

CITY OF LAKELAND
DEPT. OF ELECTRIC AND WATER
UTILITIES



ORLANDO UTILITIES COMMISSION
ORLANDO, FLORIDA

C.D. McIntosh, Jr. Power Plant
Unit No. 3

SITE
RECERTIFICATION
APPLICATION

APRIL 17, 1978

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APPENDICES I

INTRODUCTION

On December 7, 1976, the City of Lakeland, Department of Electric and Water Utilities was given Florida Power Plant Siting approval to construct and operate Unit #3, a 250 MW coal, refuse, and oil fired steam electric generating unit at the C. D. McIntosh, Jr. Power Plant in Lakeland, Florida. In the months that followed, Lakeland was approached by the Orlando Utilities Commission to explore the possibility of building and operating the unit as a joint venture between the two utilities.

In January, 1978, each respective commission governing the Lakeland and Orlando Utilities agreed that both parties to the venture should prepare the necessary information to recertify Unit #3 to a 364 MW unit and to obtain a permit for the Orlando Utilities Commission to construct a 230 KV transmission line from Unit#3 to an interconnecting point on the Orlando system. As a result of that agreement, this application contains essentially two separate areas; the first being the proposed unit and the second, the proposed Orlando transmission line.

The information contained in this recertification application on the unit and the plant site covers only those area that differ from the information contained in the City of Lakeland's 250 MW unit certification application. Those areas which do not have changes from the 250 MW application are referred back to the 250 MW application.

It should be noted that the significant changes reported are a result of increasing the size of the unit and are numerical in nature. The design philosophy used in the 250 MW Unit #3 has been followed with this 364 MW unit and include the following:

1. The capability to burn coal, refuse and oil.
2. The use of effluent from the Lakeland Sewage Treatment Plant as the primary source of cooling tower make-up.
3. Using cooling tower blowdown as make-up water to the flue gas desulfurization system.
4. No discharge of liquid wastes to either surface or groundwaters.
5. Using an electrostatic precipitator and limestone slurry scrubber to comply with particulate and sulfur dioxide emission standards.
6. Stabilizing all sludge from the desulfurization process prior to disposal.

The major changes resulting from increasing the size of Unit #3 from 250 to 364 MW are essentially covered in Section 3 of this application. This section covers the unit changes and describes the Orlando transmission line mentioned earlier. The only significant change not described in Section 3 is the acquisition of additional property contiguous to the McIntosh Plant site for the coal handling system. This information is presented in Section 2.

1.0 PERTINENT APPLICANT INFORMATION

1.1 APPLICANTS LEGAL IDENTITY

This section gives the necessary information pertaining to the applicants legal names, locations, and business entities, and additional information that will help to identify the applicants.

1.1.1 LEGAL NAMES

The applicants legal names are:

1. City of Lakeland, Department
of Electric and Water Utilities
2. Orlando Utilities Commission

1.1.2 ADDRESSES

The applicants mailing addresses are:

City of Lakeland
Department of Electric and Water Utilities
P. O. Box 368
Lakeland, Florida 33802

Orlando Utilities Commission
P. O. Box 3193
Orlando, Florida 32802

1.1.3 ADDRESSES OF OFFICIAL HEADQUARTERS

City of Lakeland
Department of Electric and Water Utilities
1000 E. Parker Avenue
Lakeland, Florida

Orlando Utilities Commission
500 South Orange Avenue
Orlando, Florida

1.1.4 BUSINESS ENTITIES

The City of Lakeland, Department of Electric and Water Utilities is a municipal utility organized and existing under the laws of Florida.

The Orlando Utilities Commission is a statutory Commission and a part of the City of Orlando, Florida. The Commission has full authority over the management and control of the electric and water plants of the City of Orlando.

1.1.5 NAME AND TITLE OF BUSINESS HEADS

The chief executive officer of the City of Lakeland Department of Electric and Water Utilities is:

Mr. C. D. McIntosh, Jr.
Director
Department of Electric and Water Utilities

The chief executive officer of the Orlando Utilities Commission is:

Mr. C. H. Stanton
Executive Vice President and General Manager

1.1.6 NAME, TITLE, BUSINESS ADDRESS AND PHONE NUMBER OF APPLICANTS' OFFICIAL REPRESENTATIVE RESPONSIBLE FOR OBTAINING CERTIFICATION

For the City of Lakeland, Department of Electric and Water Utilities:

Mr. Mike Opalinski
Environmental Coordinator
City of Lakeland
Department of Electric and Water Utilities
P. O. Box 368
Lakeland, Florida 33802
(813) 682-8163

For the Orlando Utilities Commission:

Mr. B. E. Shoup
Director, Environmental Division
Orlando Utilities Commission
P. O. Box 3193
Orlando, Florida 32802
(305) 423-9141

1.1.7 SITE LOCATION: COUNTIES

The power plant is located in Polk County, Florida, and the Associated Transmission Line is located in Polk, Osceola and Orange Counties, Florida.

1.1.8 NEAREST INCORPORATED CITY

The power plant is located in the City of Lakeland, Florida.

