITTED USES:

1. All Residential Districts - Except RM
 - a. Single-family dwellings
2. R-1A Residential Districts
 - a. Mobile homes, provided that such mobile homes meet all of the regulations, requirements, and provisions of this ordinance

2. Minimum lot width at building line
 - a. R-1A District: The minimum lot width at building line shall be 60 feet.
 - b. R-1B District: The minimum lot width at building line shall be 75 feet.
 - c. R-1C District: The minimum lot width at building line shall be 85 feet.
 - d. R-M District: The minimum lot width at building line shall be 75 feet.
 - e. R-2 District:
 1. For single-family dwellings, the minimum lot width at building line shall be 75 feet
 2. For two-family dwellings, the minimum lot width at building line shall be 85 feet
 - f. R-3 District:
 1. For single family dwellings, the minimum lot width at building line shall be 75 feet
 2. For two-family dwellings, the minimum lot width at building line shall be 85 feet
 3. For multi-family dwellings (containing 3 or more families), the minimum lot width at building line shall be 100 feet
- *3. Minimum front yard requirements

In all residential districts, the minimum front yard requirement is 25 feet. The Board may, however, grant a variance where existing development on adjoining lots does not meet this front yard requirement. Where lots are created prior to the adoption of the original Land Use Regulations, Ordinance No. 72-3, and front on a street with a waterway to the rear, the front setback shall be twenty (20) feet.
4. Minimum street frontage

All lots in residential districts shall front on a street for a minimum distance of fifty (50) feet, except those lots which front on the turnarounds of permanent dead-end streets shall be permitted to front on such turnabouts for a minimum distance of 30 feet.
- *5. Minimum side yard requirements
 - a. The minimum side yard requirement for districts R-1A, R-1B, R-1C, and R-M shall be ten (10) feet. Where lots are created prior to the adoption of the original Land Use Regulations, Ordinance No. 72-3, and do not meet the requirement for lot width at the building line, the side setback shall be seven (7) feet.

for single-family dwellings within
the zoning district

3. RM Residential Districts
 - a. Mobile homes
 4. R-2 Residential Districts
 - a. Two-family dwellings
 5. R-3 Residential Districts
 - a. Two-family dwellings
 - b. Multi-family dwellings containing up to twelve (12) dwelling units
- B. PERMITTED ACCESSORY STRUCTURES AND USES IN ALL RESIDENTIAL DISTRICTS:
1. Carport, garage or other buildings not used as a dwelling or customarily incidental to the principal use of the premises
 2. Accessory uses customarily incidental to the principal use of the premises
- C. SPECIAL EXCEPTION USES:
1. All Residential Districts
 - a. Lodging houses
 - b. Home occupational
 2. R-2 Residential Districts
 - a. Duplex mobile homes when connected to central water and sewage
 3. R-3 Residential Districts
 - a. Boarding houses, and,
 - b. Residential planned development projects
- D. DIMENSION AND AREA REGULATIONS:
The following dimension and area regulations shall apply in the respective zoning residential districts:
1. Minimum lot area
 - a. R-1A District: The minimum lot area shall be 6,000 square feet.
 - b. R-1B District: The minimum lot area shall be 7,500 square feet.
 - c. R-1C District: The minimum lot area shall be 10,000 square feet.
 - d. R-M District: The minimum lot area shall be 7,500 square feet.
 - e. R-2 District:
 1. For single-family dwellings, the minimum lot area shall be 7,500 square feet
 2. For two-family dwellings, the minimum lot area shall be 12,000 square feet
 3. For multi-family dwellings (containing 3 or more families) the minimum lot area shall be 12,000 square feet, plus 3,000 square feet for each additional dwelling unit over the first two dwelling units.

- b. The minimum side yard requirements for districts R-2 and R-3 shall be twelve (12) feet.
- c. Accessory buildings are permitted only in side and rear yards. Such accessory buildings shall be at least five (5) feet from side and rear lot lines.
- d. Non-commercial piers and boat houses are permitted in the side and rear yard, provided the structure is at least five (5) feet from side property lines. No setback is required from lot lines adjoining waterways.
- e. Screened swimming pool enclosures are permitted in the front, side, or rear yard and must be at least five (5) feet from side and rear property lines and meet the front setback requirement.

*6. Minimum rear yard requirements

In all residential districts the minimum rear yard requirement shall be 20 feet. Where lots are created prior to the adoption of the original Land Use Regulations, Ordinance No. 72-3, and the lots front on a street with a waterway to the rear, the rear yard requirement shall be fifteen (15) feet.

7. Minimum living area

In all residential districts the minimum living area of a dwelling shall be 600 square feet. For the purposes of the subsection, minimum living area shall mean the minimum floor area of a dwelling unit exclusive of carports, breezeways, unenclosed porches, or terraces. Notwithstanding the provisions of this subsection, the minimum living or floor area of a mobile home will be 450 square feet exclusive of all attachments.

8. Maximum building area

In all residential districts, except for R-3, the maximum building area of a dwelling shall be 35% of the lot area. In R-3 districts, the maximum building area of a dwelling shall be 45% of the lot area.

9. Maximum building height

In all residential districts, except for R-3, the maximum building height of a building is 35 feet, and/or 2½ stories. In R-3 districts, the maximum building height is 45 feet and/or 3 stories. No building shall exceed three (3) stories, or forty-five (45) feet in R-3 districts unless one foot

shall be added to the required front and side yards for each foot of building height over forty-five (45) feet in addition to the general yard requirements for the zoning district.

10. Under skirting

All mobile homes in the R-M district shall be completely underskirted

SECTION 3. COMMERCIAL DISTRICTS.

The following regulations shall apply to Commercial Districts as indicated:

A. PERMITTED USES:

1. Permitted uses in C-1 Commercial District shall be as follows:

- a. Comparison goods stores
- b. Convenience goods stores
- c. Personal service establishments
- d. Domestic and business service establishments
- e. Publishing and printing service establishments
- f. Domestic and business repair establishments
- g. Domestic rental establishments
- h. Business, professional and non-profit organization offices
- i. Public offices
- j. Business training schools
- k. Light research, development and testing
- l. Restaurants
- m. Indoor commercial amusement establishments
- n. Indoor motion picture theaters
- o. Motel
- p. Hotel
- q. Automobile dealer establishments, excluding the principal selling of used cars
- r. Automobile parking establishments
- s. Public transportation terminals for buses and taxis only
- t. Gasoline service stations
- u. Light farm equipment and supply establishments
- v. Light building material establishments
- w. Light construction service establishments
- x. Light landscaping service
- y. Mortuaries, funeral homes and crematories
- z. Antique stores
- aa. Alcoholic beverage dispensation
- bb. Retail food stores

2. Permitted uses in C-2 Highway Commercial District shall be as follows:

- a. Any use permitted in C-1 General Commercial District

- b. Drive-in restaurants
 - c. Automotive dealer establishments, including the principal selling of used cars
 - d. Tire and automotive accessory establishments
 - e. Automotive speciality establishments
 - f. Automobile and truck rental establishments
 - g. Automobile service establishments
 - h. Automobile and truck repair establishments
 - i. Marine establishments
 - j. Veterinarian and animal hospital service establishment
 - k. Laundry and dry cleaning plants
 - l. Light wholesale and storage establishments
 - m. Alcoholic beverage dispensation
 - n. Commercial billboard advertising signs in accordance with all Federal and State requirements
3. Permitted uses in C-3 Neighborhood Commercial Districts shall be as follows:
- a. Convenience goods stores provided that no more than two checkout lanes are provided
 - b. Personal service establishments
 - c. Business, professional and non-profit organization offices
 - d. Public offices
 - e. Alcoholic beverage dispensation
 - f. Mobile home parks (Rental Only)
 - g. Rental apartments
- B. PERMITTED ACCESSORY USES AND STRUCTURES IN ALL COMMERCIAL DISTRICTS: Permitted accessory uses and structures in all commercial districts are: Signs identifying the name and type of activity conducted on the same premises; and garage or other building not used as a dwelling and accessory to the principal use.
- C. SPECIAL EXCEPTION USES:
- 1. Special exception uses in C-1 General Commercial Districts shall be as follows:
 - a. Drive-in restaurants
 - b. Automotive dealer establishments including the principal selling of used cars
 - c. Tire and automotive accessory establishments
 - d. Automobile and truck rental establishments
 - e. Automobile specialty establishments
 - f. Automobile service establishments
 - g. Automobile and truck repair establishments
 - h. Marine establishments
 - i. Veterinarian and animal hospital service establishments
 - j. Secondhand stores
 - k. Light wholesale and storage establishments
 - l. Laundry and dry cleaning plants
 - m. Outdoor commercial amusement establishments
 - n. Dwelling unit occupying the same building in which is conducted the principle use of the premises on which it is situated

- o. Residential planned development project
- p. General highway commercial planned development project
- 2. Special exception uses in C-2 Highway Commercial Districts shall be as follows:
 - a. Outdoor commercial amusement establishments
 - b. Heavy wholesale and storage establishments
 - c. Heavy outdoor advertising service establishments
 - d. Heavy heating fuel and ice establishments
 - e. Heavy farm equipment and supply establishments
 - f. Heavy building material establishments
 - g. Heavy construction service establishments
 - h. Light and/or heavy manufacturing establishments
 - i. Heavy landscaping service establishments
 - j. Light and/or heavy motor freight transportation establishments
 - k. Dwelling unit occupying the same building in which is conducted the principle use of the premises on which it is situated
 - l. Residential planned development project
 - m. General highway commercial planned development project
 - n. Industrial planned development project
- 3. Special Exception Uses in C-3 Neighborhood Commercial District shall be as follows:
 - a. Gasoline service stations
 - b. Restaurants
 - c. Dwelling unit occupying the same building in which is conducted the principle use of the premises on which it is situated
 - d. Neighborhood commercial planned development project
- D. DIMENSION AND AREA REGULATIONS: The following dimension and area regulations shall apply in the respective commercial districts:
 - 1. Minimum front yard requirement
The minimum front yard requirement for districts C-1 and C-2 is 75 feet. The minimum front yard requirement for district C-3 is 50 feet.
 - 2. Minimum side yard requirement
The minimum side yard requirement in all commercial districts is 20 feet
 - 3. Minimum rear yard requirement
The minimum rear yard requirement in all commercial districts is 35 feet. The Board may, upon request by an applicant, reduce the required rear yard where such rear yards would be adjacent to railroad sidings if such reduction would not be detrimental to surrounding areas

4. Reduction of minimum yard requirements in C-1 Commercial Districts

The Board may, upon appeal by the applicant, reduce the minimum yard requirement within a C-1 Commercial District provided the following determinations are made:

- a. The required yards would prevent the continuous development of a compact and coordinated row of commercial buildings fronting on an already established commercial block or shopping area.
- b. Off-street parking space required under the provisions of this ordinance has been provided off the premises in accordance with the provisions of this ordinance or within the principal building being proposed.
- c. The required yards would severely limit the overall utilization of the property and would detract from the overall shopping desirability of the adjoining buildings and premises.

5. Commercial lots adjacent to residential district

All commercial uses in all Commercial Districts which are located on lots adjacent to a Residential District shall maintain a minimum setback requirement for all structures of 35 feet in the side or rear yard adjacent to the Residential District. The outer most portion of the required 35 feet setback bordering the parcel and adjacent to the Residential District shall consist of a five (5) foot landscaped separation strip. The commercial use located on such lot shall be permanently screened from the adjoining and contiguous residential properties by a wall, fence, evergreen hedge, and/or other approved enclosures. Such screening shall be located within the required separation strip and shall have a minimum height of five (5) feet and a maximum height of eight (8) feet.

6. Maximum building height

In C-1 and C-2 Commercial Districts, the maximum building height is 45 feet, and/or 3 stories. In C-3 commercial districts, the maximum building height is 35 feet, and/or 2 stories. The maximum building height permitted, except within the C-3 Commercial District, may be increased provided one additional foot is added to each of the required yards for each additional foot of building height constructed over the maximum building height permitted. In such cases the minimum side yard requirement shall be 35 feet plus 1 additional foot for each additional foot of building height permitted.

7. Required land area
No C-3 Commercial District shall consist of less than sixty thousand (60,000) square feet of land area.
8. Mobile home parks (rental)
In addition to the requirements above, mobile home parks shall conform to Rules, State of Florida, Department of Health and Rehabilitative Services, Division of Health, Chapter 10D-26, Trailer Parks, and its amendments except that:
 - a. A minimum of ten (10) mobile home spaces shall be provided.
 - b. Each space for a mobile home twelve (12) feet wide or over shall contain a minimum of 2,400 square feet or five (5) times the mobile home square footage, whichever is larger.
 - c. A minimum of fifteen (15) feet shall be maintained between mobile homes or any enclosed appurtenances, and between mobile homes and park buildings, or structures. All mobile homes or attachments and/or accessory buildings shall be five (5) feet or more feet from each lot line, public walkways, streets, private roadways, right-of-ways, and seven and one half (7½) feet from overhead electrical utility easements.
 - d. Private roads shall be in accordance with State regulations, with twenty-four (24) foot pavement. Pavement Base and Wearing Surface shall be as specified for "Standard A Developments." Off-street parking shall conform to the requirements for single and multiple family dwellings.
 - e. The minimum living or floor area shall be 450 square feet excluding any and all attachments.
9. Rental apartments
Rental apartment units shall consist of building with twelve (12) or more dwelling units contained under one roof. Each apartment unit shall conform to the following in addition to the requirements above:
 - a. Each dwelling unit shall consist of as a minimum, a kitchen, bathroom, combination living room/bedroom, and adequate storage facilities.
 - b. Each dwelling unit shall have a minimum of 450 square feet of living area, exclusive of all areas designed for multi-family or general public usage.
 - c. An apartment unit may contain commercial service facilities in combination with living facilities as permitted in a C-3 zoning district. Approval by the Planning and Zoning Commission will be required for such combinations.

SECTION 4. INDUSTRIAL DISTRICTS.

The following regulations shall apply in Industrial Districts as indicated:

A. PERMITTED USES:

1. Permitted uses in all industrial districts shall be as follows:
 - a. Light manufacturing
 - b. Light wholesale and storage establishments
 - c. Light outdoor advertising service establishments
 - d. Light research, development and testing laboratories
 - e. Light motor freight transportation establishments

B. PERMITTED ACCESSORY STRUCTURES AND USES:

1. In all Industrial Districts the following are permitted accessory structures and uses:
 - a. Signs identifying the name and type of activity conducted on the same premises
 - b. Garage or other buildings not used as a dwelling and accessory to the principal use

C. SPECIAL EXCEPTION USES:

1. In all industrial districts the following are special exception uses:
 - a. Heavy manufacturing
 - b. Heavy wholesale and storage establishments
 - c. Heavy outdoor advertising service establishments
 - d. Heavy research, development and testing laboratories
 - e. Heavy motor freight transportation establishments
 - f. Heavy heating fuel and ice establishments
 - g. Heavy building material establishments
 - h. Heavy construction service establishments
 - i. Heavy landscaping service establishments
 - j. Laundry and dry cleaning plants
 - k. Aircraft establishments
 - l. Industrial planned-development project
 - m. General highway commercial planned-development project
 - n. Dwelling unit for caretaker or watchman employed on the premises
 - o. Dwelling unit occupying the same building in which is conducted the principal use of the premises on which it is situated

D. DIMENSIONS AND AREA REGULATIONS:

1. The following dimension and area regulations shall apply in industrial districts:
 - a. Minimum front yard requirement: The minimum front yard requirement for industrial districts is 50 feet.
 - b. Minimum side yard requirement: The

AIR QUALITY REVIEW

FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA

OCTOBER, 1982

SHOLTES & KOOGLER
ENVIRONMENTAL CONSULTANTS, INC.
1213 NW 6TH STREET
GAINESVILLE, FLORIDA 32601
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1.0 INTRODUCTION

Florida Crushed Stone is a major producer of construction aggregates, silica sand, lime rock base material and chemical lime. The company is located principally in Florida with offices in Leesburg, Florida.

Florida Crushed Stone proposes to construct a 600,000 tons per year Portland Cement plant and a 125 megawatt cogeneration coal-fired power plant on property owned by the company northwest of Brooksville, Florida. Presently located at the site of the cement plant is a lime plant and a lime rock mining operation owned by Florida Crushed Stone.

The cement plant proposed by Florida Crushed Stone will utilize the latest in dry process cement technology and has been addressed in an application for PSD approval filed with the Florida Department of Environmental Regulation, Bureau of Air Quality Management.

The power plant proposed by Florida Crushed Stone will produce the electric power requirements for the existing facilities on site (12 megawatts) and for the proposed cement plant (13 megawatts). A portion of the steam generated in the power plant (greater than five percent) will be used to preheat air that will be used in the cement plant. Excess steam will be used to generate additional electric power (100 megawatts) which will be sold through an electric power company connected with the Florida electric power grid. The sulfur content of the coal used to fire the power plant will be approximately 0.75 percent.

The proposed power plant will consist of a used 125 megawatt turbine generator and a used coal fired boiler. Both of these components were manufactured before August, 1971 and are, therefore, not subject to Federal New Source Performance Standards (NSPS). Air pollutant emissions from the power boiler will be subject to a Best Available Control Technology (BACT) review by the Florida Department of Environmental Regulation (FDER), however.

The operation of the cement plant and power plant will not threaten ambient air quality standards or Class I or Class II PSD increments. Neither will the operation of the plant result in emissions that will significantly impact particulate matter or sulfur dioxide non-attainment areas or result in adverse impacts to the soil, vegetation or visibility in the area.

2.0 FACILITY DESCRIPTION

2.1 The Site

The site for the proposed cement plant and power plant is located in Hernando County, approximately 3.5 miles northwest of Brooksville, Florida. The plants will be located on 6,400 acres of property owned by Florida Crushed Stone. The actual plant site will occupy approximately 30 acres in the southeast section of the Florida Crushed Stone property. The site will be approximately one kilometer from the east and south Florida Crushed Stone property lines.

The 6,400 contiguous acres owned by Florida Crushed Stone is presently zoned for mining. Mining has been actively pursued on the property since 1938 to provide aggregate and road base material for the construction industry of central Florida. Associated with the limestone mining operation is a lime production plant. Both the mining activities and the production of lime are expected to continue well into the 21st century.

In addition to the active mine and the lime plant, the Florida Crushed Stone property also includes approximately 1,050 acres devoted to a closed water recirculation system and settling ponds. The entire property is fenced and road access is restricted by gates.

The site, except for the existing mining operation and lime plant, is industrially undeveloped. For Prevention of Significant Air Quality Deterioration (PSD) permitting purposes, the site is classified as Class II. The area is also classified as Attainment for all criteria pollutants.

The site is approximately 20 kilometers south-southeast of the Chassahowitzka National Wildlife Refuge; a Class I PSD area, 57 kilometers north of the particulate matter non-attainment area in Hillsborough County and 55 kilometers east-northeast of the sulfur dioxide non-attainment area in Pinellas County.

The site location is shown in Figures 2-1 and 2-2.

2.2 Facility Description

The cement plant-power plant complex proposed by Florida Crushed Stone is a totally new grassroots complex which will manufacture finished Portland Cement. The plant will be designed to produce 1,800 tons of cement clinker per day or 600,000 tons of finished cement per year. The proposed power plant will be a cogeneration coal-fired, 125 megawatt plant. The term "cogeneration" indicates that at least five percent of the steam produced by the power plant will be used for purposes other than generating electric power; for preheating air in this case. The power plant will utilize a boiler and turbine generator manufactured prior to August, 1971 and therefore will not be subject to federal New Source Performance Standards.

2.2.1 Cement Plant

The cement plant proposed for the site will utilize the latest in dry process cement technology for the production of finished Portland Cement. An application for state and federal PSD review has been filed with the Florida Department of Environmental Regulation for this plant.