1.1.9 SITE LATITUDE AND LONGITUDE

81° 55' 36" Latitude
28° 04' 49" Longitude

1.1.10 SITE COORDINATES - UTM's

3105.8 N
408.5 E

1.1.11 NAMEPLATE GENERATING CAPACITY AT PLANT SITE

Existing capacity (KW): 258,100
Proposed additional capacity (KW) : 364,000

SECTION 2

THE SITE

2.1 CHANGES IN SITE LOCATION AND LAYOUT

The proposed unit will be located on the north east shore of Lake Parker which is north east of the City of Lakeland. Lakeland is located in Imperial Polk County in Central Florida as previously indicated in the initial certification application submitted in May, 1975.

Subsequent to submitting the previous application, an architect-engineer has been contracted and the original site layout and routing for the railroad spur has been revised per their recommendations.

In order to accomodate the additional equipment required for the larger unit and to facilitate rail access to the plant site, additional property will be acquired east of existing plant property. Approximately 95 acres will be added to the plant property, resulting in a total plant acreage of 370 acres. With the addition of Unit #3, the total utilized acreage at the plant will be approximately 100 acres.

Map 2.1.1 is an aerial view of the area around the plant and includes the major accesses to the site, the proposed railroad spur, and the new plant perimeter.

Map 2.1.2 is the revised plant layout as recommended by the architect-engineer and includes locations of all major equipment and the railroad layout within the plant perimeter.

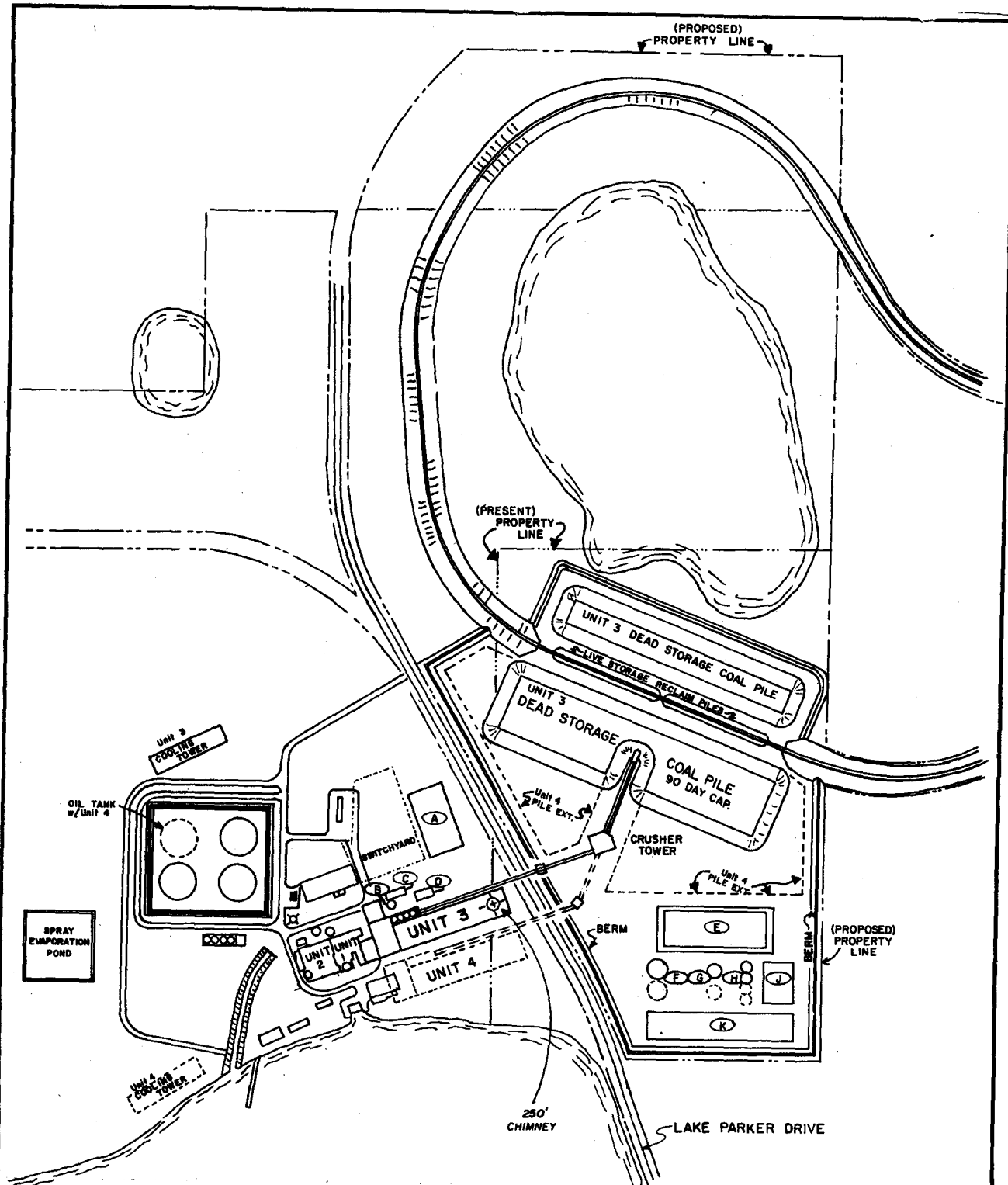
2.2 CHANGES IN REGIONAL DEMOGRAPHY, LAND, AND WATER USE

There are no changes from the previous application. The new property required with the proposed new unit will cause no changes in the area around the site nor will the increased size of the unit.



Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale 1"=1,000'
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by <u>McIntosh</u>	Date <u>5-21-75</u>	McINTOSH PLANT		Dwg. No.	Rev. No.
App. by		AERIAL TOPOGRAPHICAL MAP		MAP 2.1.1	





Division <i>POWER GENERATION</i>		CITY OF LAKELAND, FLORIDA DEPT. OF ELECTRIC & WATER UTILITIES PLOT PLAN		Proj. No.	Scale <i>N/A</i>
Engineer				Map Section	
Dr. by <i>A. Houpoux</i>	Date	McINTOSH PLANT UNIT no. 3		Dwg. No.	Rev. No.
App. by	<i>1-27-78</i>			MAP 2.1.2	

2.2 CHANGES IN REGIONAL DEMOGRAPHY, LAND, AND WATER USE

There are no changes from the previous application. The new property required with the proposed new unit will cause no changes in the area around the site nor will the increased size of the unit.

2.3 REGIONAL HISTORIC, SCENIC, CULTURAL AND NATIONAL LANDMARKS - ASSOCIATED TRANSMISSION FACILITIES

2.3.1 LANDMARKS

There are no significant historic, cultural, or natural landmarks along the proposed transmission line route. No sites are listed in the National Register of Historic Places; the National Registry of Natural Landmarks; or by the Florida Bureau of Historic Sites and Properties, Division of Archives, History, and Record Management. In addition, there is no unusual or unique site or vista along the route.

2.3.2 ARCHAEOLOGICAL SITES ALONG TRANSMISSION LINE ROUTE

A review of the Florida Master Site maintained by the Division of Archives, History, and Records Management revealed that no archaeological sites are recorded for the project area. Since the route has not been subjected to a systematic, professional survey for such sites, the lack of recorded sites may not be significant.

2.3.3 ARCHAEOLOGICAL AND HISTORIC SURVEY

A plan is being developed with the Florida Division of Archives, History, and Records Management to conduct an archaeological and historical survey of the proposed transmission line right-of-way. Orlando Utilities Commission will carry out specific preservation plans warranted on the basis of the results of the survey.

2.4 GEOLOGY

The geology of the new property is essentially the same as the existing plant site except for the areas of reclaimed phosphate land. There are essentially no changes from the previous application.

2.5 HYDROLOGY

There are no changes from the previous application.

2.6 METEROLOGY

All necessary data on meterology is covered in Section 5.4.

2.7 ECOLOGY

The proposed 364 MW unit will reduce the overall impact on the ecology in the vicinity of the plant. Relocation of the materials handling facilities to the new property east of the existing plant site will considerably reduce the quantity of vegetation requiring removal in the existing site. The only additional clearing involved will be for the cooling tower in the area northwest of the fuel oil yard as shown on Map 2.1.2.

The new property east of the existing plant site is predominantly reclaimed phosphate land, use of which will have very little impact on the ecology. The area is presently in use as pasture land. There will be some removal of pines and scrub oaks required to accomodate the materials handling facility and the railroad siding, but this will be only minimal.

There will be less adverse effect on wildlife around the plant site due to the lesser amount of natural vegetation which must be disturbed. The area around Fish Lake has been an uncontrolled dumping area for many years which has significantly reduced the wildlife in that area. The area has been an eyesore and a source of vermin. The construction and operation of the railroad spur and materials handling facilities in the new area will not change the overall ecology of the site significantly and will allow the area north and west of the plant site to remain in an essentially natural state.

2.8 AMBIENT AIR

All required data on ambient air quality is covered in Section 5.4. All available baseline data and information is presented along with projections of the impact of Unit #3 on air quality.

SECTION 3

THE PLANT

3.1 CHANGES IN EXTERNAL APPEARANCE

The orientation of the proposed unit has been modified per recommendations by the architect-engineer. The new layout is shown on Map 2.1.2

The coal facility and much of the equipment related to flue gas cleaning has been relocated on the new property east of the existing plant site and south of Fish Lake. The entire area of the coal facility, scrubber sludge stabilization facility, and limestone preparation facility will be enclosed by a berm approximately twenty feet high.

This berm will be constructed from stabilized scrubber sludge. It will then be completely seeded and topped with trees to isolate the area from public view, to isolate any noise created, and to isolate any potential dust problems.

Figures 3.1.1 and 3.1.2 show detailed views of the external appearance of the boiler and flue gas cleaning equipment including dimensions for the proposed larger unit and the stack elevation.