2.2.2 Power Plant

The power plant proposed by Florida Crushed Stone will be rated at 125 megawatts. The plant will be defined as a cogeneration plant; that is, at least five percent of the energy produced by the plant will be in the form of steam that will be used to preheat air for use in the cement plant. The remaining power generated by the plant will be converted to electrical power which will provide the electric power requirements of the proposed cement plant, the existing aggregate production facility and the existing lime plant operated by Florida Crushed Stone. Excess electric power will be distributed through the Florida Power Corporation to the Florida electric power grid.

The power plant will consist of a turbine generator and a coal-fired power boiler; both manufactured prior to August, 1971. Since the components were constructed prior to August, 1971, the power plant will not be subject to Federal New Source Performance Standards. The emissions from the plant will be required to meet Best Available Control Technology (BACT) as determined by the Florida Department of Environmental Regulation, however.

The heat input to the power plant from fuel will be 9,872 BTU per kilowatt, or 1,234 million BTU per hour at the rated capacity of 125 megawatts. This heat will be provided by coal with a sulfur content of approximately 0.75 percent.

The power plant will be designed to operate with an annual operating factor of 90 percent; or 7,884 hours per year.

The burners installed in the power boiler will be low-NOx burners to control nitrogen oxides emissions to a level of 0.7 pounds of nitrogen oxides (as NO₂) per million BTU of heat input. The sulfur dioxide emissions from the power boiler will be controlled through the sulfur content of the coal to a sulfur dioxide emission rate not to exceed 1.2 pounds per million BTU heat input.

Most of the flue gases exhausted from the power boiler will be used to provide heat to dry materials in the cement plant. The flue gases not used in the cement plant will be combined with the gases exhausted from the cement plant and discharged into the kiln-power plant baghouse. This baghouse will be designed to reduce the particulate matter emissions from the power plant to a rate equivalent to 0.1 pounds per million heat input to the power plant.

The fly ash and bottom ash from the power plant will be collected and transferred through an enclosed conveying system to an ash silo at the raw mill of the cement plant. The ash from this silo will be used in the cement plant for the production of cement.

Coal will be used to provide heat in both the cement plant kiln and the proposed power plant. Coal will be required to provide approximately 248 million BTU per hour to the kiln and 1,234 million BTU per hour to the power plant.

The coal requirement in the cement plant will be approximately 75,000 tons of coal per year. The coal requirements for the power plant will be approximately 394,200 tons of coal per year making a total coal requirement for the proposed complex of 469,000 tons per year.

The coal, containing approximately ten percent moisture, will be delivered in 60-70 car unit trains. The capacity of each car will be 100 tons. This will require approximately 78 unit trains per year.

The coal will be bottom-dumped from the train cars as they pass over a raised railroad tressel. The unloading time for a unit train is expected to be about one hour. The maximum unloading time will not exceed four hours.

From the train cars, the coal will fall approximately 30 feet to a receiving area beneath the tressel. A water spray system, utilizing

contained rainfall run-off, will be used as necessary to control fugitive dust emissions during the unloading operation from the receiving area, the coal will be pushed by dozer to a paved storage area and compacted.

The coal will be reclaimed from the storage area by a front end loader and discharged onto a conveyor belt. The coal for the power plant will then be transferred to a raw coal storage day-bin at the power plant.

The handling and transport of coal will be designed to contain and control particulate matter emissions. With the receiving and storage system, water sprays will be used as necessary to control fugitive particulate matter emissions. A coal handling system similar to the one proposed by Florida Crushed Stone has been operated by Lakeland Utilities in Lakeland, Florida for a limited time without the use of water sprays and with no noticeable fugitive particulate matter emission problem.

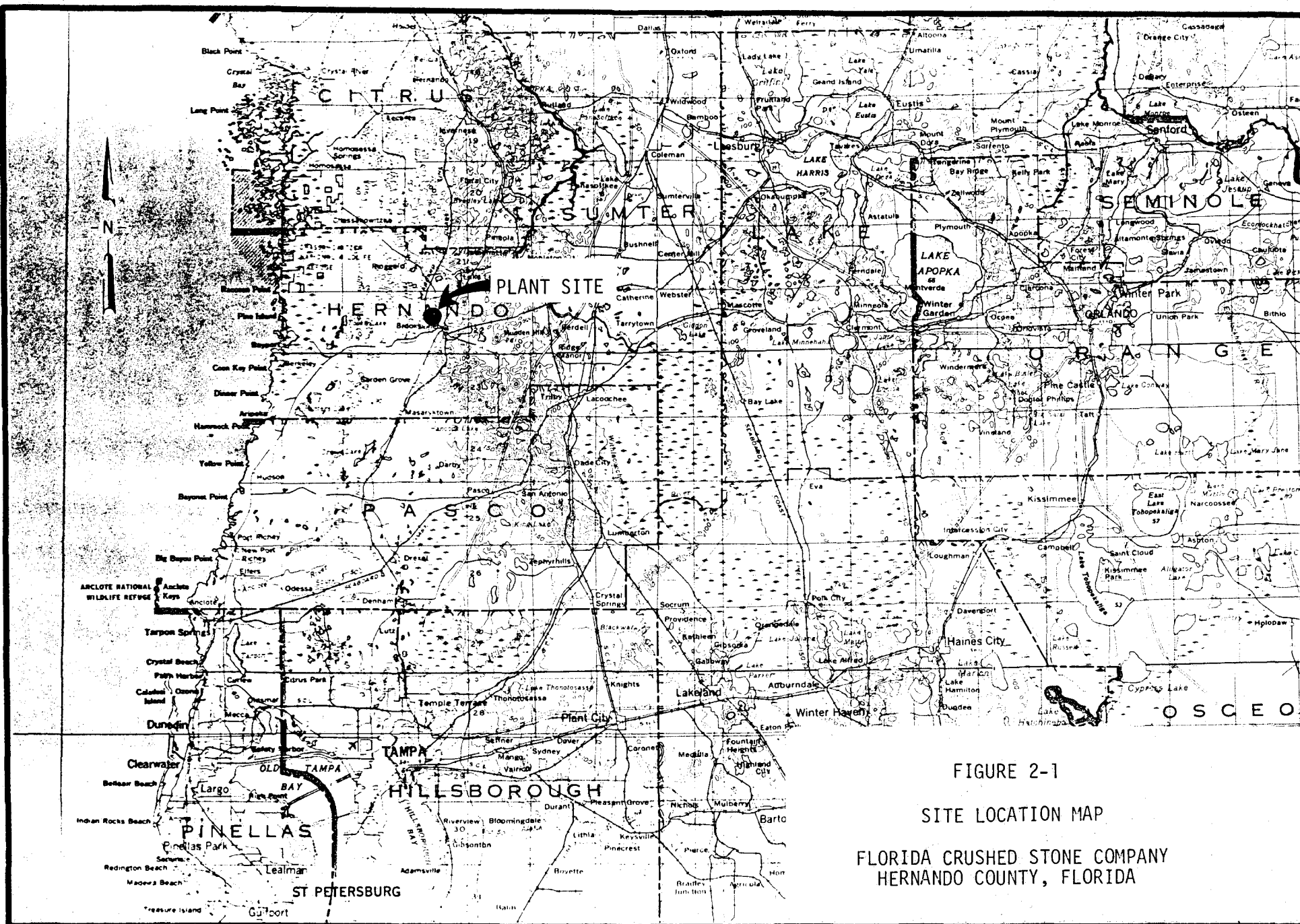
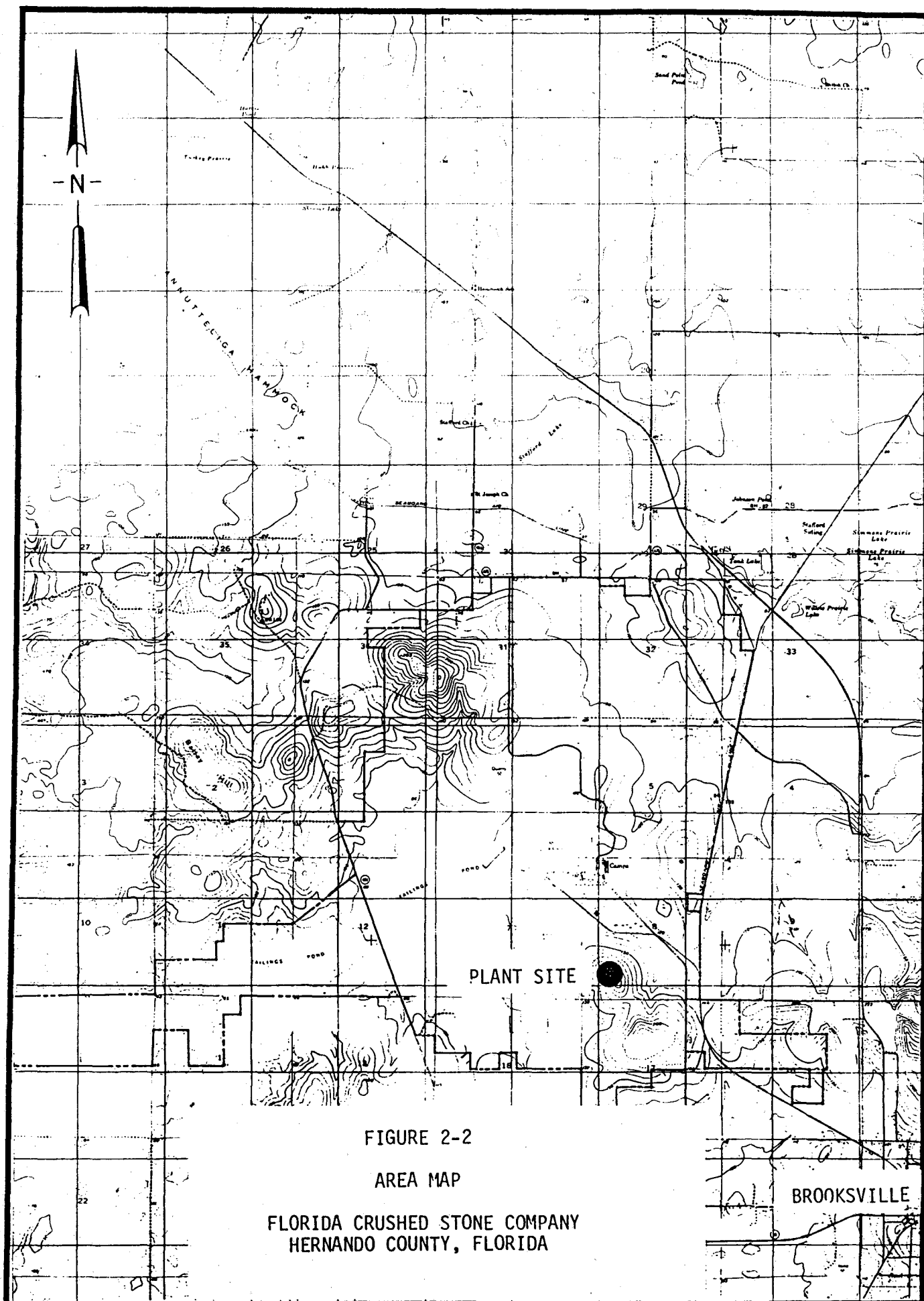


FIGURE 2-1

SITE LOCATION MAP

FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA



3.0 EMISSION ESTIMATES

The air pollutants that will be emitted in the proposed facility are particulate matter from 32 cement plant sources and sulfur dioxide, nitrogen oxides and carbon monoxide from the kiln-power plant bag collector stack. Secondary sources; auto, truck and rail traffic, will result in the emission of particulate matter sulfur dioxide, nitrogen oxides, carbon monoxide and hydrocarbons. Emissions from all of the sources have been calculated based on federal New Source Performance Standards, proposed Best Available Control Technology emission rates or fugitive and transportation emission factors developed by EPA. Based on these emission rate calculations, it was determined that the proposed facility is a major emitting facility for particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide and hydrocarbons.

Annual pollutant emission rates from the complex proposed by Florida Crushed Stone are summarized in Table 3-1. The calculation of emissions from the power plant are detailed in Appendix 3A.

3.1 Cement Kiln/Clinker Cooler/Power Plant

The utilization of waste heat in the power plant and cement plant as proposed by Florida Crushed Stone will result in a rather complex gas flow arrangement. The basic gas flow arrangement, with both the power plant and cement plant operating, is shown in Figure 3-1. Gas flow with only the power plant operating is shown in Figure 3-2 and the gas flow with only the cement plant operating is shown in Figure 3-3.

With both the cement plant and power plant operating, the air used in the cement plant clinker cooler will be entirely consumed as combustion air in the cement kiln and the power plant. The gases exhausted from the cement kiln will be used in the kiln preheater system to heat the raw materials fed to the kiln. From the preheater the gases will be used in a rotary dryer to reduce the moisture content of the clay and limestone fines that have been reclaimed from storage. The heat requirement for drying these materials will be supplemented with flue gases exhausted from the power plant. The gas stream exhausted from the rotary dryer will be vented through the kiln-power plant baghouse.

The flue gas from the power plant will be split to provide heat to the raw mill and the rotary dryer. One fraction of the flue gas will be recombined with the gas stream exhausted from the raw mill and exhausted through the kiln-power plant baghouse.

The total air flow through the baghouse and the particulate matter loading to the baghouse will be greatest when both the power plant and the cement plant are operating. Conditions resulting with only the power plant operating or only the cement plant operating are detailed in Figures 3-2 and 3-3, respectively.

3.1.1 Particulate Matter

The particulate matter emissions from the kiln-power plant bag collector must meet Federal New Source Performance Standards for the cement kiln and clinker cooler and Best Available Control Technology requirements for controlling particulate matter emissions from the power boiler. The New Source Performance Standards for the cement plant limit particulate matter emissions from the kiln to 0.3 pounds per ton of dry kiln feed. Clinker cooler emissions are limited to 0.1 pounds per ton of dry kiln feed. The Best Available Control Technology proposed for power plant emissions will limit particulate matter from the power plant to 0.1 pounds per million BTU heat input from fuel. Based on a kiln feed rate of 124 tons per hour and a power plant output of 125 megawatts (1234 million BTU per hour heat input) the total allowable particulate matter emission rate from the kiln-power plant baghouse, with both the cement plant and power plant operating, will be 172.9 pounds per hour. With the power plant only operating, the allowable particulate matter emission rate will be 123.4 pounds per hour and with the cement plant only operating the particulate matter emission rate will be 49.5 pounds per hour.

A single baghouse will be used to control the particulate matter emissions from both the cement plant and the power plant. The gas flow rate through the baghouse will be approximately 580,400 actual cubic feet per minute at a temperature of 240°F. These gases will be discharged to the atmosphere through a 300 feet high stack.

3.1.2 Sulfur Dioxide

Sulfur dioxide will be generated during the combustion of coal in the cement kiln and in the power boiler. The sulfur dioxide emission rate proposed as Best Available Control Technology for the power plant is 1.2 pounds of sulfur dioxide per million BTU of heat input from fuel. To meet this requirement, coal with a 0.75 percent sulfur content must be used or sulfur dioxide absorption must occur as the power plant flue gases pass through the cement plant and the kiln-power plant baghouse. Since it is presently not known how much sulfur dioxide absorption might be expected, it has been assumed that there will be no sulfur dioxide absorption and that coal with 0.75 percent sulfur content will be used in both the cement plant and the power plant. After operating experience has been gained and sulfur dioxide absorption evaluated, it may be found that Florida Crushed Stone can use coal with a higher sulfur content and still meet the emission standard proposed as Best Available Control Technology for sulfur dioxide from the power boiler.

At a coal firing rate of 10.3 tons per hour, the potential sulfur dioxide generated in the cement kiln will be 305 pounds per hour. It has been estimated by Polysius, the cement plant designer, that the actual sulfur dioxide emission rate from the cement plant will be 80.0 pounds per hour.

At design rate the heat input fuel to the power plant will be 1234 million BTU per hour. At an emission rate of 1.2 pounds of sulfur dioxide per million BTU input, the sulfur dioxide emission rate from the power plant will be 1481 pounds per hour.

The total sulfur dioxide emission rate from the cement plant-power plant complex will be 1561 pounds per hour, with both plants operating at design rate.

3.1.3 Nitrogen Oxides

There is considerable uncertainty in determining the nitrogen oxides emission rate from cement kilns. Since there are no state or federal nitrogen oxides emission standards for these sources, emission data are limited. For the purposes of the air quality review, Polysius has estimated that the nitrogen oxides emission rate from the cement kiln will be 416 pounds per hour.

The nitrogen oxides emission rate from the power plant will be limited to 0.7 pounds per million BTU heat input. This emission rate is proposed as Best Available Control Technology for nitrogen oxides and will be accomplished by the use of low-NO_x burners. At the designed heat input of 1234 million BTU heat input per hour, the nitrogen oxides emission rate from the power plant will be 864 pounds per hour.

The total nitrogen oxides emission rate from the cement plant-power plant complex, at design rate, will be 1280 pounds per hour, expressed as nitrogen dioxide.

3.1.4 Carbon Monoxide

The carbon monoxide emission rate from the cement plant was assumed to be zero. From the power plant, the carbon monoxide emission rate was calculated using an emission factor of 1.0 pounds per ton of coal burned (EPA, AP-42).

At a coal firing rate of 50.0 tons per hour the carbon monoxide emission rate will be 50.0 pounds per hour.

3.1.5 Hydrocarbons

Hydrocarbon emissions from the cement plant were assumed to be zero.

Emissions from the power plant were calculated using an emission factor of 0.3 pounds of hydrocarbons per ton of coal fired. At a coal firing rate of 50.0 tons per hour, the hydrocarbon emission rate will be 15.0 pounds per hour.

3.2 Emissions From Secondary Sources

Particulate matter emissions from vehicular traffic will be controlled by minimizing vehicular traffic and paving and sweeping areas that will experience a relatively high level of traffic.

A traffic control program will be established to segregate passenger traffic and truck traffic and, further, to minimize traffic throughout the plant site. The volume of auto, truck and rail traffic has been estimated based upon expected shipments and receivables.

3.2.1 Automobile Traffic

Florida Crushed Stone will employ approximately 90 persons at the cement plant and power plant. It has been estimated that 1.25 persons will travel per automobile and that the full work force will be at the plant

350 days per year. It was further assumed that the vehicle will travel two miles on Florida Crushed Stone property. Based on these factors, it has been estimated that there will be 50,000 automobile miles traveled on Florida Crushed Stone property each year.

3.2.2 Truck Traffic

Trucks will deliver gypsum to the plant site and will transport 100 percent of the finished cement from the site. It has been estimated that gypsum delivery will require 1,200 round trip truck trips per year and that the shipment of finished cement from the site will require 19,600 trucks per year. The latter is based on an 85 percent production rate which is considered realistic for a long-term operating rate.

Based on these factors, it has been estimated that there will be 41,600 truck miles traveled on Florida Crushed Stone property each year.

3.2.3 Rail Traffic

Coal will be received on site by unit trains. For planning purposes, it was estimated that 78 trains per year, or 4727 100-ton rail cars, will be involved in delivering coal each year.

3.2.4 Secondary Emission Estimates

Based upon the volume of traffic estimated and emission factors published in EPA document AP-42, annual secondary emissions of particulate matter, sulfur dioxide, nitrogen oxides, carbon dioxide and hydrocarbons were

estimated. The calculations involved in arriving at these estimates are included in Appendix 3A. The calculated emission rates are summarized in Table 3-1.

3.3 Good Engineering Practice Stack Height

The proposed height of the kiln-power plant baghouse stack is 300 feet. The raw materials homogenizing silos and the Gepol preheater for the cement kiln which are within 410 feet of the stack, are between 225 and 260 feet high and have a dimension normal to the stack of 100 feet.