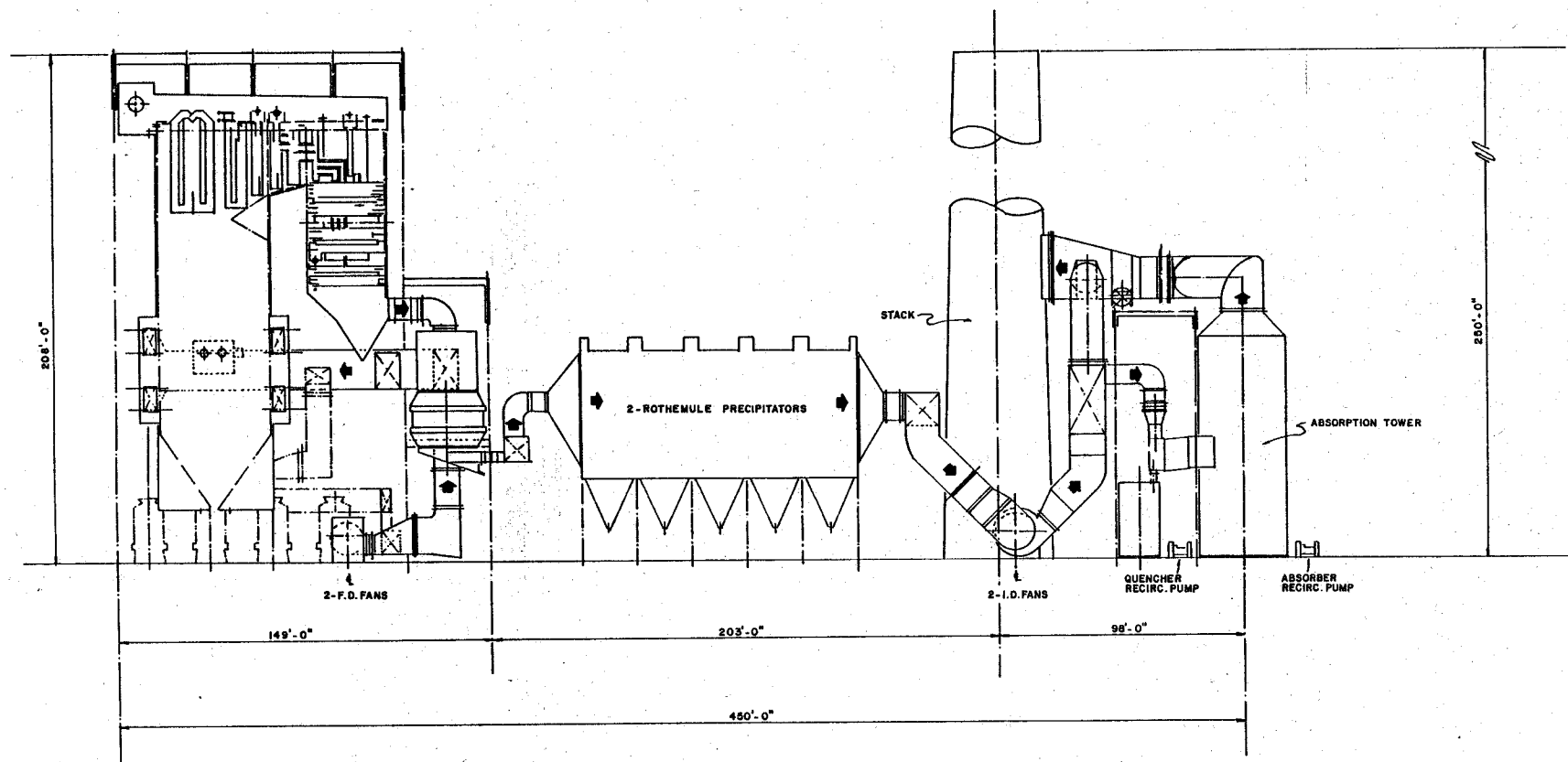
The only gaseous wastes from the plant will be flue gases from the stack at an elevation of 387 ft. MSL or 250 ft. above ground level. The only liquid wastes from the plant will be excess cooling tower blowdown re-entering the sewage treatment system.

3.1 EXTERNAL APPEARANCE (Revised 5-9-78)

The existing units at site of the proposed new unit are open with exposed painted structural steel, aluminum skinned steam generator, and insulated piping. This has proven to be an acceptable and highly economical construction method for Florida.

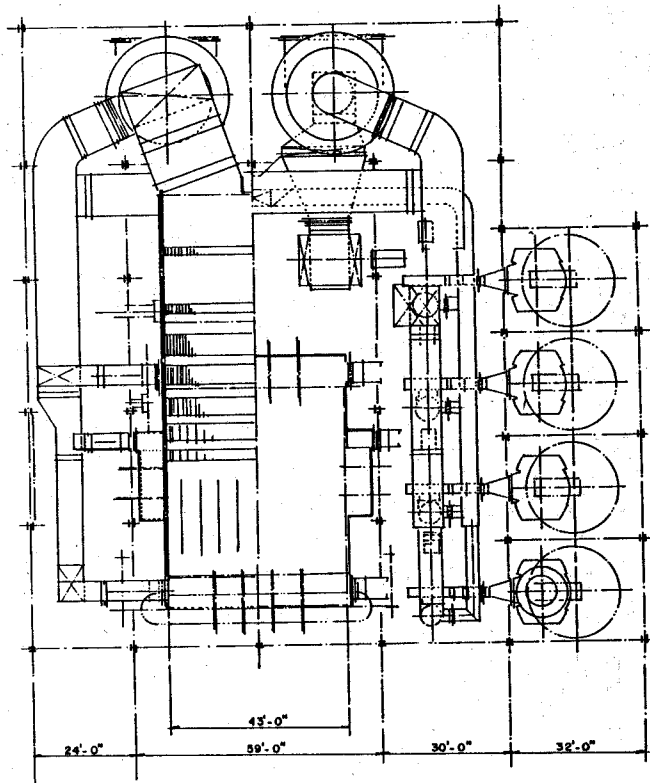
The structural steel and non-insulated piping on the unit will be painted to match existing structures; the steam generator, high temperature piping, ducts, and tanks will be insulated and protected with aluminum lagging. This is necessary to reduce heat loss and protect personnel, but also will provide an attractive, low maintenance external appearance for the unit.