"Good engineering practice" stack height is defined to be a height not exceeding the height of a nearby structure plus 1.5 times the height or width of the structure, whichever is less. Applying this equation to the proposed cement plant-power plant stack results in a stack height of 375 feet $[225 + 1.5 (100)]$. This height exceeds the proposed height for the kiln-power plant stack, hence the height of the kiln-power plant stack is not considered to be excessive.

TABLE 3-1

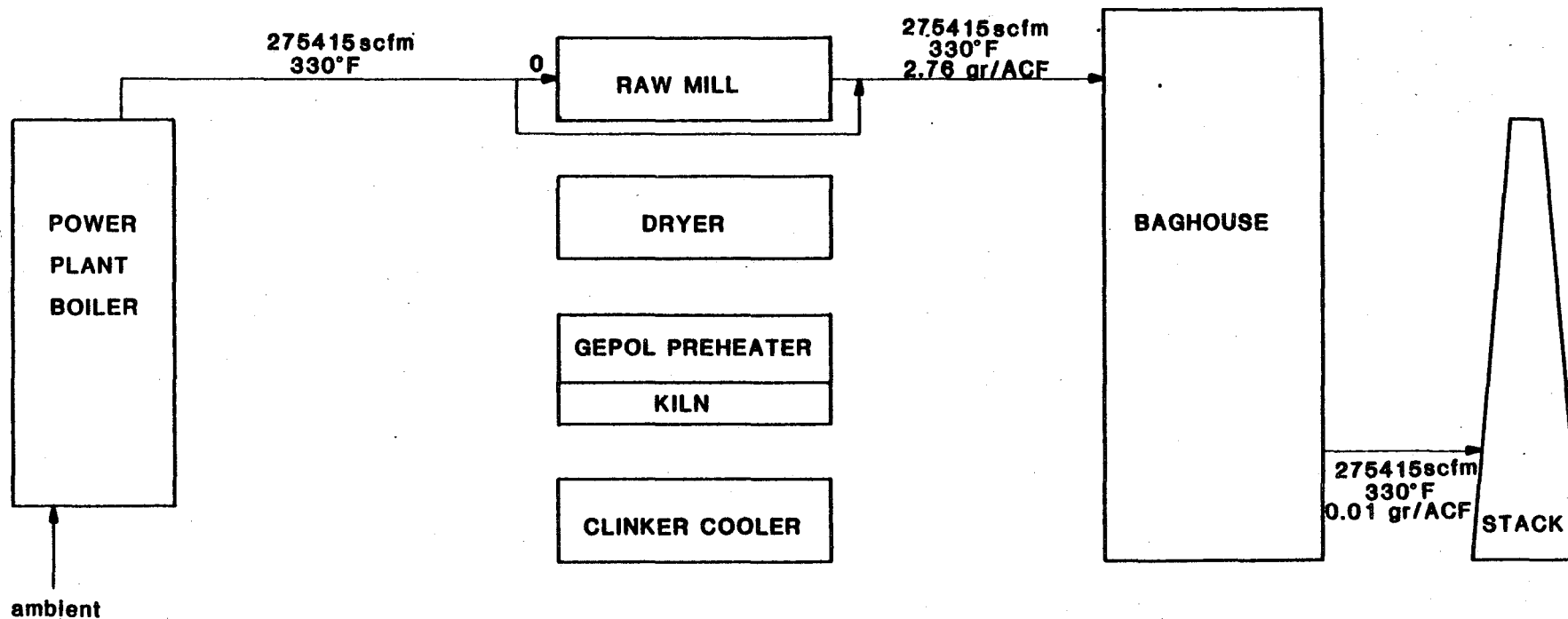
ANNUAL AIR POLLUTANT EMISSION RATES

FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA

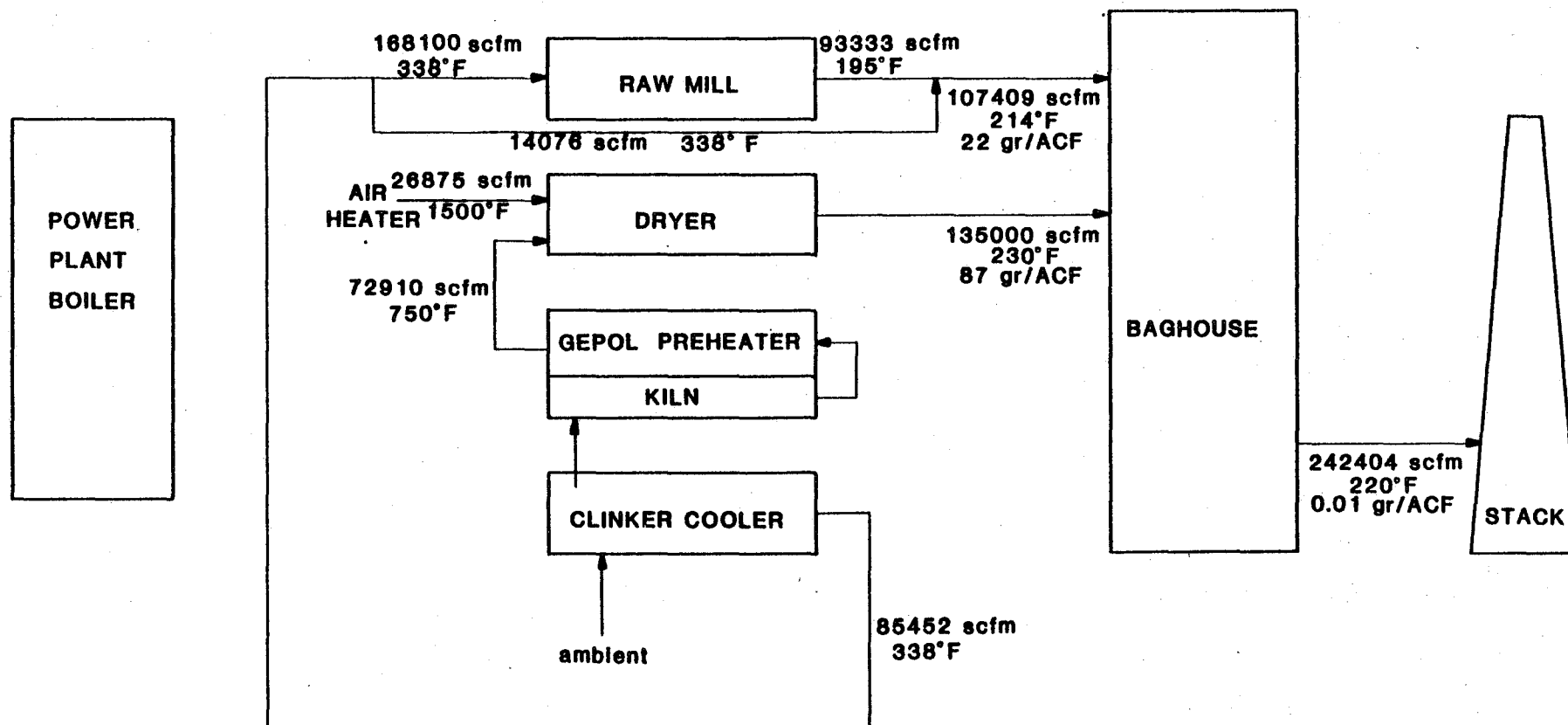
Pollutant Emission Rate (tpy)

Source	Particulate Matter	Sulfur Dioxide	Nitrogen Oxides	Carbon Monoxide	Hydrocarbons
Kiln	141	305	1585	0	0
Cooler	47	0	0	0	0
Power Plant	486	5837	3405	197	59
Other					
Cement Plant	159	0	0	0	0
Secondary (1)	1	1	5	7	2
Total	834	6143	4995	204	61
De Minimus Emission Rate	25	40	40	100	40

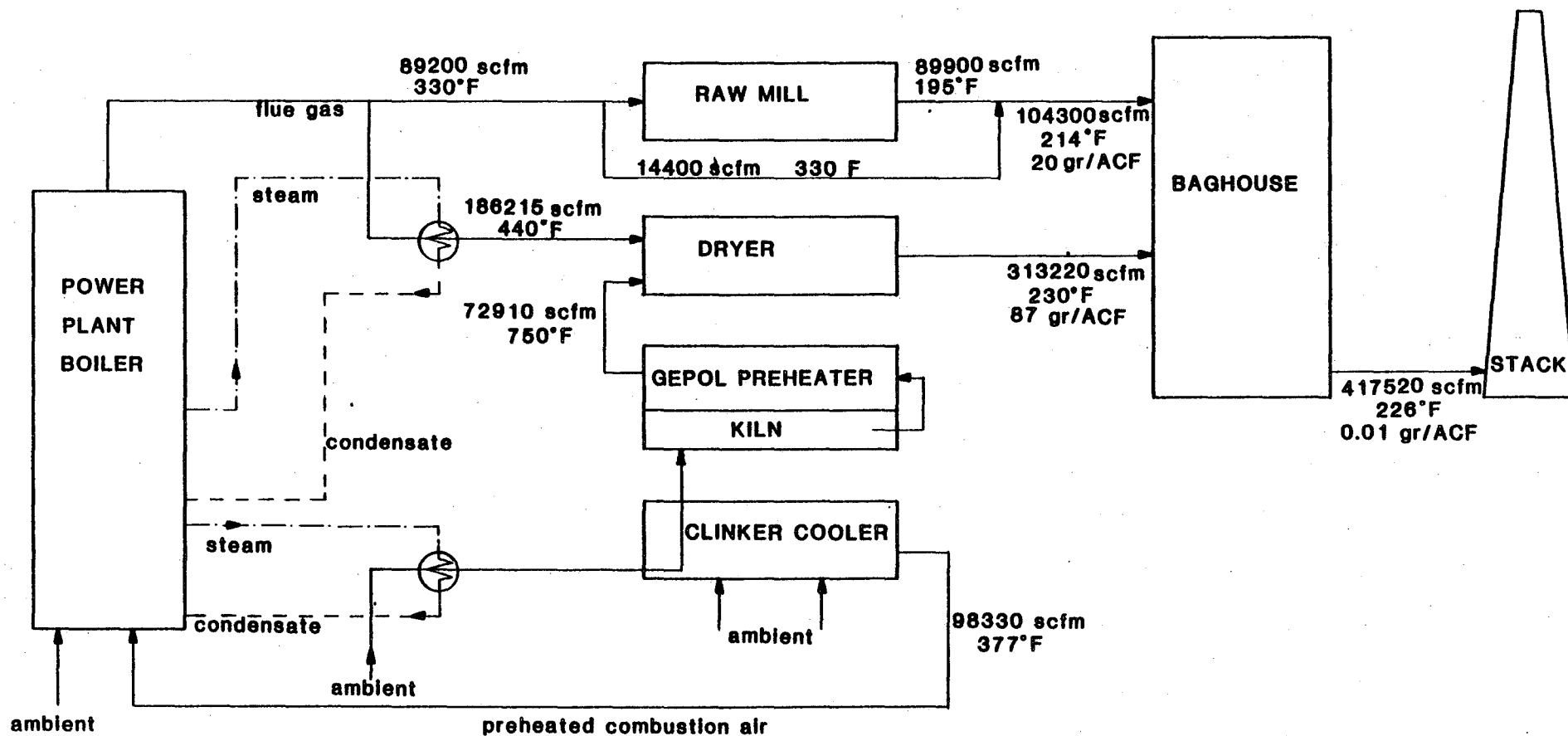
(1) See Appendix 3A



POWER PLANT OPERATING/CEMENT PLANT NOT OPERATING



POWER PLANT NOT OPERATING/CEMENT PLANT OPERATING



POWER PLANT OPERATING/CEMENT PLANT OPERATING

TABLE II
FABRIC FILTERS

Point Number (from Flow Diagram) E20		Manufacturer & Model No. (if available)		
Name of Abatement Device Power Plant KILN MILL BAGHOUSE		Type of Particulate Controlled		
GAS STREAM CHARACTERISTICS				
Flow Rate (acfm)		Gas Stream Temperature (°F)	Particulate Grain Loading (grain/scf)	
Design Maximum	Average Expected		Inlet	Outlet
578800	550,000	230	25	0.01
Pressure Drop (in. H ₂ O)		Water Vapor Content of Effluent Stream (lb water/lb dry air)	Fan Requirements (hp) (ft ³ /min)	
6			2250	500000
PARTICULATE DISTRIBUTION (By Weight)				
Micron Range	Inlet		Outlet	
0.0-0.5	%		%	
0.5-1.0	%		%	
1.0-5.0	%		%	
5-10	%		%	
10-20	%		%	
over 20	%		%	
FILTER CHARACTERISTICS				
Filtering Velocity (acfm/ft ² of Cloth)	Bag Diameter (in.)	Bag Length (ft)	Number of Bags	Number of Compartments in Baghouse
1.6	12	37	3192	28
Bag rows will be:		Walkways will be provided between banks of bags:		
Staggered ☐ <u>Straight</u> ☒		Yes ☒ No ☐		
Filtering Material: Teflon coated fiber glass				
Describe Bag Cleaning Method and Cycle: Reverse Air				
ADDITIONAL INFORMATION				

On separate sheets attach the following:

- Details regarding principle of operation
- An assembly drawing (Front and Top View) of the abatement device dimensioned and to scale clearly showing the design, size and shape.

If the device has bypasses, safety valves, etc., include in drawing and specify when such bypasses are to be used and under what conditions.

APPENDIX 3A
EMISSION RATE CALCULATIONS.

FLORIDA CRUSHED STONE

POWER PLANT EMISSION CALCULATIONS

125 Megawatt Power Plant - Elect Power Output

Heat Input - 9872 BTU / KWH

$$\begin{aligned}\text{Plant Efficiency @ } 3413 \text{ BTU / KWH} \\ &= 3413 \times 100 / 9872 \\ &= 34.6\%\end{aligned}$$

$$\begin{aligned}\text{Total Heat Input} \\ &= 9872 \text{ BTU / KWH} \times 125000 \text{ KW} \\ &= 1234.0 \times 10^6 \text{ BTU / hr}\end{aligned}$$

$$\begin{aligned}\text{Coal Consumption @ } 12,330 \text{ BTU / lb} \\ &= 1234 \times 10^6 / 12,330 \times 1/2000 \text{ ton / lb} \\ &= 50.0 \text{ tons / hr}\end{aligned}$$

Emissions

$$\begin{aligned}\text{Particulate Matter @ } 0.1 \text{ lb / } 10^6 \text{ BTU} \\ &= 1234.0 \times 0.1 \\ &= 123.4 \text{ lb / hr} \\ &\text{or} \\ &= 486.4 \text{ tons / yr @ } 90\% \text{ operating Factor}\end{aligned}$$

$$\begin{aligned}\text{SO}_2 @ 1.2 \text{ lb / } 10^6 \text{ BTU} \\ &= 1234.0 \times 1.2 \\ &= 1408.8 \text{ lb / hr} \\ &\text{or} \\ &= 5837.3 \text{ tons / yr @ } 90\% \text{ O.F.}\end{aligned}$$

$$\begin{aligned}\text{NO}_x @ 0.7 \text{ lb / } 10^6 \text{ BTU} \\ &= 1234.0 \times 0.7 \\ &= 863.8 \text{ lb / hr} \\ &\text{or} \\ &= 3405.1 \text{ tons / yr @ } 90\% \text{ O.F.}\end{aligned}$$

CO @ 1.0 lb / ton of Coal (AP-42)

$$= 1.0 \times 50.0$$

$$= 50.0 \text{ lb/hr}$$

or

$$= 197.1 \text{ tons/yr @ 90\% O.F.}$$

Hydrocarbons @ 0.3 lb / ton of Coal (AP-42)

$$= 0.3 \times 50.0$$

$$= 15.0 \text{ lb/hr}$$

or

$$= 59.1 \text{ tons/yr @ 90\% O.F.}$$

AUTO TRAFFIC

$$90 \text{ persons} \times (1/1.25) \text{ cars/employee} \times 350 \text{ trips/yr} \times 2 \text{ miles/trip} \\ = 50,000 \text{ miles/yr}$$

Emissions

Part. Matter

$$\text{Roads} = 0.012 \text{ lb/mile} \times 50,000 \text{ miles} \times 1/2000 = 0.3 \text{ tpy}$$

$$\text{Auto} = 0.6 \text{ g/mi} \times 1/453.6 \times 50,000 \times 1/2000 = <0.1$$

CO	=	76.5 g/mi x (	)	=	4.2
HC	=	10.8 g/mi x (	)	=	0.6
NO _x	=	4.9 g/mi x (	)	=	0.3
SO ₂	=	0.2 g/mi x (	)	=	<0.1

TRUCK TRAFFIC

$$20,800 \text{ trucks/yr} \times 2 \text{ mi/trip} = 41,600 \text{ miles/yr}$$

Emissions

Part. Matter

$$\text{Roads} = 0.024 \text{ lb/mi} \times 41,600 \times 1/2000 = 0.5 \text{ tpy}$$

$$\text{Auto} = 1.3 \text{ g/mi} \times 1/453.6 \times 41,600 \times 1/2000 = 0.1$$

CO	=	28.7 g/mi x (	)	=	1.3
HC	=	4.6 g/mi x (	)	=	0.2
NO _x	=	20.9 g/mi x (	)	=	1.0
SO ₂	=	2.8 g/mi x (	)	=	0.1

RAIL TRAFFIC

Assume one locomotive will operate on-site 6 hours per day for 30 days/year at a fuel consumption rate of 100 gal/hour.

$$6 \text{ hr/day} \times 30 \text{ day/yr} \times 100 \text{ gal/hr} = 18 \times 10^3 \text{ gal \#2 fuel/yr}$$

Emissions

Part. Matter @ 25 lb/1000 gal	=	0.2 tpy
CO @ 130 lb/1000 gal	=	1.2
HC @ 94 lb/1000 gal	=	0.9
NO _x @ 370 lb/1000 gal	=	3.3
SO ₂ @ 57 lb/1000 gal	=	0.5

TOTAL SECONDARY EMISSIONS

PART MATTER	-	1.2 tpy
CO	-	6.7 tpy
HC	-	1.7 tpy
NO _x	-	4.6 tpy
SO ₂	-	0.7 tpy

4.0 AIR QUALITY DATA

The application prepared by Florida Crushed Stone addresses particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide and hydrocarbons. Air quality modeling, reported in Section 6.0 of this application, has shown the impact of particulate matter and sulfur dioxide to be greater than the de minimus impact levels for these pollutants but has shown the impacts of the other three pollutants to be less than the de minimus impact levels.

The maximum 24-hour particulate matter impact from the proposed facility is 21 micrograms per cubic meter compared with a de minimus impact level of 10 micrograms per cubic meter, 24-hour average. The maximum sulfur dioxide impact resulting from the proposed complex is 19 micrograms per cubic meter, 24-hour average, compared with a de minimus 24-hour impact level of 13 micrograms per cubic meter. The de minimus impact level for nitrogen oxides is 14 micrograms per cubic meter, annual average. The maximum nitrogen oxides impact resulting from the proposed facility is 1.0 microgram per cubic meter, annual average.

The de minimus impact level for carbon monoxide is 575 micrograms per cubic meter, eight hour average. Modeling was not conducted specifically to evaluate the impact of carbon monoxide but the impact was extrapolated from sulfur dioxide modeling.

The carbon monoxide emission rate from the Florida Crushed Stone facility will be 50 pounds per hour. The sulfur dioxide emission rate from the same facility (and stack) is 1561 pounds per hour. Since the maximum 3-hour sulfur dioxide impact will be 73 micrograms per cubic meter, it is apparent that the maximum 8-hour carbon monoxide impact will be much less than 575 micrograms per cubic meter.

For hydrocarbons, no de minimus impact level exists. The requirements for preconstruction monitoring for this pollutant are related to an emission rate. If the emission rate is less than 100 tons per year, no monitoring is required. The hydrocarbon emission rate from the Florida Crushed Stone power plant is 59 tons per year.

Based on these modeling results air quality monitoring was required for sulfur dioxide and particulate matter. The monitoring requirements for these pollutants were discussed with FDER staff and a monitoring program agreed upon. One continuous sulfur dioxide monitor was located east of the plant site, between the proposed plant site and Brooksville, and two total suspended particulate monitors were deployed. One of the particulate matter monitors was located at the sulfur dioxide monitoring site and the second was located west of the plant site. The locations of the monitoring sites are shown in Figure 4-1.

The east monitoring site was given the SAROAD identification number 101740005 and the west monitoring site was given the SAROAD site identification number 101740004.

Monitoring was conducted during the period May 25, 1982 through September 26, 1982. The four-month sampling period was approved by FDER at the time the monitoring program was initiated.

During the monitoring period all required Quality Assurance Procedures were incorporated to assure the quality of the data. These procedures were outlined in quality assurance documents and the monitoring network operating procedure manual filed with FDER. At the east monitoring site, two high-volume samplers were located for quality assurance. The sulfur dioxide monitor located at this site was equipped with an automatic calibrator which injected a known calibration gas every 24 hours.

The particulate matter and sulfur dioxide monitoring data collected at the monitoring network have been forwarded to the Florida Department of Environmental Regulation, Bureau of Air Quality Management. The four-month average particulate matter concentration at the east monitoring site was 34.7 micrograms per cubic meter and at the west site was 31.7 micrograms per cubic meter. This level compares with an annual ambient air quality standard for particulate matter of 60 micrograms per cubic meter. The expected second-high 24-hour particulate matter concentration

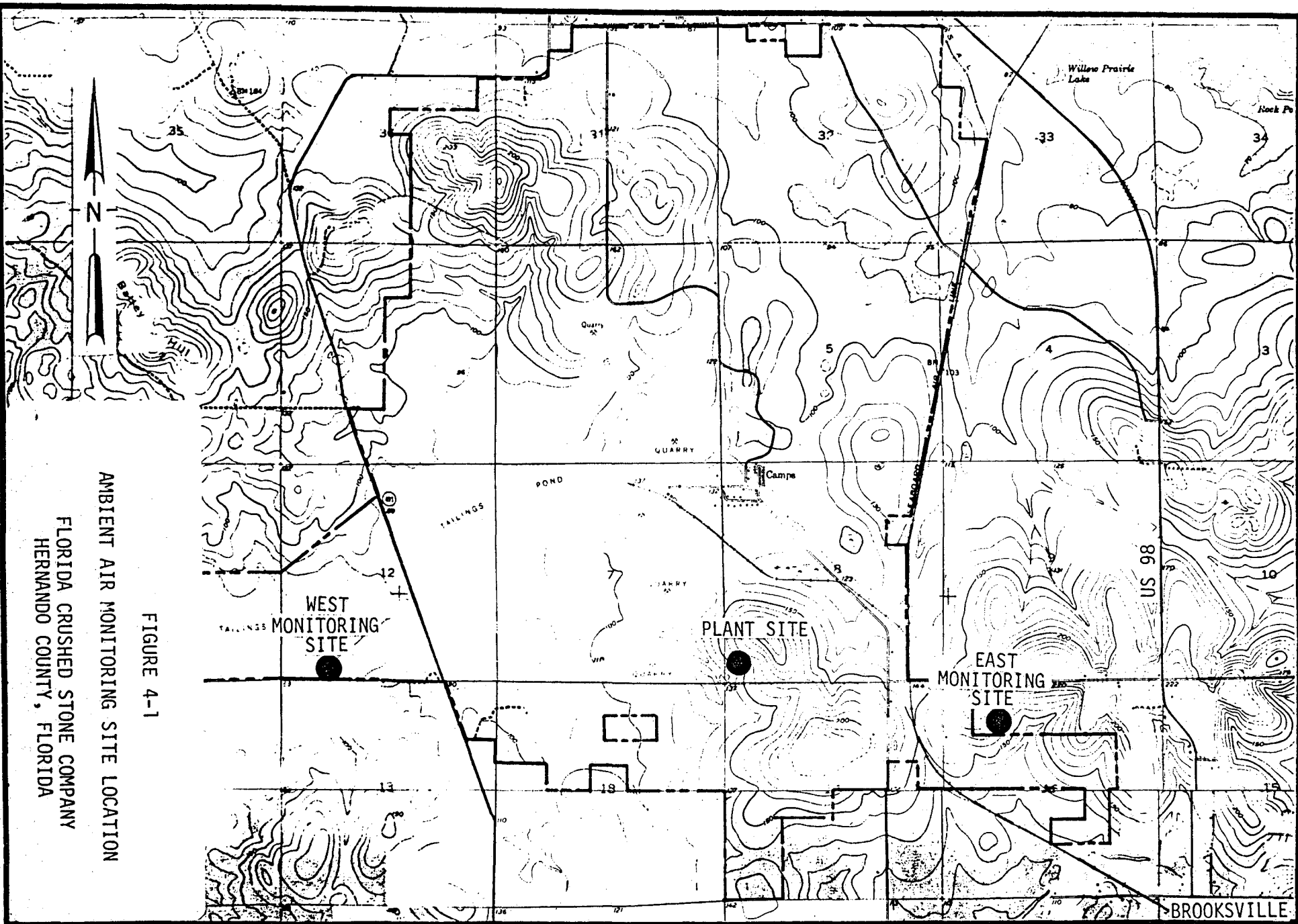
at the east monitoring site, based on a full year of monitoring data, is 112 micrograms per cubic meter. The second-high 24-hour concentration expected at the west monitoring site is 100 micrograms per cubic meter. These concentrations compare with a 24-hour air quality standard for particulate matter of 150 micrograms per cubic meter, not to be exceeded more than once per year.

The sulfur dioxide levels monitored in the area were extremely low. The four-month average sulfur dioxide level at the east monitoring site was 0.6 micrograms per cubic meter compared with an annual average sulfur dioxide standard of 60 micrograms per cubic meter. The maximum observed 24-hour sulfur dioxide concentration at the site was 9.4 micrograms per cubic meter compared with the 24-hour sulfur dioxide standard of 260 micrograms per cubic meter and the maximum observed 3-hour sulfur dioxide concentration was 42 micrograms per cubic meter compared with a 3-hour standard of 1,300 micrograms per cubic meter.

During the four-month monitoring period for sulfur dioxide, valid data were collected 2,563 hours. During 2,498 of these hours the sulfur dioxide concentration measured was zero. The zero sulfur dioxide concentration level occurred 97.5 percent of the time and is a good indication that the background sulfur dioxide level in the area is zero.

For air quality modeling purposes, the background sulfur dioxide concentration was assumed to be zero. The background particulate matter level for the annual period was assumed to be 34 micrograms per cubic

meter, the four-month average total suspended particulate matter level at the east monitoring site. The 24-hour background level was assumed to be 112 micrograms per cubic meter which is equivalent to the expected second-high total suspended particulate matter level at the east monitoring site.



5.0 SITE CLIMATOLOGY AND METEOROLOGY

The Florida Crushed Stone site is located in west-central Florida, approximately 70 kilometers north of Tampa and 20 kilometers east of the Gulf Coast. The site is sub-tropical, characterised by relatively dry winters and rainy summers, a high annual percentage of sunshine and high humidity. Rainfall averages about 57 inches per year with more than 50 percent of the total occurring as thundershowers during the months of June through September. Temperatures in the area seldom exceed 95°F or fall below 32°F. Night ground fogs appear frequently during the winter months. These fogs normally occur between 0300 hours and 0800 hours. Fog occurs 15 to 25 percent of the time during these hours in the winter months and between one and five percent of the time during these hours in the summer months.

The wind patterns in Florida are determined by the interaction of localized phenomena with large scale pressure patterns. One of the major localized factors in the land-sea interface; a factor which probably exerts some influence at the Florida Crushed Stone site since this site is only 20 kilometers from the Gulf Coast.

Annually, the prevailing site winds are easterly; however, there are some seasonal variation. During the winter months, the predominate winds are from the north, during the spring from the east, during the summer from the southeast, and during the fall from the northeast.

An annual wind rose for Tampa, Florida is presented in 5-1. This wind direction distribution is considered representative of the Florida Crushed Stone site.

The annual average wind speed at the site, as represented by Tampa meteorological data, is 8.7 miles per hour. Throughout the year the monthly average wind speeds are quite constant; varying at the most one mile per hour from the annual average wind speed. The highest monthly average wind speeds occur during the spring months (9.5 miles per hour) and the lowest monthly wind speeds occur during the late summer months (7.4 miles per hour).

The highest wind speed recorded in the area (Tampa) was 75 miles per hour for a five minute period. This occurred during the passage of a hurricane in 1935. Assuming a gustiness factor of 1.3, the maximum expected wind gust at the site will be approximately 98 miles per hour.

A wind speed distribution for the site is presented in Figure 5-2.

Rainfall at the site can be divided into two regimes; a winter pattern associated with the passage of frontal systems and a summertime rainfall pattern associated primarily with thunderstorms. The thunderstorm activity occurs primarily during the months of May through September. During these months approximately 65 percent of the annual rainfall occurs.

The 25-year one hour rainfall at the site is expected to be 3.8 inches, the 25-year 12 hour rainfall - 8.0 inches, and the 25-year 24 hour

rainfall - 9.0 inches with monthly precipitation averages between 3.8 and 9.7 inches. The remainder of the precipitation is fairly evenly distributed during the remaining months with monthly average rainfalls ranging between 2.0 and 3.5 inches.

The number of days per year with rainfall greater than 0.01 inches is approximately 115. On approximately 90 days a year, the daily rainfall exceeds 0.01 inches and on approximately 35 days per year, the daily rainfall exceeds 0.5 inches. On 16 days per year, the daily rainfall exceeds 1.0 inches. The annual average precipitation for the site is 57.2 inches.

The annual average temperature at the site averages 72°F with monthly average temperatures ranging from 60°F to 81°F. Mean monthly maximum temperatures range from 71 degrees during the winter months to 90 degrees during the summer months. The absolute maximum temperature reported at the site (Brooksville) was 104°F.

The mean monthly minimum temperatures range from 50 degrees during the winter months to 72 degrees during the summer months. The minimum temperature reported at the site is 16°F. On approximately 80 days per year, the temperature can be expected to exceed 90°F and on approximately 6 days per year, the temperature can be expected to be below 32°F.

The annual relative humidity at the site is 78 percent. The monthly average relative humidity ranges between 73 percent during the early

spring to 85 percent during the summer months. Relative humidities are generally highest during the early morning hours, typically between 85 and 90 percent, and generally lowest in the afternoon hours, typically 55 to 60 percent.

Based on the criteria of the ceiling less than 300 feet and a visibility of less than one mile, it was estimated that the humidity was high enough in the Brooksville area to result in the formation of fog on approximately 266 hours during a typical year. The fog is most frequent during the hours 0300 to 0800 and during the months of December through February. During these periods fog can be expected 20 to 25 percent of the time. During the spring and fall, fog occurs during the early morning hours between five and ten percent of the time and during the summer, early morning fog occurs between one and five percent of the time. It is quite unusual for fog to persist after 0900 to 1000 hours.

Atmospheric stability is one of the key factors effecting the dispersion of air pollutants. This factor is a measure of the turbulence of the atmosphere. For purposes of this presentation, stability will be considered in three general categories; unstable, neutral and stable. An unstable atmosphere is one of which dispersion takes place rapidly in both the horizontal and vertical directions. This atmosphere is characterized by a rapid decrease in temperature with height. Neutral stability is normally associated with moderate dispersion. As with the unstable atmosphere, the temperature in a neutral atmosphere also decreases

with height but at a much less rapid rate. The stable atmosphere occurs when there is an increase in temperature with height. During this condition, dispersion occurs at a reduced rate and is greatly affected by mechanically induced wind turbulence near the ground surface.

At the Brooksville site, an unstable atmosphere can be expected to occur 22 percent of the time, a neutral atmosphere 37 percent of the time and a stable atmosphere 40 percent of the time on an annual basis. During the winter season, the occurrence of an unstable atmosphere decreases to 18.3 percent, a neutral atmosphere exists 38 percent of the time and a stable atmosphere exists 44 percent of the time. During the summer months an unstable atmosphere can be expected 37 percent of the time, a neutral atmosphere 20 percent of the time and a stable atmosphere 42 percent of the time.

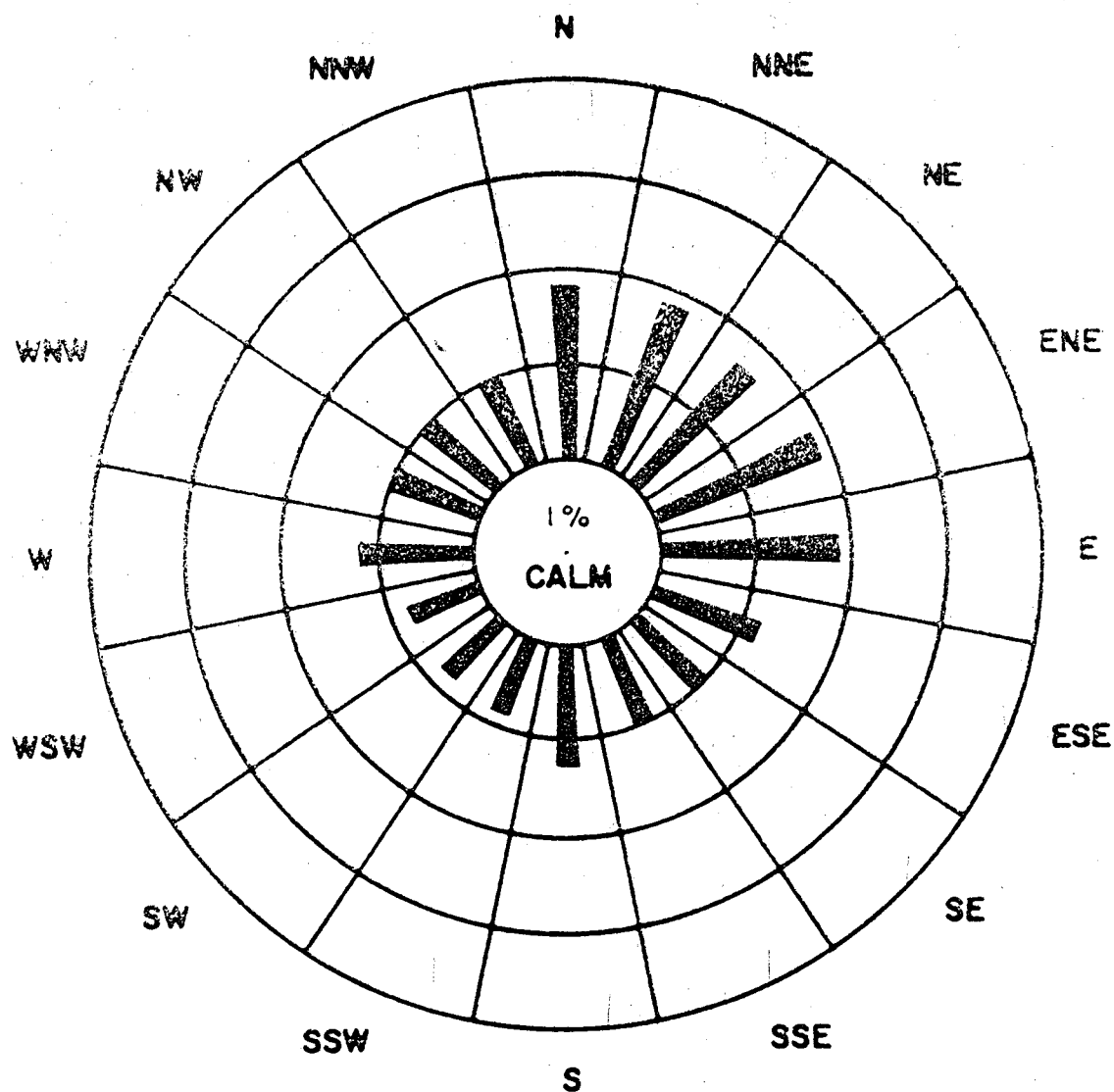
Inversions exist when a stable atmosphere exists at ground level or at an upper elevation. Inversions develop most evenly at night as a result of the difference in cooling rates between the ground and the air.

The significance of an inversion from an air pollution standpoint is the fact that the conditions within the inversion layer are stable and pollutants emitted into this layer can become trapped within the layer. In the Brooksville area, inversions based at 500 feet or less occur approximately 32 percent of the time annually; 36 percent of the time during the winter, 30 percent of the time during the spring, 25 percent of the time during the summer and 36 percent of the time during the

fall. The mean maximum depth for the area is approximately 3300 feet during the winter months and approximately 5000 feet during the summer months.

Based upon hurricane data accumulated by the U.S. Army Corps of Engineers, it has been determined that 20 hurricanes of record have affected the Brooksville area since 1830. Normally, the hurricanes approach from the southwest and begin to dissipate by the time they reach the site due to passage over land. A hurricane can be expected within 50 miles of the site approximately once every seven years. The maximum wind speed associated with a hurricane in the area (Tampa) was 75 miles per hour.

During the period 1916 - 1969, a total of 590 tornados have been reported in the State of Florida. Approximately 66 of these were associated with the passage of tropical storms. During the period of 1953 - 1962 there were nine tornados reported in the one degree square (4100 square miles) in which the site is located.



Note: Concentric circles represent 5 percent frequency intervals.

FIGURE 5-1

ANNUAL WIND ROSE FOR TAMPA, FLORIDA
1960 - 1964

FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA

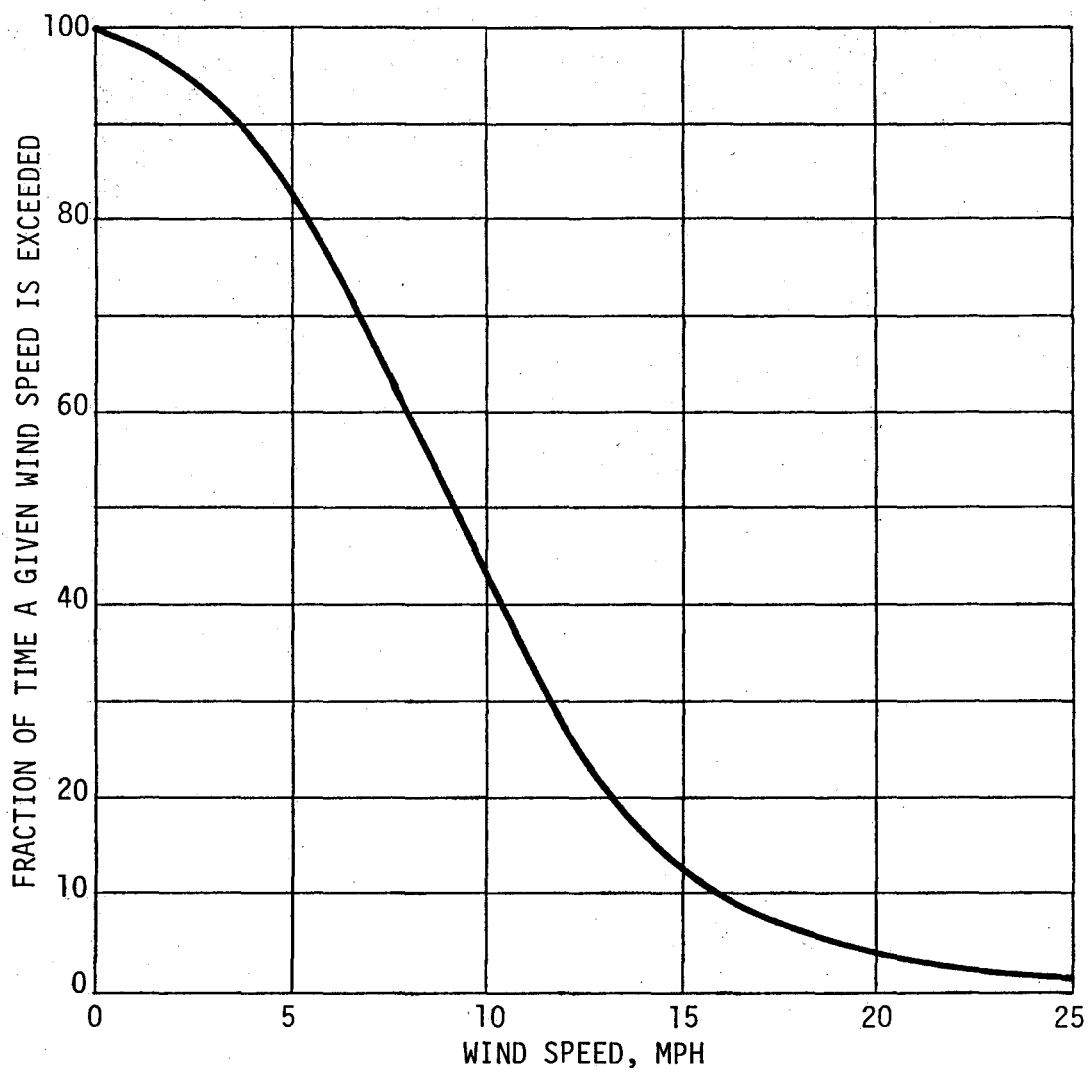


FIGURE 5-2

WIND SPEED DISTRIBUTION
FOR TAMPA, FLORIDA

FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA

6.0 AIR QUALITY IMPACT ANALYSIS

6.1 Introduction

An air quality review was required to evaluate the impact of particulate matter, sulfur dioxide and nitrogen oxides emissions from the proposed Florida Crushed Stone facility. The baseline concentration for the 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 proposed facility have been included in the air quality impact analysis.