The additional capital cost of providing a hurricane resistant external facade for the proposed new unit would be astronomical and would have to be paid by customers of the City of Lakeland in the form of higher utility bills. Our goal is to provide a generation unit that is realistically esthetic, highly reliable, totally environmentally acceptable, low in maintenance, and can provide the lowest possible cost electrical generation to our customers.

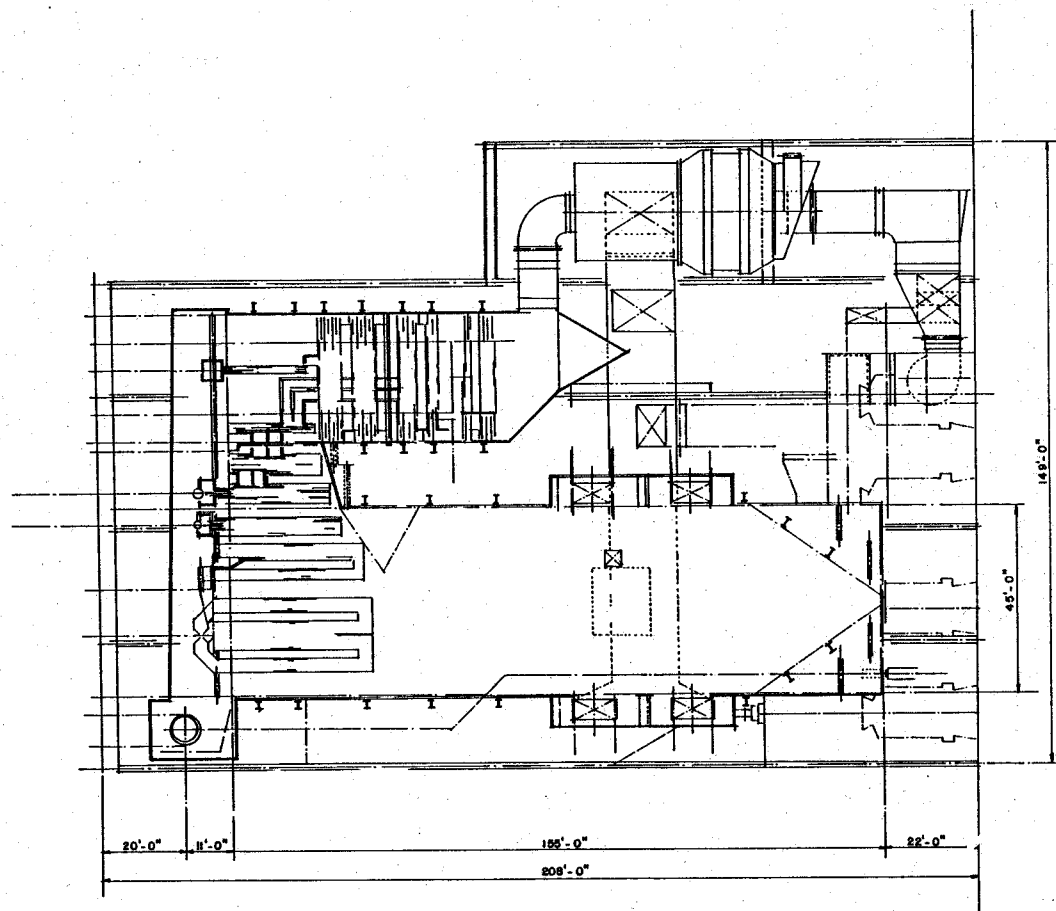


P.3.1-2

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale: $\frac{1}{4}$ "
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by M/G	Date 1-23-76	BOILER AND FLUE GAS CLEANING EQUIPMENT		Dwg. No.	Rev. No.
App. by				FIG. 3.1.1	



BOILER PLAN VIEW



BOILER ELEVATION VIEW

P.3.1-3

Division POWER GENERATION			CITY OF LAKELAND, FLORIDA		Proj. No.	Scale: #
Engineer			DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by M. Gieseler	Date	4-5-70	BOILER VIEWS		Dwg. No.	Rev. No.
App. by					FIG. 3.1.2	

3.2 FUELS

3.2.1 FUEL TYPES

Unit #3 will have the capability of burning the same types of fuels and fuel combinations as described in the 250 MW application.

The primary fuel will be pulverized coal and additionally the unit has been designed to burn processed refuse to supplement the pulverized coal. The unit has been designed so that refuse can supply up to 10% of the necessary heat input for loads over 50% of the design maximum capability (approximately 182 MW). However, for the purposes of calculating the emission rates, flue gas volumes and flow rates, and for annual fuel consumption for this report, it was assumed that the unit would burn refuse at a constant rate of 26.25 tons per hour for 8 hours per day.

As a backup to pulverized coal, Unit #3 will also have the capability to burn low sulfur oil as a principal fuel. The unit will also have the capability to burn processed refuse with the oil. Oil and the oil/refuse combination will only be used during those periods when the use of coal is impossible due to precipitator or scrubber malfunction or disruption of coal supply. Possible disruptions could result from coal handling equipment failures, coal mine strikes, railroad strikes, etc.

In summary, Unit #3 will have the capability of the four (4) following firing modes:

1. Pulverized coal only
2. Pulverized coal and processed refuse
3. Low sulfur oil only
4. Low sulfur oil and processed refuse

It is entirely possible that any or all firing modes could be utilized on a given day, however, during normal operation, firing modes 1 and 2 will be considered the primary modes.

3.2.2. FUEL QUANTITIES

Unit #3 will have an annual heat input requirement of 2.162×10^{13} BTUs based on a 75% load factor and an annual availability of 95% or 345 days. It is anticipated that the coal only and coal/refuse firing mode will be available for 311 days annually with the oil and oil/refuse modes accounting for the remaining availability. Based on the above data, typical annual fuel uses are:

<u>Fuel</u>	<u>Quantity</u>
Coal	818,000 tons
Refuse	72,450 tons
Oil	337,600 Bbls.

The expected hourly fuel flow requirements at both maximum load (364MW) and at average load (272MW) for each of the firing modes described in Section 3.2.1 are shown in Table 3.2.1.

TABLE 3.2.1

FIRING MODES
FUEL FLOW RATES

<u>MODE/LOAD</u>	<u>HOURLY FLOW RATES</u>	
	<u>364 Mw</u>	<u>272 Mw</u>
NO. 1 COAL ONLY (tons/hr.)	140.9	113.5
NO. 2 COAL/ REFUSE: (10% REFUSE)		
COAL (tons/hr.)	129.4	102.1
REFUSE (tons/hr.)	26.25	26.25
NO. 3 OIL ONLY (bbbls/hr.)	531.1	428.1
NO. 4 OIL/ REFUSE: (10% REFUSE)		
OIL (bbbls/hr.)	488.1	385.0
REFUSE (tons/hr.)	26.25	26.25

P. 3.2-3

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by <u>M. GIEGEL</u>	Date <u>4-5-78</u>	<u>C.D. MCINTOSH, JR. POWER PLANT</u>		Dwg. No.	Rev. No.
App. by		<u>UNIT NO. 3</u>			

3.2.3 TRANSPORTATION

Coal will be delivered to the plant site in two continuously operating unit trains of 70 one hundred ton cars per train. At this time a particular coal supplier has not been determined, but an investigation is currently in progress to determine the most economical sources of coal and the transportation costs involved with each source. Presently, four potential areas have been identified. They are:

1. District 13 - Alabama
2. District 9 - West Kentucky
3. District 8 - East Kentucky and parts of West Virginia, Tennessee and Virginia
4. District 3 - Northern West Virginia

Coals from Alabama, East Kentucky and West Kentucky can be transported to Lakeland by single-line rail haul (L&N/SCL RR) and can be expected to have the lowest unit train freight rates. Northern West Virginia (the "Fairmont" coal field) represents a source of high-quality, medium to high sulfur coal, suitable for use in the proposed Lakeland unit; and, despite a two-line rail haul to Lakeland (Chessie System/SCL RR), is considered potentially competitive with coals from the other areas. Although West Virginia District 8 coals originating on the N&W Rwy. and the C&O would likewise involve two-line rail hauls, they cannot at this stage of the Coal Supply Study be ruled out as non-competitive.

Unit trains from any of the above mentioned sources will reach the plant site on a railroad spur line which will be constructed

from the coal unloading area to an existing Seaboard Coast Line track located 1.5 miles due east of the plant site. The spur will cross Combee Road in a northwesterly direction to pass north of Fish Lake. The coal storage area, as shown on map 2.1.2, has been moved from the location shown in the 250 MW application to a site located east of the boiler. The spur line, as shown on map 2.1.1 will loop around Fish Lake with the coal unloading area being located south southeast of the lake.

In order to locate the coal pile as shown on map 2.1.2, the City will purchase additional land east of the existing plant site. Plans are already underway for the condemnation and purchase of the necessary parcel.

Oil will be delivered into the plant site by fuel oil trucks from Port Tampa as is presently done for existing units.

Refuse collected in the Lakeland area will be delivered to the refuse processing area located on the plant site by collection and/or transfer trucks.

3.2.4 STORAGE

Coal will be stored on site in open piles for immediate use and a 90 day emergency reserve supply will be maintained in a sealed pile. The emergency reserve pile will require approximately 9 acres of land when the coal is compacted and layered to a height of 20 feet. The reserve pile will store approximately 275,000 tons of coal and the active pile will store approximately 10,000 tons.

Oil will be stored in the two (2) existing 96,000 barrel low sulfur oil tanks. Unlike the original 250 MW application, no additional fuel oil storage tanks will be constructed for the 364 MW unit.