The air quality modeling performed to assess long-term and short-term impacts was conducted in accordance with guidelines established by EPA (Guideline for Air Quality Models, March, 1978). For particulate matter the annual and 24-hour impacts were evaluated; for sulfur dioxide the annual, 24-hour and 3-hour impacts were investigated and nitrogen oxides the annual impact was investigated. These periods of investigation correspond to periods for which air quality standards exist for these pollutants.

The annual impact of pollutants was evaluated using the Industrial Source Complex-Long Term (ISC-LT). The short-term impacts, that is the 24-hour and 3-hour impacts, were evaluated using the CRSTER and PTMTPW models. With all models, five years of meteorological data from Tampa representing the period 1970-1974 were used.

Source emission data for all major sources within approximately 75 kilometers of the proposed site were used in the air quality review. In addition to these sources all of the smaller sources within 50 kilometers of the site that would have a significant impact on the site were included in the review.

6.2 Meteorological Data

The EPA guidelines for air quality modeling recommend that five years of meteorological data be used for the air quality review. The potential sources of meteorological data were Orlando, Florida (104 kilometers east of the site), and Tampa, Florida (70 kilometers south of the site). The Tampa site is located in a coastal area whereas the Florida Crushed Stone site is approximately 20 kilometers from the Gulf Coast. Orlando, Florida is located on peninsular Florida and is subject to even less maritime influences than is the Brooksville area. In addition, Orlando is significantly further from the Florida Crushed Stone site than is Tampa. Based on these considerations, Tampa meteorological data were selected for the air quality review.

Hourly surface meteorological data are available from Tampa for the period 1970-1974. These data were combined with Tampa upper air data for the same period of record to obtain mixing heights applicable to the Brooksville area. The data were also summarized into the STAR format with five stability classes for use with the ISC-LT model.

6.3 Emission Data

The permit files of the FDER office in Tampa were reviewed for sources which might have an impact on the air quality at the proposed Florida Crushed Stone site. The sources included in the emission inventory are shown on Figure 6-1 and are listed in Appendix 6A. The emission and stack parameters associated with these sources are included in Appendix 5A.

The sources included in the emission inventory include all major sources (such as power plants) within approximately 75 kilometers of the proposed site and smaller sources which were judged to have a potential impact on air quality at the site. Several small sources within 50 kilometers of the site, such as asphalt plants and commercial and pathological incinerators, were excluded from the emission inventory because it was estimated that these sources would not have a significant impact on the air quality at the Florida Crushed Stone site.

In conducting the air quality review, meteorological conditions were selected which would align the various sources shown in Figure 5-1 with the sources at the Florida Crushed Stone site to investigate source interaction.

6.4 Air Quality Review

The air quality review included both the short-term and long-term impact of air pollutants. The short-term impacts are defined as the 3-hour and 24-hour impacts 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 the meteorological data for the period 1970-1974 from Tampa, Florida. The four inner receptor distances in the CRSTER model were set to predict the point of maximum impact for the pollutants and the outer set of CRSTER receptors was set to evaluate the impact of emissions on the Class I PSD area 20 kilometers west of the site.

Meteorological data for evaluating the 3-hour and 24-hour pollutant levels in the ambient air were selected from the CRSTER model output. A summary of the maximum impacts for each year of meteorology and the meteorology selected for evaluating pollutant impacts in several directions is included at the beginning of the CRSTER output for particulate matter and for sulfur dioxide in an attachment to this application.

Meteorological data resulting in the highest second-high 24-hour and 3-hour impacts in several directions were selected for further investigation. These directions corresponded to the direction of the highest second-high impact regardless of direction and the highest second-high impact in the directions that would align the various sources with the Florida Crushed Stone sources.

The long-term air quality impact is defined as the annual average impact of pollutants emitted from sources within the study area. The long-term impact analyses were conducted with the ISC-LT. The input data to the ISC-LT included emission data from all sources within the study area and meteorological data from Tampa for the period 1970-1974. These data were in the STAR format with five stability classes.

6.4.1 Sulfur Dioxide Impact Analysis

6.4.1.1 Short-Term Sulfur Dioxide Impact

The short-term impact analysis for sulfur dioxide involved the 3-hour impact analysis and a 24-hour impact analysis. These time periods correspond to applicable short-term air quality standards for sulfur dioxide. The CRSTER model was run with sulfur dioxide emission data from the proposed Florida Crushed Stone sources. The receptors were set to determine the maximum air quality impact of the new sources. From these runs 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 24-hour and 3-hour periods and the directions that would allow the investigation of the interaction of pollutants emitted from the various sources defined in Figure 6-1 with Florida Crushed Stone emissions. The meteorological conditions selected for evaluating impacts with various source alignments are summarized at the beginning of the CRSTER output for sulfur dioxide in an attachment to this application.

Also, from this set of CRSTER runs the annual, 24-hour and 3-hour impacts of sulfur dioxide on the Chassahowitzka National Wildlife Refuge were evaluated and the impact of emissions on the Pineallas County Sulfur Dioxide Non-Attainment Area was inferred. The Class I PSD Area is 19.9 kilometers west of the Florida Crushed Stone site. It was determined from the CRSTER model runs that sulfur dioxide emissions from the proposed Florida Crushed Stone facility will not significantly impact the Class I area for the annual or 3-hour periods. For the 24-hour period the CRSTER model indicated one 24-hour set of meteorological conditions that might result in a significant 24-hour sulfur dioxide impact. This period was investigated with the PTMTWP model and the impact were found to be less than significant.

Since the sulfur dioxide impacts in the direction of the sulfur dioxide non-attainment area were not significant at 19.9 kilometer, it was inferred that the impacts would not be significant at the non-attainment area which is 55 kilometers from the site.

The critical meteorological conditions established with the CRSTER model and the emission data from the Florida Crushed Stone sources other than new and existing sources were input to the PTMTWP model to determine the maximum impact of sulfur dioxide for each condition investigated. The receptor spacing used for determining the point of maximum impact was 0.1 kilometers. The results of the short-term sulfur dioxide air quality review are summarized in Table 6-2 and Figures 6-2 and 6-3.

6.4.1.2 Long-Term Sulfur Dioxide Impact

The long-term sulfur dioxide air quality review was conducted with the ISC-LT. This model was run first to establish a baseline sulfur dioxide concentrations; that is the air quality level resulting from the sulfur dioxide emissions from existing sources in the study area. The model was run a second time to determine the impact of emissions from new sources within the study area including the Florida Crushed Stone sources and a third time to determine the impact of the sulfur dioxide emissions from all sources. The ISC-LT was also run to determine the impact of Florida Crushed Stone another new sulfur dioxide source on the Class I PSD area - a confirmation of the CRSTER results.

The annual average sulfur dioxide levels resulting from these various combinations of sources are summarized in Table 6-2 and Figures 6-4 through 6-6.

6.4.2 Particulate Matter Impact Analysis

6.4.2.1 Short-Term Particulate Matter Impact

The short-term impact analysis for particulate matter involved a 24-hour particulate matter analysis. This time period corresponds to the applicable short-term air quality for particulate matter.

The short-term particulate matter air quality review was conducted in a manner identical to the short-term sulfur dioxide impact analysis. The meteorological data which were selected from the CRSTER run for further investigation with PTMTPW are summarized immediately proceeding the CRSTER output for particulate matter in an attachment to this application. The maximum 24-hour particulate matter impacts resulting from Florida Crushed Stone emissions and the interaction of Florida Crushed Stone emissions with the other source emissions are summarized in Figure 6-7 and Table 6-2.

The CRSTER model run was also used to determine that the annual and 24-hour particulate matter impacts at the boundaries of the Class I PSD area and the Hillsborough County Particulate Matter Non-Attainment Area (57 kilometers south-southeast of the Florida Crushed Stone site) were not significant.

6.4.2.2 Long-Term Particulate Matter Impact

The long-term particulate matter air quality review was conducted in a manner identical to the long-term sulfur dioxide impact review. The annual average particulate matter levels resulting from the emissions of all sources within the study area, are summarized in Table 6-2 and in Figures 6-8 through 6-10.

6.4.3 Nitrogen Oxides Impact Analysis

Since an air quality standard exists for nitrogen oxides for only the annual period a longterm impact analysis was conducted. This analysis was conducted with the ISC-LT in a manner identical to the long-term sulfur dioxide and particulate matter impact analyses. The results of this analysis are summarized in Figure 6-11 and in Table 6-2.

The results of this analysis indicated that the maximum annual nitrogen oxides concentration expected from the Florida Crushed Stone sources will be one microgram per cubic meter. This compares with a de minimus impact level of 14 micrograms per cubic meter, annual average, and an air quality standard of 100 micrograms per cubic meter, annual average.

6.4.4 Carbon Monoxide Impact Analysis

No air quality modeling was conducted to evaluate the impact of carbon monoxide emissions. The maximum impact of this pollutant can be inferred, however, from the sulfur dioxide modeling since both pollutants are emitted from the same stack.

The emission rate of carbon monoxide is 50 pounds per hour and that of sulfur dioxide, 1,561 pounds per hour. The emission rate of sulfur dioxide is 31.2 times that of carbon monoxide and the ambient impacts will follow this same relationship. Since the maximum 3-hour sulfur dioxide impact is 73 micrograms per cubic meter the maximum 3-hour carbon monoxide impact will be 2.3 micrograms per cubic meter. Based on this concentration, it

is apparent that the one-hour carbon monoxide standard (40,000 micrograms per cubic meter) and the 8-hour standard (10,000 micrograms per cubic meter) will not be approached.

6.4.5 Hydrocarbon Impact Analysis

No modeling was conducted for hydrocarbons since no air quality standard exists for this pollutant. Using the method of analysis described in Section 6.4.4 for carbon monoxide, however, maximum 3-hour and 24-hour hydrocarbon concentrations of 0.7 and 0.2 micrograms per cubic meter were extrapolated; levels not expected to cause environmental problems.

6.5 Impact on Class I Areas and Non-Attainment Areas

The nearest Class I area to the Florida Crushed Stone site is the Chassahowitzka National Wildlife Refuge 19.9 kilometers west of the site. Other Class I areas and all particulate matter and sulfur dioxide non-attainment areas in the west central Florida area are over 50 kilometers from the site. By reviewing the output of the CRSTER model for sulfur dioxide, and particulate matter and the output of the ISC-LT for nitrogen oxides, it is apparent that emissions from the proposed Florida Crushed Stone sources do not significantly impact Class I PSD areas or the particulate matter or sulfur dioxide non-attainment areas.

6.6 Impact of Site Preparation and Plant Construction

The site preparation and the construction of the proposed power plant will result in minimal impacts on ambient air quality.

The site of the proposed power plant is in an area which was previously mined for limestone. Because of the previous mining activities the existing ground elevation of the proposed site is depressed and, because of this, has a relatively high moisture content. The fact that the moisture content of the soil at the plant site is relatively high will tend to reduce fugitive particulate matter emissions associated with traffic and heavy equipment operations associated with preparing the site. The fact that the proposed site had been previously mined also means there will be virtually no land clearing associated with the proposed project and hence air pollutant emissions associated with disposable organic trash will be not be significant.

The construction activities and the traffic associated with the construction work force will result in the generation of some fugitive particulate matter. These emissions will be short-term and the effects of the emissions will be reversible. Florida Crushed Stone proposes to employ adequate measures to control fugitive particulate matter emissions associated with the site preparation and plant construction. The measures will include good construction practices and the use of dust suppressants as necessary.

6.7 Impacts of Associated Facilities

The coal receiving and storage area associated with the proposed power plant is a potential source of fugitive particulate matter emissions. Florida Crushed Stone is taking adequate measures to assure that the generation of fugitive particulate matter emissions during the receiving and storage of the coal are minimized. The potential for fugitive emissions and the measures being taken to control the emissions are addressed in Section 2.2.2 of this application.

The flyash and bottom ash generated during the combustion of coal in the power plant will be collected and pneumatically conveyed to a flyash silo associated with the cement plant that Florida Crushed Stone is constructing adjacent to the power plant. The flyash will be consumed in the cement plant and will therefore not create a disposal problem. The collection, transfer and storage system for the flyash will be enclosed and all gases vented from the system will be vented through fabric filters to control particulate matter emissions.

6.8 Effects of Off Stream Cooling

The water used for cooling the proposed power plant will be cooled in existing ponds on Florida Crushed Stone property. The surface area of these ponds is approximately 1,050 acres. The cooling water flow through the power plant and through the existing pond system will be approximately 100,000 gallons per minute. The temperature rise in the cooling water, as it passes through the power plant, will be 15-18°F.

It has been estimated that the thermal evaporation resulting from the cooling of this water in the pond systems will be approximately 2.25 million gallons per day. This moisture will be added to the atmosphere and will increase the potential of fog within a limited area around the pond system.

The criteria of a ceiling less than 300 feet and a visibility of less than one mile were used as an indicator of an occurrence of fog. Using these criteria, fog existed approximately 270 hours on an annual basis. Approximately 74 percent of these hours occurred during the time period 0300 to 0800 hours.

In Florida the potential for artificially induced fog, normally exists about 200-300 hours per year or approximately the same number of hours that fog existed. In general, these hours will be preceded or inter-dispersed with periods of fog. In very few cases do the hours of potential fog follow periods of fog.

It can be expected, therefore, that the number of hours of fog may be increased by 60 percent. Because of the size of the cooling pond and the heat load on the pond, however, the artificially created fog will be expected to occur only in the vicinity of the plant site. In general, the artificially created fog will develop late at night and in very few cases will it cause naturally occurring periods of fog to extend beyond 0900 to 1000 hours.

6.9 Air Quality Review Summary

The air quality review for the proposed Florida Crushed Stone facility was conducted with modeling guidelines established by the U.S. Environmental Protection Agency. The long-term impact analyses were conducted with the ISC-LT and short-term analyses were conducted with the CRSTER and PTMTPW.

The air quality review indicates that the cement plant and power plant proposed by Florida Crushed Stone can be constructed and operated with no threat to ambient air quality standards, to PSD increments, or to non-attainment areas for particulate matter or sulfur dioxide.

TABLE 6-1
AIR QUALITY STANDARDS AND INCREMENTS
FLORIDA CRUSHED STONE COMPANY
HERNANDO 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)
<u>Sulfur Dioxide</u>				
Annual	60	20	2	1
24-Hour	260	91	5	5
3-Hour	1300	512	25	25
<u>Particulate Matter</u>				
Annual	60	19	5	1
24-Hour	150	37	10	5
<u>Nitrogen Oxides</u>				
Annual	100	N/A	N/A	N/A
<u>Carbon Monoxide</u>				
8-Hour	40,000	N/A	N/A	N/A
1-Hour	10,000	N/A	N/A	N/A
<u>Hydrocarbons</u>				
All Times	N/A	N/A	N/A	N/A

TABLE 6-2

SUMMARY OF AIR QUALITY REVIEW

FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA

Pollutant	Impact (ug/m ³)				
	CLASS II AREAS			CLASS I AREAS	
	Max. Impact New Sources	Max. Impact Existing Sources	Max. Impact All Sources	Max. Impact ⁽⁵⁾ FCS Sources	All ⁽⁶⁾ New Sources
Particulate Matter					
Annual	4	58 ⁽¹⁾	59 ⁽¹⁾	0.2	--
24-Hour	21	136 ⁽²⁾	149 ⁽²⁾	1.8	--
Sulfur Dioxide ⁽³⁾					
Annual	3	29	31	0.8	0.87
24-Hour	19	17	23	3.0	--
3-Hour	73	55	86	21.0	--
Nitrogen Oxides					
Annual	1 ⁽⁴⁾	--	--	0.0	--

(1) Includes a background of 34 ug/m³.(2) Includes a background of 112 ug/m³.

(3) Includes a background of zero for all time periods.

(4) Impact of Florida Crushed Stone Sources only.

(5) From CRSTER model.

(6) From ISC-LT model.

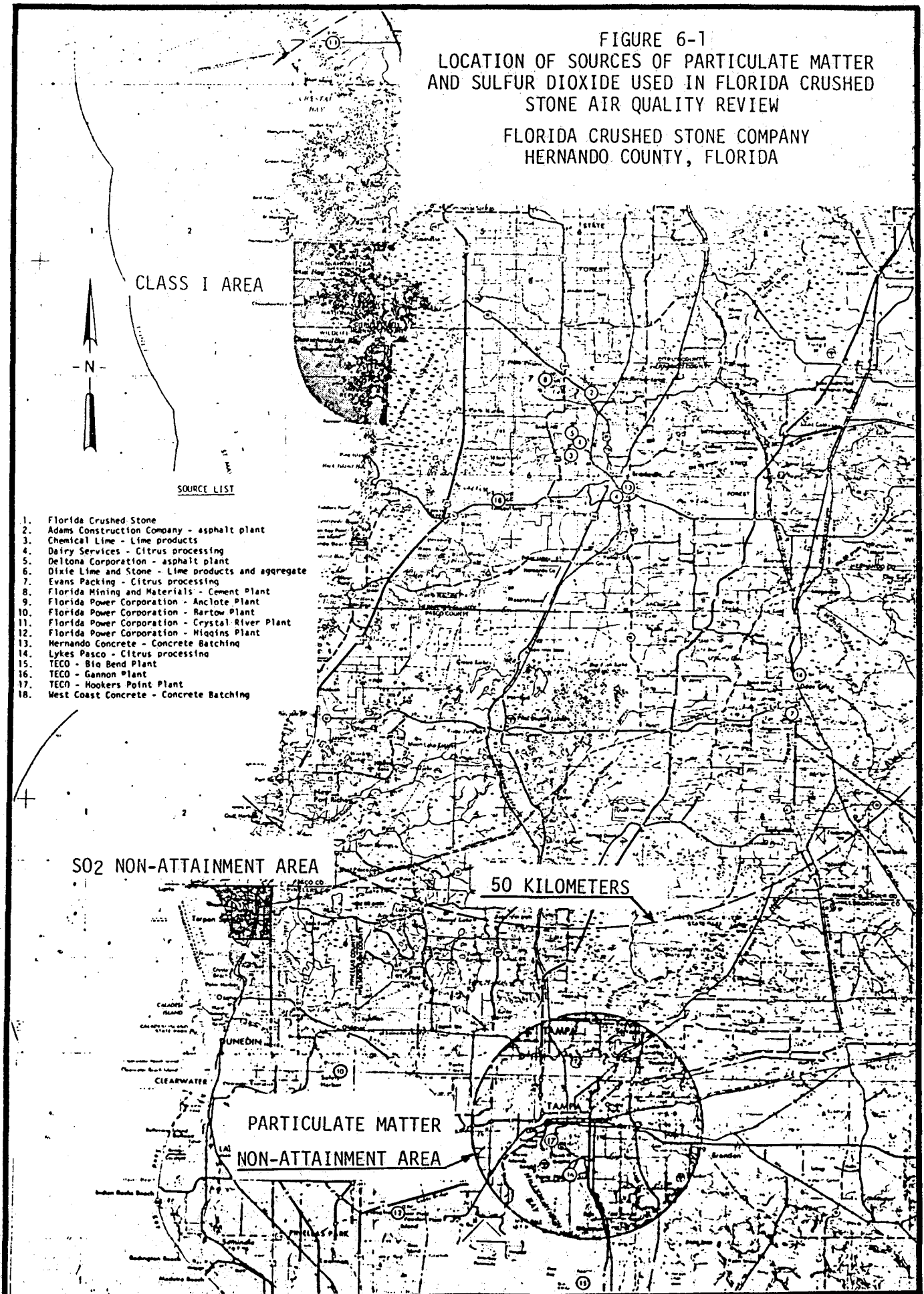
NOTE: Impacts on Pinellas County Sulfur Dioxide Non-Attainment area and Hillsborough County Particulate Matter Non-Attainment area are less than significant for all time periods.

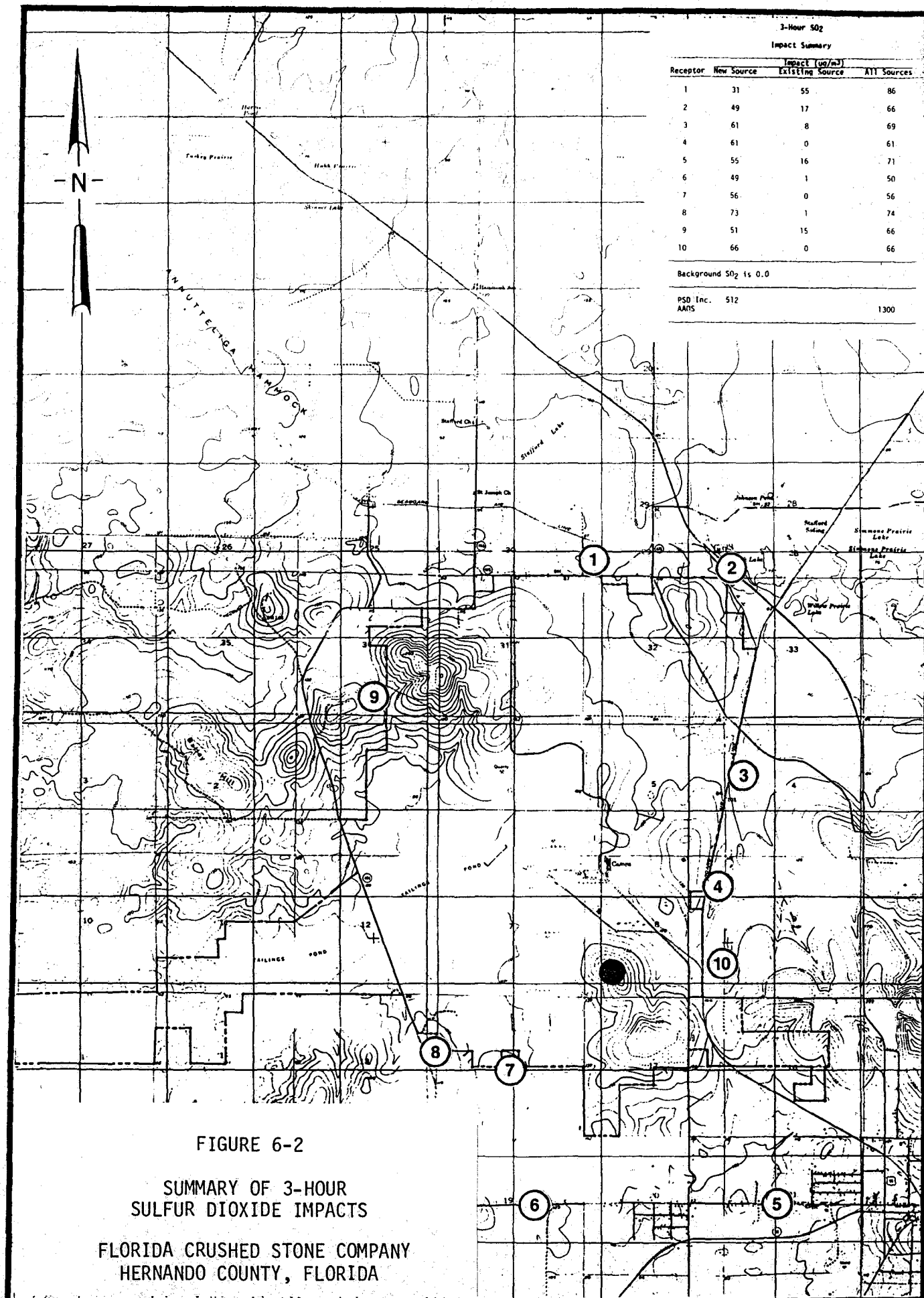
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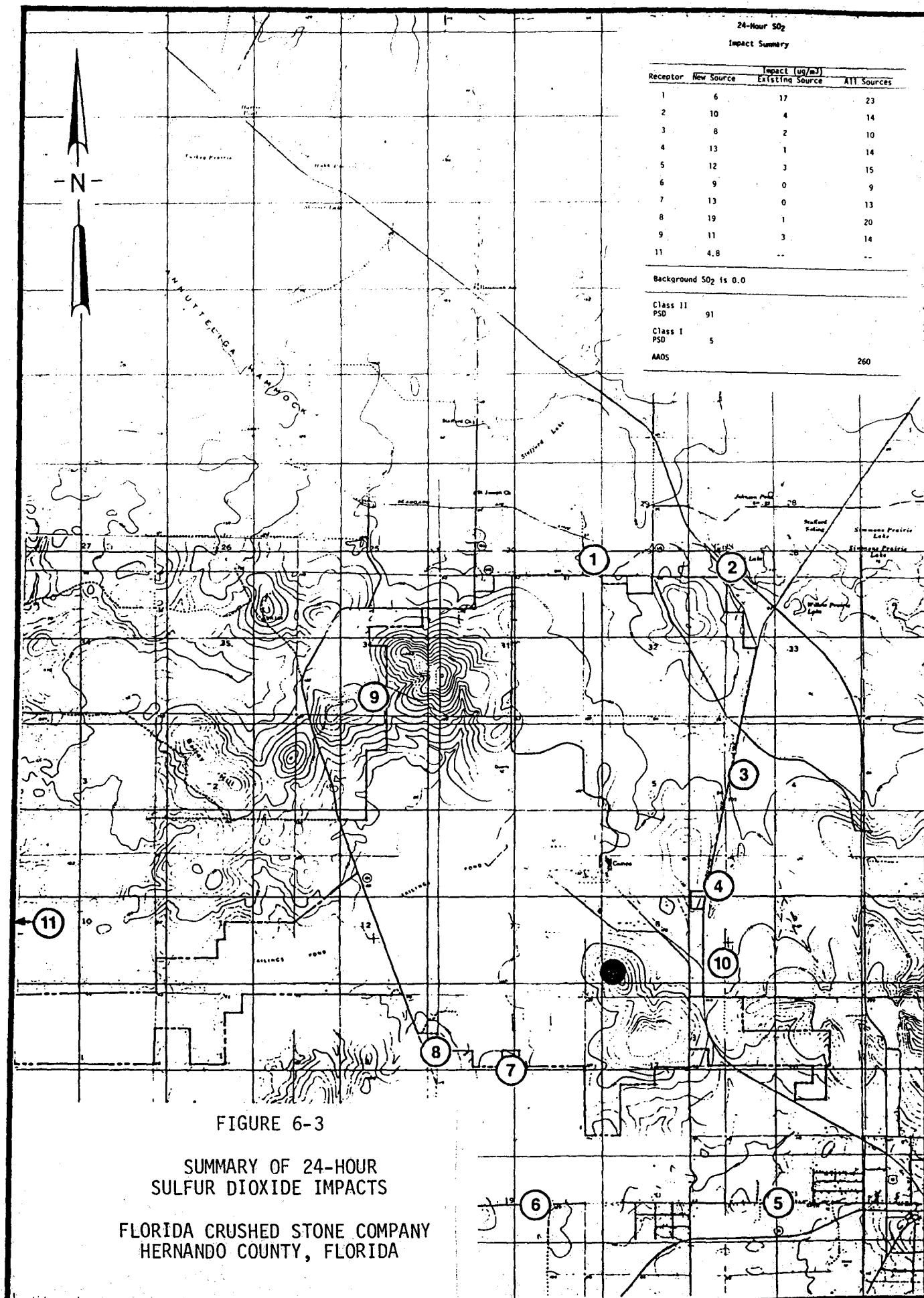
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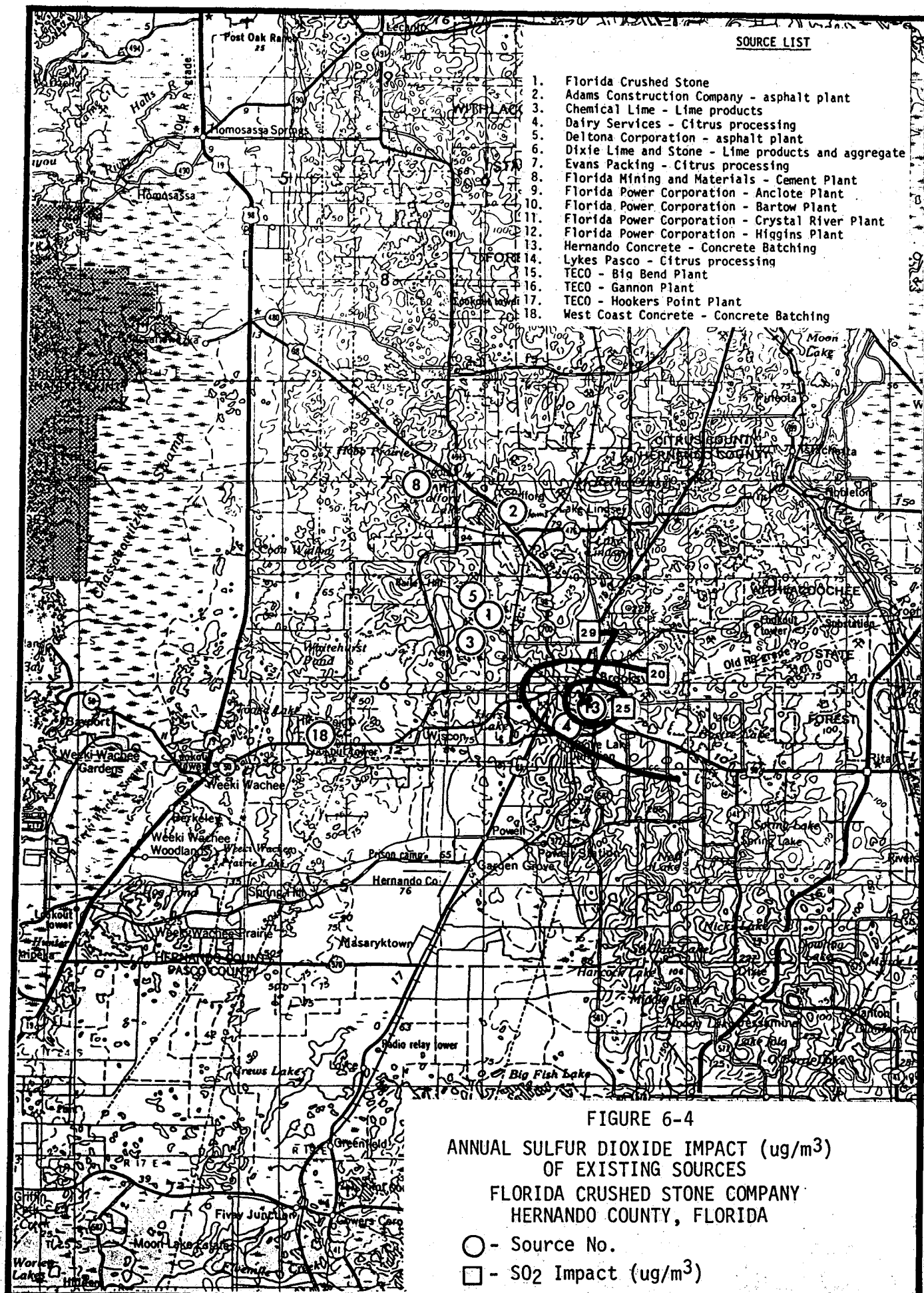
FIGURE 6-1
LOCATION OF SOURCES OF PARTICULATE MATTER
AND SULFUR DIOXIDE USED IN FLORIDA CRUSHED
STONE AIR QUALITY REVIEW

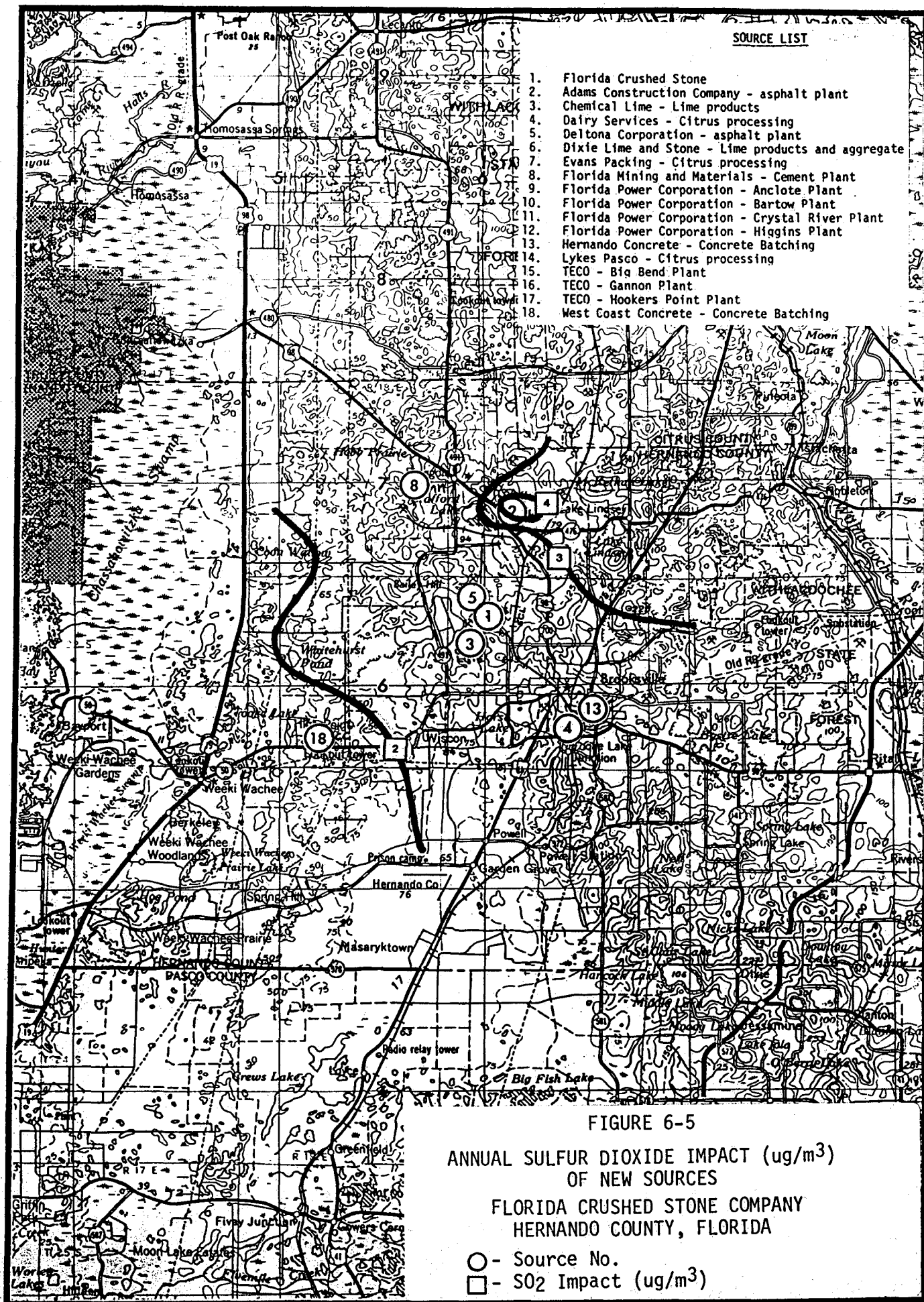
FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA

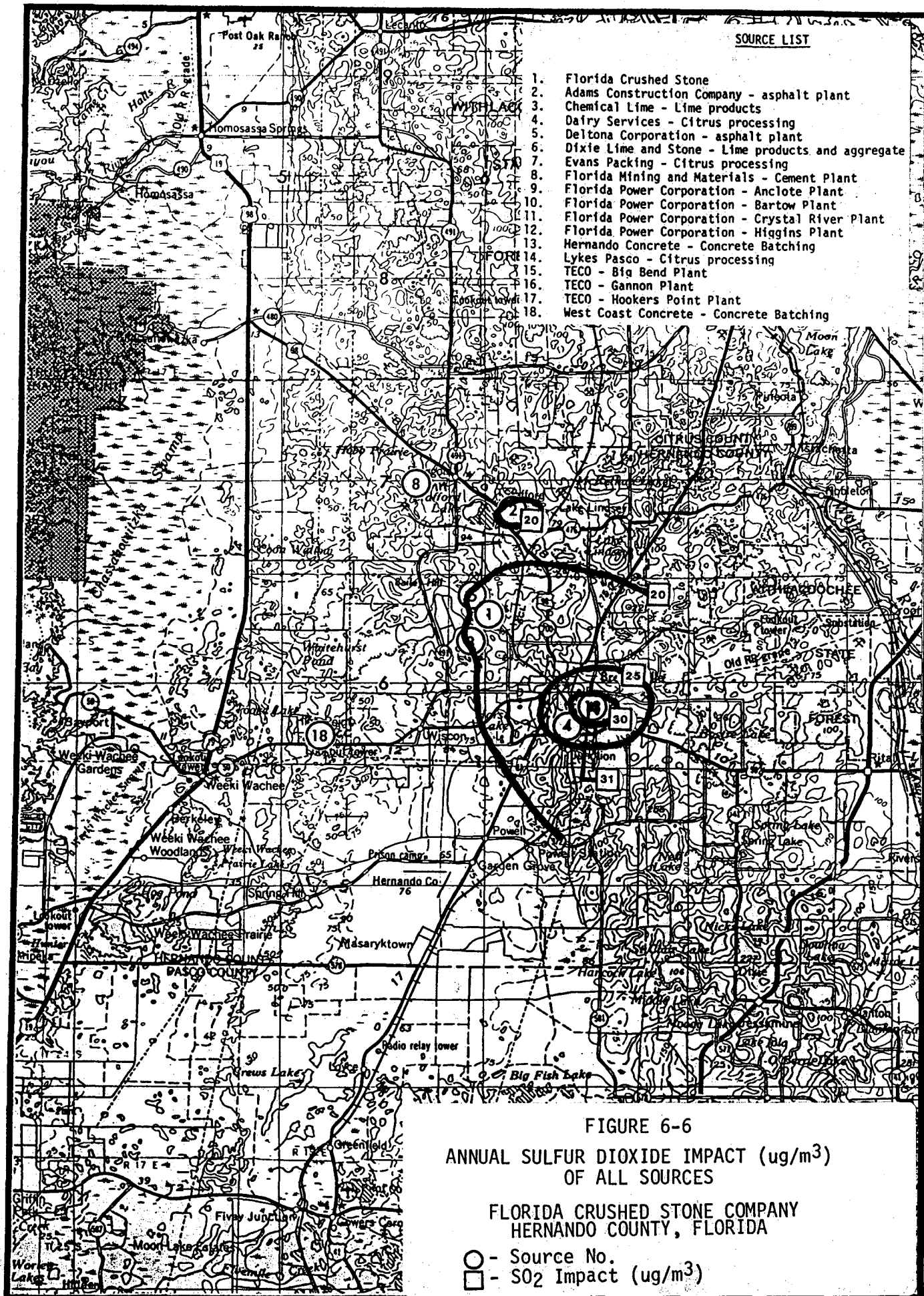


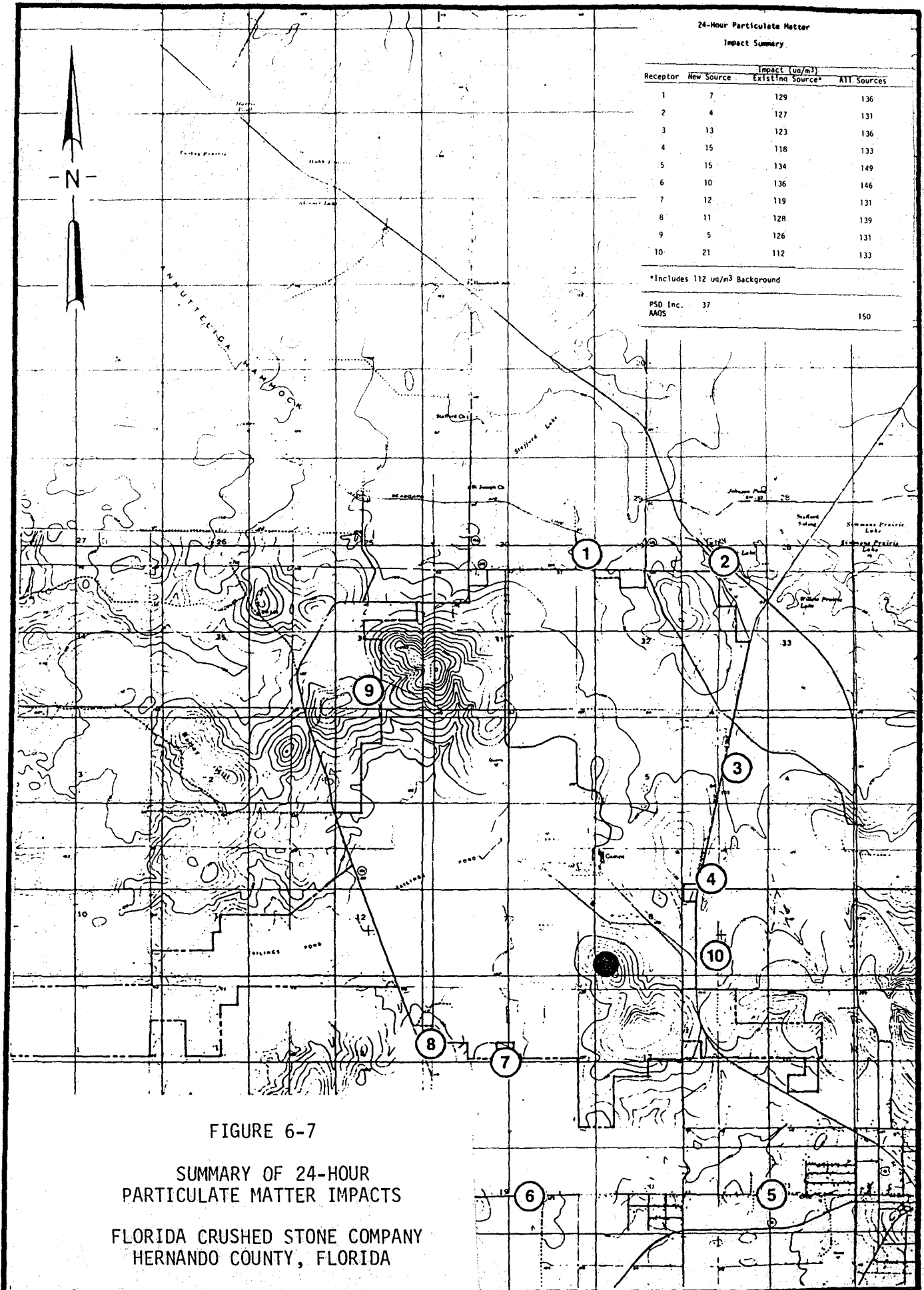


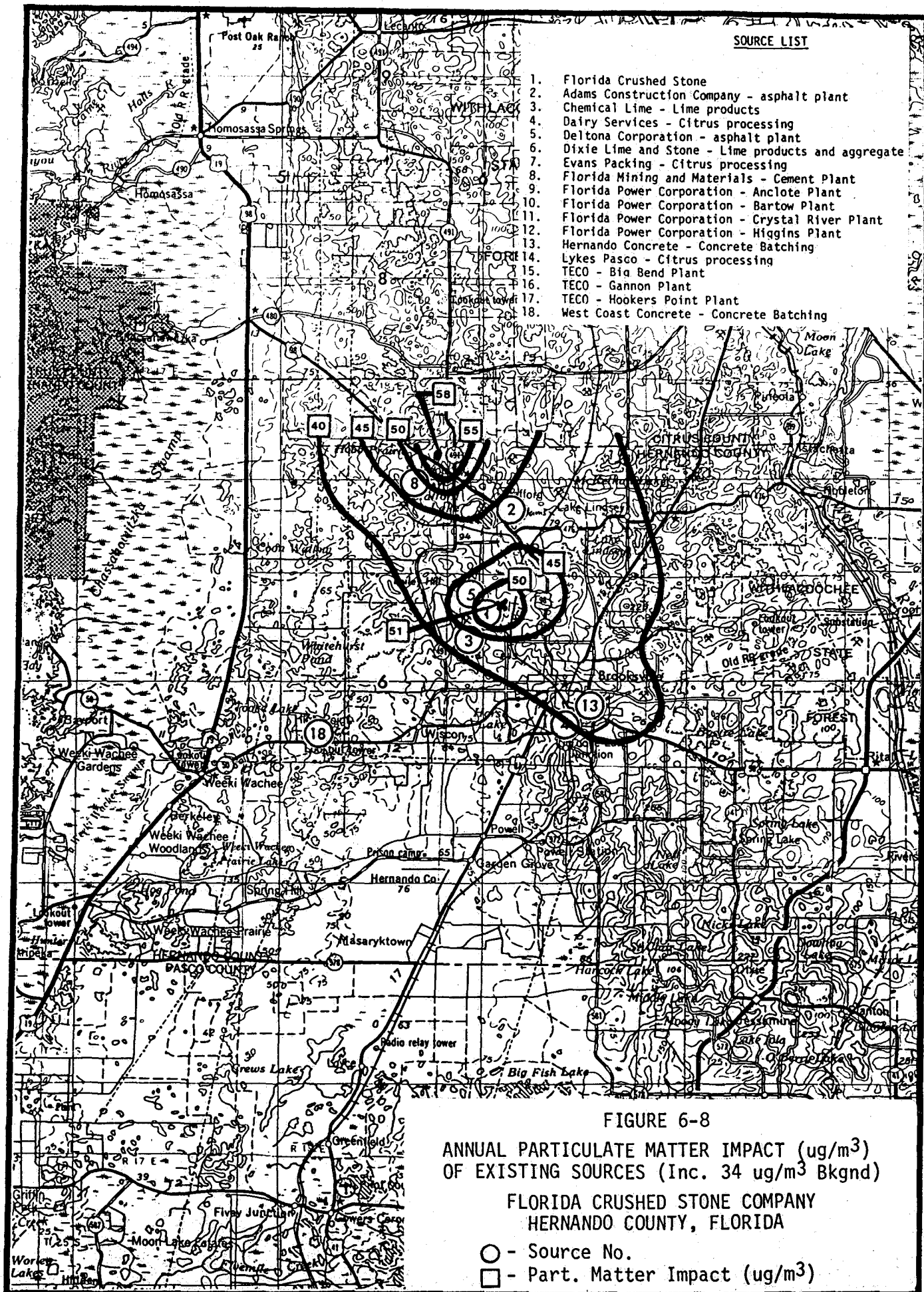


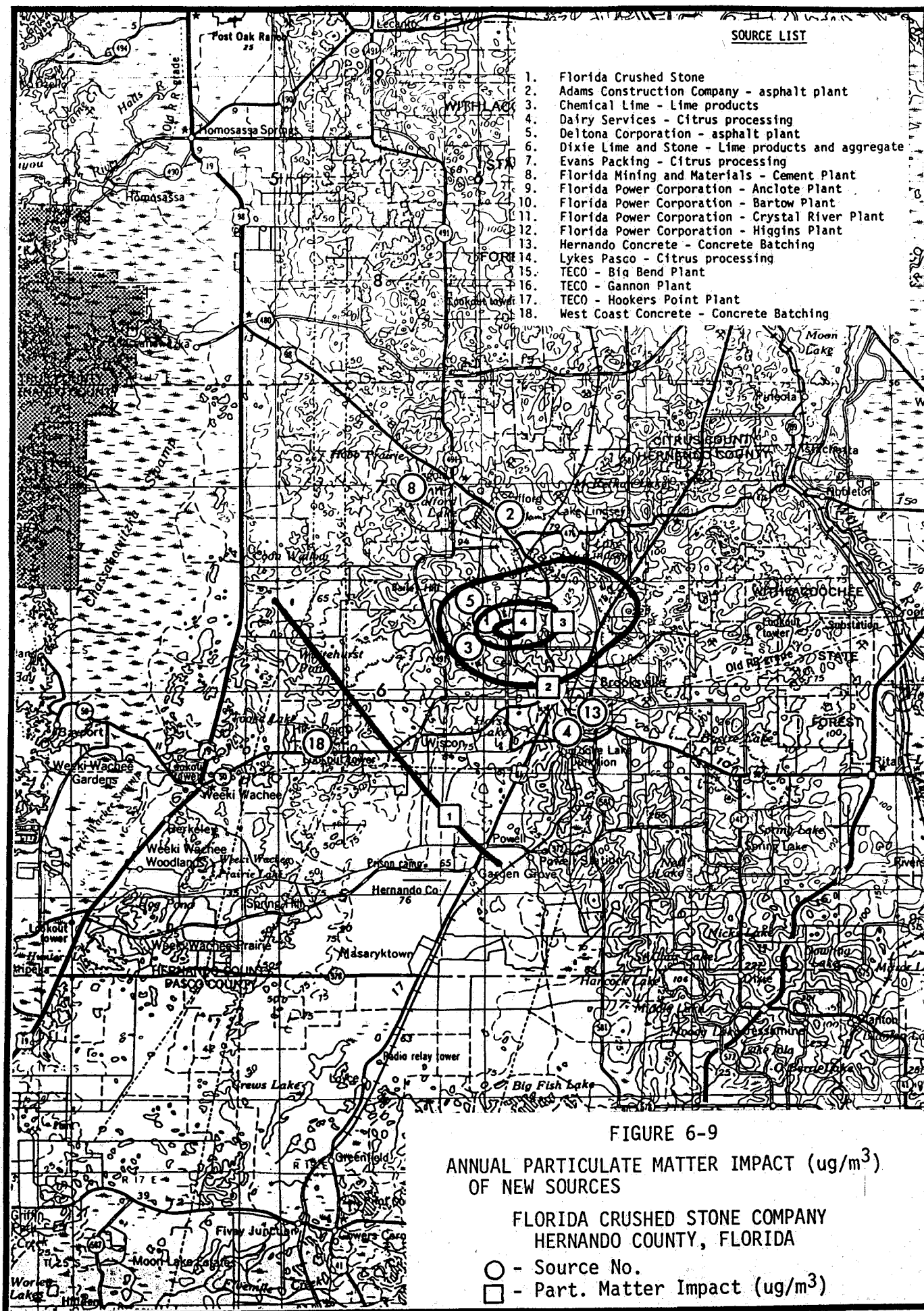


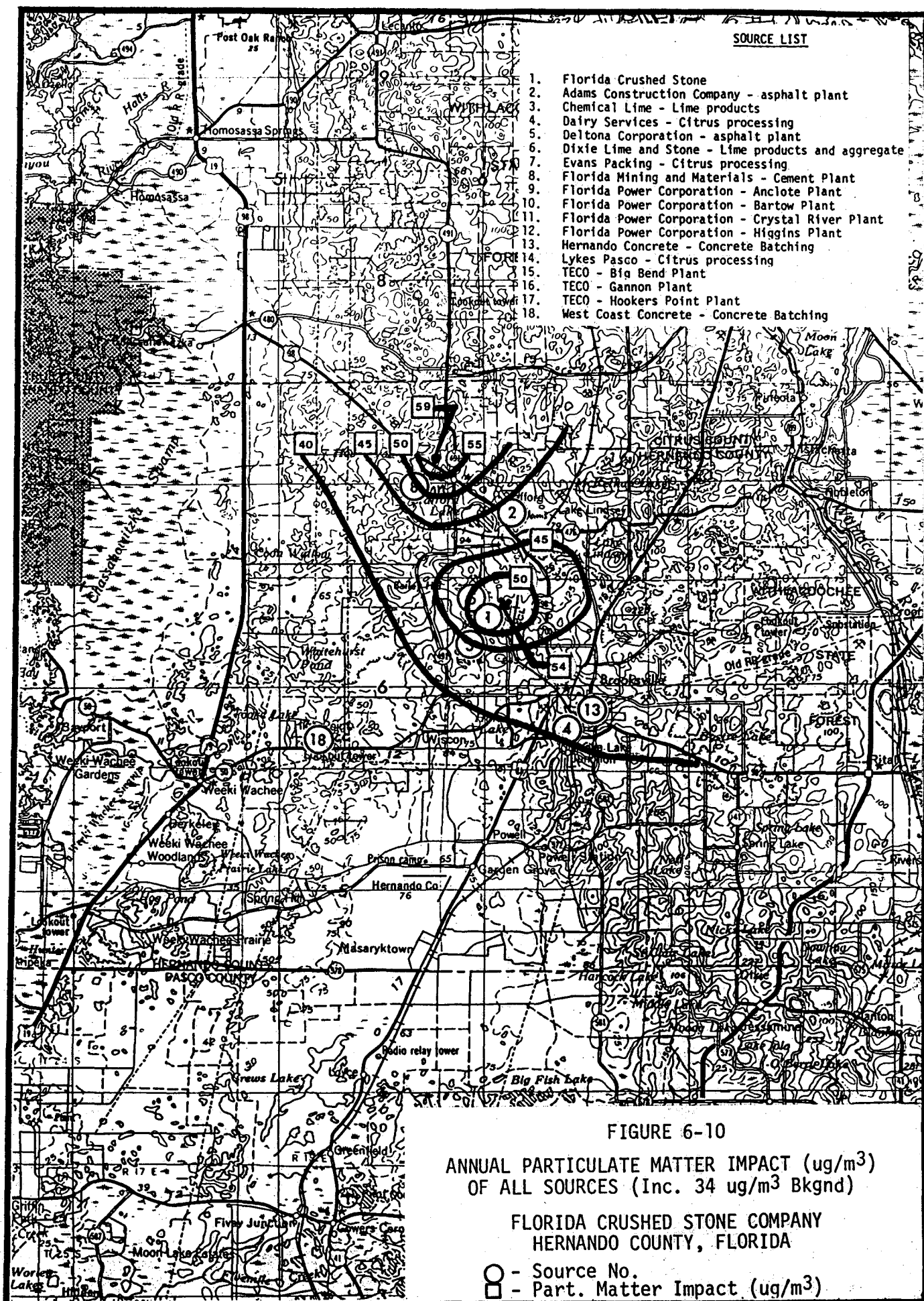


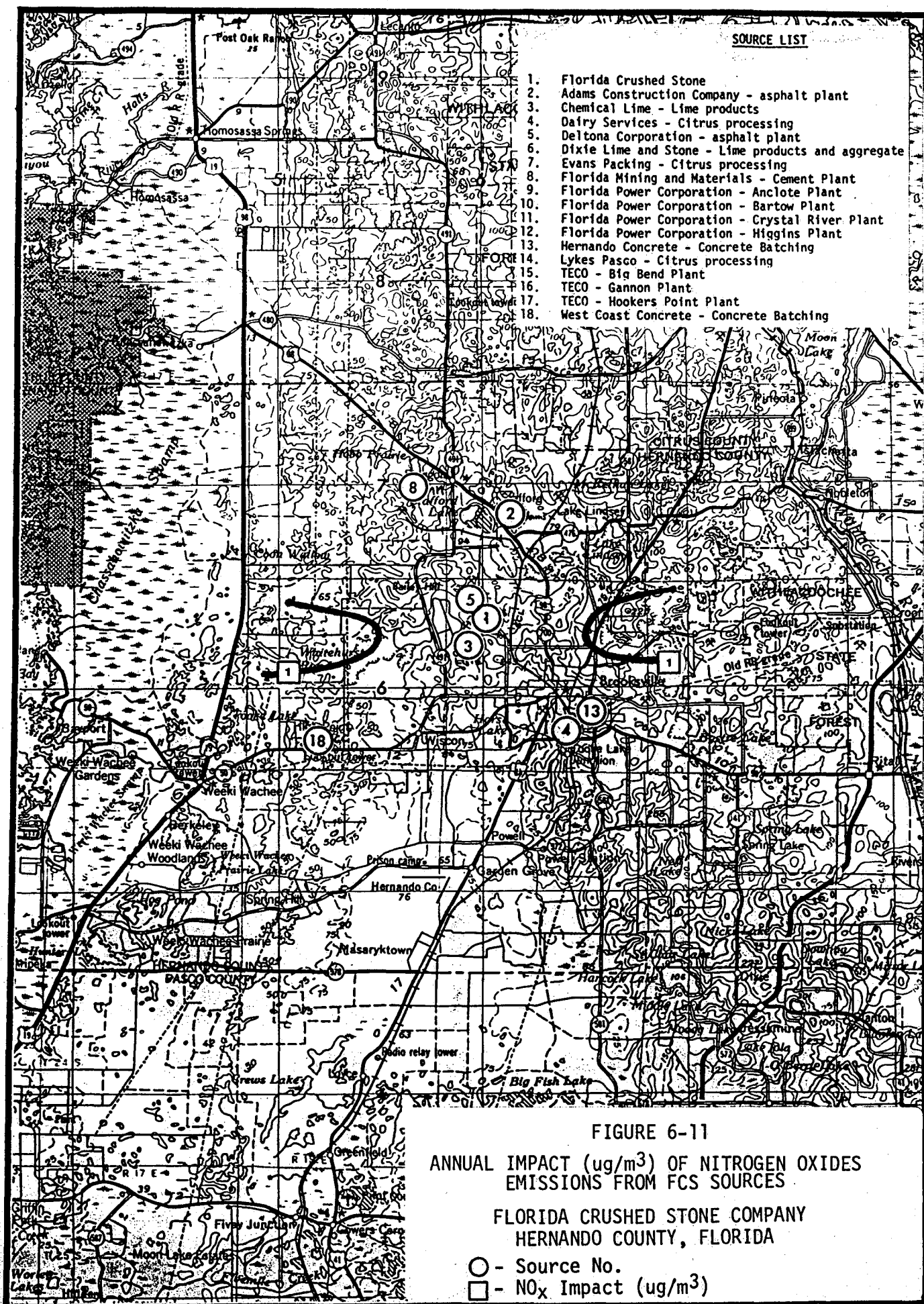












APPENDIX 6A

SOURCES USED IN FLORIDA CRUSHED STONE
AIR QUALITY REVIEW

(NOTE: The number following the three character
source identification corresponds with the source
number in the Source List of Figure 6-1.)