Refuse will be received and stored in the same manner as described in the original 250 MW application.

3.2.5 FUEL ANALYSES

Typical fuel analyses for the coal, oil, and refuse that will be burned in Unit #3 are located in Tables 3.2.2, 3.2.3 and 3.2.4 respectively.

3.2.6 PLANS FOR EMERGENCY SPILLS

As described in Section 3.2.4, no new oil tanks will be required, so existing fuel oil unloading areas will be utilized. Since these areas already comply with the U.S. Environmental Protection Agency's rule on the prevention of oil spills, no additional spill protection will be required.

3.2.7 COAL PILE RUN-OFF

As described in the original 250 MW application, the entire coal handling facility will be encircled by a trench system which will collect and direct coal pile run-off (up to and including the amount of run-off expected from the ten-year, 24 hour storm event.) Run-off quantities and diagrams are shown in more detail in Section 3.3.

TYPICAL COAL ANALYSISUNIT #3

<u>CONSTITUENT</u>	<u>% WEIGHT</u>
Proximate:	
Volatile Matter	32.9
Fixed Carbon	46.4
Sulfur	3.3
Moisture	5.4
Ash	12.0
Ultimate:	
H	4.5
N	1.3
C	66.0
O	7.5
S	3.3
Moisture	5.4
Ash	12.0

HHV - 11,500 BTU/lb.

TYPICAL ANALYSISNo. 6 Oil - 0.77% Sulfur

<u>CONSTITUENT</u>	<u>VALUE</u>
API Gravity @ 60°F	24
Specific Gravity 60/60°F	0.9100
Viscosity SSU @ 100°F	280
Flash Point °F	200
Four Point °F	55
Sulfur %	0.77
Sediment %	0.15
Water %	NIL
Ash %	0.05
Vanadium ppm	75
Sodium ppm	30
BTU/bbl	6,100,000

TYPICAL ANALYSIS
OF
MUNICIPAL REFUSE

<u>CONSTITUENT</u>	<u>AVG.</u>	<u>MAX.</u>	<u>MIN.</u>
Moisture, wt. %:			
Total	31.2	66.3	11.1
Inherent	1.2	2.62	0.36
Ash, wt. %:			
As received	15.8	21.4	7.6
Dry	23.1	33.0	14.3
Sulfur, wt. %:			
As received	0.10	0.28	0.04
Dry	0.16	0.36	0.07
Chlorides, wt. %:			
As received	0.40	0.94	0.14
Dry	0.58	1.14	0.31
Common Salt, wt. %:			
As received	0.30	0.55	0.11
Dry	0.45	0.76	0.33

3.3 PLANT WATER USE CHANGES

3.3.1 SYSTEMS WITH WATER USE CHANGES

Due to the increase in unit size from 250 MW to 364 MW, water uses and consumption will be increased in almost all plant components requiring water. The most notable increases will occur in demineralizer requirements, scrubber make-up water, and cooling tower evaporation rates. Recent advances in cooling tower drift elimination have resulted in this consumptive use being reduced by approximately 130 gallons per minute or 187,200 gallons per day.

3.3.2 WATER AND WASTEWATER FLOWS

Figure 3.3.1 is a flow diagram showing the source of water to each of the plant's major components and the wastewater treatment system. It should be noted that whenever possible, wastewater will be reused.

3.3.3 SOURCES OF WATER

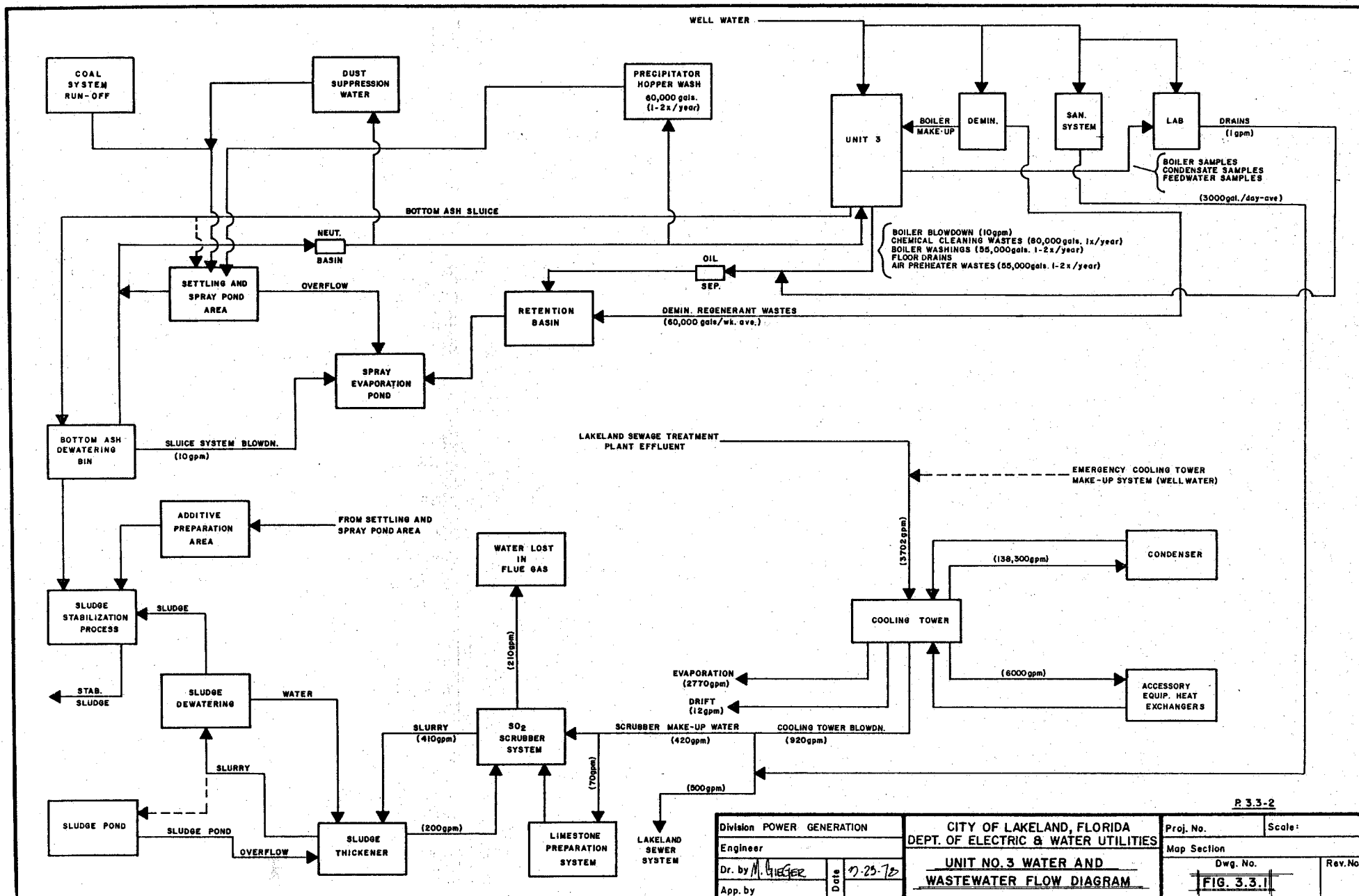
As described in the 250 MW application, groundwater (as shown in Figure 3.3.1) will be used on a continuous basis in the ion-exchange unit and the plant sanitary system. Intermittent uses of groundwater will be for boiler chemical cleanings and boiler and air preheater washings. The groundwater required for these systems will come from two (2) existing service water wells already in operation serving Units #1 and #2 at the McIntosh Plant. These wells are both 555 feet deep and have the capability to pump 600 gpm.

The major source of water to the unit will be secondary treated sewage from the City's Waste Treatment Plant. Treated sewage effluent will be the source of make-up water to the cooling tower and the SO₂ scrubber system. The use of the treated sewage effluent reflects no change from the 250 MW application.

In the event of a temporary interruption of the supply of treated sewage effluent, groundwater from three (3) deep wells located along the northern boundary of the site will be used until the effluent supply is restored. Under the 250 MW Unit #3 "Conditions of Certification", groundwater used for make-up to the unit is limited to emergency use only with the stipulation that average annual use shall not exceed 0.2166 MGD or 5.271 MGD on a maximum daily basis from the three (3) wells. Because of changes in the range of the 364 MW Unit #3 cooling tower, no changes from this certification condition will be required.

3.3.4 CONSUMPTIVE USES

Table 3.3.1 shows the daily consumptive uses of water anticipated at minimum and maximum power operations. For the purposes of the consumptive use calculations and since Unit #3 will be essentially a base load unit, minimum consumption was calculated at 70% load.



Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale:
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by M. GIEGER	Date 7-25-75	UNIT NO. 3 WATER AND		Dwg. No.	Rev. No.
App. by		WASTEWATER FLOW DIAGRAM		FIG. 3.3.1	

CONSUMPTIVE WATER USES

<u>SYSTEM</u>	<u>MAXIMUM OPERATING CONDITIONS</u>		<u>MINIMUM OPERATING CONDITIONS</u>	
	<u>RATE</u>	<u>GAL/DAY</u>	<u>RATE</u>	<u>GAL/DAY</u>
BOILER BLOWDOWN	10 GPM	14,400	8 GPM	11520
ION-EXCHANGE REGENERATION	55000 Gal/Wk	8,000	37850 Gal/Wk	5400
CARBON FILTER BACKWASH	3000 Gal/Wk	430	3000 Gal/Wk	430
COOLING TOWER BLOWDOWN	920 GPM	1324800	920 GPM	1324800
COOLING TOWER EVAPORATION	2770 GPM	3988800	2770 GPM	3988800
COOLING TOWER DRIFT	12 GPM	17280	12 GPM	17280
SANITARY WATER	---	3000	---	3000
SCRUBBER MAKE-UP WATER	420 GPM	604,800	210 GPM	302400
SLUICE SYSTEM BLOWDOWN	10 GPM	14,400	10 GPM	14400

29,830 GPD - water

TABLE 3.3.1

3.4 HEAT DISSIPATION SYSTEM

The unit will utilize a wet mechanical draft cooling tower for dissipation of waste heat from condensor and accessory equipment cooling water. The proposed tower location is shown on Map 2.1.2.