STACK PARAMETERS AND EMISSION RATES

For All Sources Used in Air Quality Review

Florida Crushed Stone Company
Hernando County, Florida

Source	Emission PM (Lb/Hr)	Rates SO2 (Lb/Hr)	Stack Height (Ft)	Stack Diam. (Ft)	Stack Velocity (FPS)	Gas Temp. (Deg F)	X Coord. (km)	Y Coord. (km)
FCS 1 Clay Crush	1.0322	0.0000	25.080	2.310	40.260	105.80	360.044	3162.648
FCS 1 Limestone Conv	0.4764	0.0000	55.440	1.650	47.520	105.80	360.123	3162.379
FCS 1 Limestone Transfer	0.7940	0.0000	15.180	1.980	42.570	105.80	359.950	3162.477
FCS 1 Premix Bin	1.0322	0.0000	125.730	2.310	42.240	105.80	360.005	3162.337
FCS 1 Fly Ash Bin	1.0322	0.0000	125.730	2.310	42.240	105.80	360.017	3162.337
FCS 1 Kiln	172.9000	1560.8000	201.300	14.190	43.230	244.40	360.008	3162.392
FCS 1 Raw Mat'ls Transfer	0.6352	0.0000	25.080	1.650	47.520	150.80	360.030	3162.335
FCS 1 Blend Silo	2.9378	0.0000	206.250	3.630	40.260	150.80	360.037	3162.312
FCS 1 Kiln Feed	1.2704	0.0000	50.160	2.640	34.320	150.80	360.044	3162.306
FCS 1 Cooler Discharge	0.6352	0.0000	9.900	1.650	47.520	150.80	360.086	3162.200
FCS 1 Clinker Silo L12	1.2704	0.0000	201.300	2.640	34.320	150.80	360.114	3162.137
FCS 1 Clinker Silo L13	1.2704	0.0000	201.300	2.640	34.320	150.80	360.108	3162.125
FCS 1 Clinker Silo Discharge	0.6352	0.0000	25.080	1.650	47.520	150.80	360.105	3162.125
FCS 1 Limestone Silo	0.3970	0.0000	25.080	1.320	40.920	105.80	360.105	3162.143
FCS 1 Cement Silo	1.0322	0.0000	25.080	1.980	42.570	150.80	360.123	3162.133
FCS 1 Finish Mill	5.5580	0.0000	100.650	4.950	39.270	199.40	360.111	3162.157
FCS 1 Cement Silo Discharge (4)	4.1288	0.0000	25.080	1.980	42.570	150.80	360.125	3162.100
FCS 1 Cement Silos (5)	7.7018	0.0000	201.300	2.640	40.920	150.80	360.125	3162.110
FCS 1 Packing Plant	1.2704	0.0000	55.440	2.640	34.320	105.80	360.155	3162.032
FCS 1 Masonry Silos (3)	3.8906	0.0000	80.520	2.640	34.320	150.80	360.147	3162.047
FCS 1 Raw Coal Bin	0.3970	0.0000	100.650	1.320	40.920	105.80	360.102	3162.210
FCS 1 Power Plant Coal Bin	0.3970	0.0000	100.650	1.320	40.920	105.80	360.080	3162.010
FCS 1 Gypsum S.10	3.9700	0.0000	25.080	1.320	40.920	105.80	360.080	3162.010
EVN 7 20493	0.0794	1.5880	40.260	1.320	30.030	379.40	383.300	3135.800
EVN 7 54003&4	16.1976	218.3500	40.260	3.630	39.270	449.60	383.300	3135.800
EVN 7 6657	30.9660	187.3840	85.470	3.300	57.090	163.40	383.300	3135.800
EVN 7 7038, 39, 40	96.0740	562.1520	85.470	3.300	57.090	163.40	383.300	3135.800
FPC 9 #1 Anclote	485.1340	13343.1700	502.920	25.080	21.450	289.40	324.500	3118.600
FPC 9 #2 Anclote	485.1340	13343.1700	502.920	24.090	51.480	289.40	324.500	3187.500
L/P 14 D1 & D2	63.5200	457.3440	75.570	2.970	91.740	161.60	383.500	3139.200
L/P 14 3 Boilers	86.5460	1211.6440	75.570	4.620	60.060	334.40	383.500	3139.200
L/P 14 ST Dryers	73.8420	0.0000	65.340	2.640	12.540	188.60	383.500	3139.200
FPC 12 Higgins 1	50.0220	1375.2080	174.570	12.540	26.070	303.80	336.500	3098.200
FPC 12 Higgins 2	50.0220	1375.2080	174.570	12.540	29.700	303.80	336.500	3098.200
FPC 12 Higgins 3	50.8160	1408.5560	174.570	12.540	20.460	303.80	336.500	3098.200
FPC 10 Bartow 2	129.4220	3560.2960	301.950	8.910	102.630	300.20	342.400	3082.700
FPC 10 Bartow 3	204.8520	5637.4000	301.950	11.220	96.030	314.60	342.400	3082.700
FPC 11 #1	479.5760	12064.0360	502.920	15.180	150.480	296.60	334.400	3204.510
FPC 11 #2	479.5760	14623.0980	506.220	16.170	147.840	296.60	334.400	3204.510
FPC 11 Fly Ash 1, 2, 5	88.1340	0.0000	7.920	0.990	24.420	199.40	334.400	3204.510
FPC 11 Fly Ash 3	36.5240	0.0000	93.720	1.650	153.120	150.80	334.400	3204.510
FPC 11 Fly Ash 4	35.7300	0.0000	35.310	1.980	1.650	150.80	334.400	3204.510
FPC 11 #4	667.7540	8009.8720	603.570	22.770	90.420	257.00	334.400	3204.510

STACK PARAMETERS AND EMISSION RATES

For All Sources Used in Air Quality Review

Florida Crushed Stone Company
Hernando County, Florida

Source	Emission PM (Lb/Hr)	Rates SO2 (Lb/Hr)	Stack Height (Ft)	Stack Diam. (Ft)	Stack Velocity (FPS)	Gas Temp. (Deg F)	X Coord. (km)	Y Coord. (km)
FPC 11 #5	667.7540	8009.8720	603.570	22.770	90.420	257.00	334.400	3204.510
DLS 6 Kiln 2	7.9400	10.3220	70.290	4.620	41.580	244.40	397.200	3182.600
DLS 6 Lime Dry	7.9400	59.5500	30.360	3.960	42.570	132.80	397.200	3182.600
DLS 6 Lime Cool	5.0816	0.0000	95.700	4.620	32.670	240.80	397.200	3182.600
DLS 6 CaCO3	1.5880	0.0000	55.110	1.650	47.520	105.80	397.200	3182.600
DLS 6 Misc	5.5580	0.0000	21.120	1.650	76.560	105.80	397.200	3182.600
DLS 6 Coal Handlins	0.1588	0.0000	23.100	0.990	12.870	105.80	397.200	3182.600
DLS 6 Kiln 1	5.6374	10.3220	69.300	3.960	44.880	244.40	397.200	3182.600
DLS 6 Kiln 1 Dust	0.4764	0.0000	23.100	1.320	37.290	105.80	397.200	3182.600
TEC 16 Gannon 1	125.4520	1383.1480	307.890	12.210	74.250	329.00	360.000	3087.500
TEC 16 Gannon 2	125.4520	1383.1480	307.890	10.230	106.920	329.00	360.000	3087.500
TEC 16 Gannon 3	142.9200	1573.7080	307.890	10.560	116.820	309.20	360.000	3087.500
TEC 16 Gannon 4	187.3840	2064.4000	307.890	9.570	81.180	338.00	360.000	3087.500
TEC 16 Gannon 5	228.6720	2513.8040	307.890	14.850	68.310	287.60	360.000	3087.500
TEC 16 Gannon 6	379.5320	4179.6160	307.890	17.820	77.220	287.60	360.000	3087.500
TEC 17 Hookers Pt. 1	30.1720	327.9220	281.820	11.220	60.060	264.20	358.000	3091.000
TEC 17 Hookers Pt. 2	30.1720	327.9220	281.820	11.220	60.060	264.20	358.000	3091.000
TEC 17 Hookers Pt. 3	41.2880	452.5800	281.820	12.210	37.950	255.20	358.000	3091.000
TEC 17 Hookers Pt. 4	41.2880	452.5800	281.820	12.210	37.950	255.20	358.000	3091.000
TEC 17 Hookers Pt. 5	61.1380	670.9300	281.820	11.220	60.060	264.20	358.000	3091.000
TEC 17 Hookers Pt. 6	77.8120	855.9320	281.820	9.570	59.070	325.40	358.000	3091.000
TEC 15 Bis Bend 1	222.3200	18273.9100	493.020	24.090	42.570	307.40	361.500	3075.000
TEC 15 Bis Bend 2	202.4700	15749.7840	493.020	24.090	44.880	269.60	361.500	3075.000
TEC 15 Bis Bend 3	411.2920	26759.3880	493.020	24.090	35.640	278.60	361.500	3075.000
TEC 15 Packins 1 & 2	18.2620	514.5120	75.570	16.500	117.810	928.40	361.500	3075.000
TEC 15 Turbine 1 & 2	3.1760	65.1080	35.310	11.220	92.400	1009.40	361.500	3075.000
TEC 15 Bis Bend 4	130.0572	5198.3180	493.020	24.156	66.000	156.20	361.600	3075.000
FMM 8 Raw Material Storage	37.3180	0.0000	80.520	2.970	35.640	105.80	356.200	3169.900
FMM 8 Raw Material Grindins	37.3180	0.0000	80.520	2.970	35.640	105.80	356.200	3169.900
FMM 8 Kiln 1	37.3180	5.5580	75.570	9.900	35.640	260.60	356.200	3169.900
FMM 8 Cooler 1	34.1420	0.0000	80.520	7.590	31.680	217.40	356.200	3169.900
FMM 8 Clinker Grindins	35.7300	0.0000	82.500	2.970	52.140	105.80	356.200	3169.900
FMM 8 Clinker Silo 1	34.1420	0.0000	145.860	1.980	16.170	105.80	356.200	3169.900
FMM 8 Clay Crush 1	26.2020	16.6740	24.090	1.980	45.540	269.60	356.200	3169.900
FMM 8 Btm Blend	37.3180	0.0000	206.250	2.640	61.710	199.40	356.200	3169.900
FMM 8 Product Storage	34.1420	0.0000	135.960	2.970	34.650	105.80	356.200	3169.900
FMM 8 Masonry Silo (3)	2.3820	0.0000	211.200	2.310	50.160	145.40	356.200	3169.900
FMM 8 Kiln 2	21.5968	3.1760	90.420	16.170	25.080	386.60	356.200	3169.900
FMM 8 Cooler 2	7.1460	0.0000	50.160	7.590	72.270	399.20	356.200	3169.900
FMM 8 Clinker Silo (L07)	1.7468	0.0000	150.810	2.970	53.460	185.00	356.200	3169.900
FMM 8 Finish Mill 1 & 2	4.7640	0.0000	75.570	4.620	50.160	199.40	356.200	3169.900
FMM 8 Clay Crush 2	7.9400	0.0000	20.130	4.950	50.160	269.60	356.200	3169.900
FMM 8 Kiln Feed	0.7940	0.0000	90.420	1.650	44.550	129.20	356.200	3169.900

STACK PARAMETERS AND EMISSION RATES

For All Sources Used in Air Quality Review

Florida Crushed Stone Company
Hernando County, Florida

Source	Emission PM (Lb/Hr)	Rates SO2 (Lb/Hr)	Stack Height (Ft)	Stack Diam. (Ft)	Stack Velocity (FPS)	Gas Temp. (Deg F)	X Coord. (km)	Y Coord. (km)
FMM 8 Blend Silo	2.3820	0.0000	221.430	2.640	61.710	199.40	356.200	3169.900
FMM 8 Raw Materials Feed	0.8734	0.0000	10.230	3.300	50.160	105.80	356.200	3169.900
2 Adams Construction	9.5280	58.7560	28.050	3.960	56.100	199.40	361.400	3168.400
4 Dairy Service Boiler	2.6996	37.3180	30.360	1.980	34.650	399.20	364.200	3158.300
4 Dairy Service Dryer	10.6396	37.3180	60.390	2.640	40.920	145.40	364.200	3158.300
5 Deltona	37.3180	11.1160	25.080	5.940	16.500	165.20	359.800	3164.000
13 Hernando Conc..	12.7040	0.0000	50.160	1.980	16.170	105.80	365.300	3158.300
18 West Coast Conc.	3.1760	0.0000	55.110	1.980	16.170	105.80	352.000	3157.000
3 Chem Lime Calc.	21.6762	0.0000	90.420	3.960	15.510	114.80	359.400	3162.300
3 Chem Lime Hyd.	14.0538	0.0000	20.130	3.960	14.520	105.80	359.400	3162.300
3 Chem Lime Dryer	33.3480	0.0000	30.360	3.630	61.050	249.80	359.400	3162.300
3 Chem Lime Boiler 1 & 2	0.0794	1.5880	35.310	0.660	48.180	300.20	359.400	3162.300
3 Chem Lime Bassins	11.9894	0.0000	62.370	1.650	36.960	105.80	359.400	3162.300

7.0 IMPACT ON SOILS, VEGETATION AND VISIBILITY AND SECONDARY IMPACTS

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

The land use in the general area of the Florida Crushed Stone site is dedicated to agriculture and mining with the agricultural activities divided between cattle and citrus. Brooksville, population 7,000, is located three miles southeast of the site and scattered residential developments are located two miles or more from the site in the eastern and western directions. (See Figure 7-1). The activities proposed by Florida Crushed Stone, including the air pollutant emissions from the proposed facility, are not anticipated to adversely impact any activity presently practiced in the area.

The 6,400 acres owned by Florida Crushed Stone has been actively mined since 1938. The mining and the operation of a lime plant, a lime rock plant and an aggregate plant, all located on the site and owned by Florida Crushed Stone, are expected to continue well into the twenty-first Century.

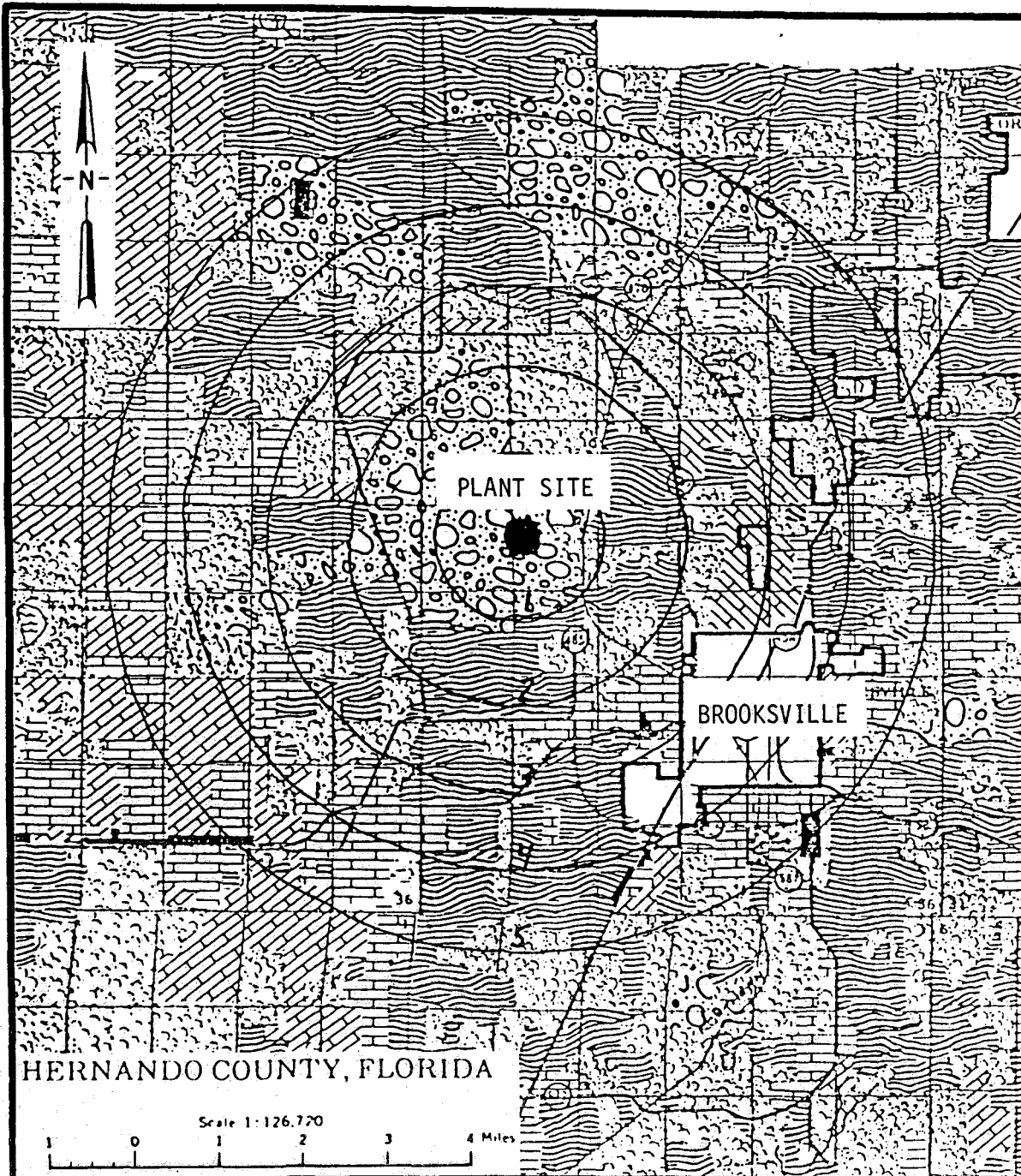
The particulate matter emissions from the proposed cement plant will be similar in nature to the particulate matter emissions resulting from activities presently in existence at the site. The particulate matter emissions which have occurred over the past 44 years have not been

observed to adversely affect the soil, vegetation and visibility in the area. The emissions that will result from the proposed cement plant and power plant, likewise, are not expected to impact the soils, vegetation and visibility in the area.

The nitrogen oxides and sulfur dioxides emissions from the proposed cement plant and power plant will result in impacts that are well below applicable air quality standards; standards which have been developed to protect the health and welfare of the general public. The impact of sulfur dioxides from the proposed complex are less than 10 percent of the annual and 24-hour standards and less than 5 percent of the 3-hour standard. The impact of nitrogen oxides from the proposed facility is approximately one percent of the nitrogen oxides air quality standard for the annual period. Since the impacts of sulfur dioxide and nitrogen oxides in the area will be so much lower than the air quality standards for these pollutants, no adverse impacts on soils, vegetation and visibility is anticipated.

During the construction period which will commence in early 1983, activities on the site may generate more than the normal amount of fugitive particulate matter. Florida Crushed Stone will control these fugitive emissions by watering or with other dust suppressants and by assuring that sound construction policies are adhered to.

During the construction period there will be a maximum labor force on site of approximately 600 persons. This labor force will be drawn from the present population of the west-central Florida area. During normal plant operations approximately 90 persons will be employed at the plant. The majority of these employees will also be drawn from the west-central Florida work force. During neither the construction phase of the project nor the operation phase of the project; therefore, will an influx of permanent or transient workers be expected.



PRESENT LAND USE

	Urban Built-up
	Commercial/Industrial
	Open Urban Land
	Agricultural
	Rangeland
	Forested Upland
	Water
	Wetland
	Barren
	Not Included

FIGURE 7-1

PRESENT LAND USE WITHIN FIVE MILES
OF FLORIDA CRUSHED STONE SITE
FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA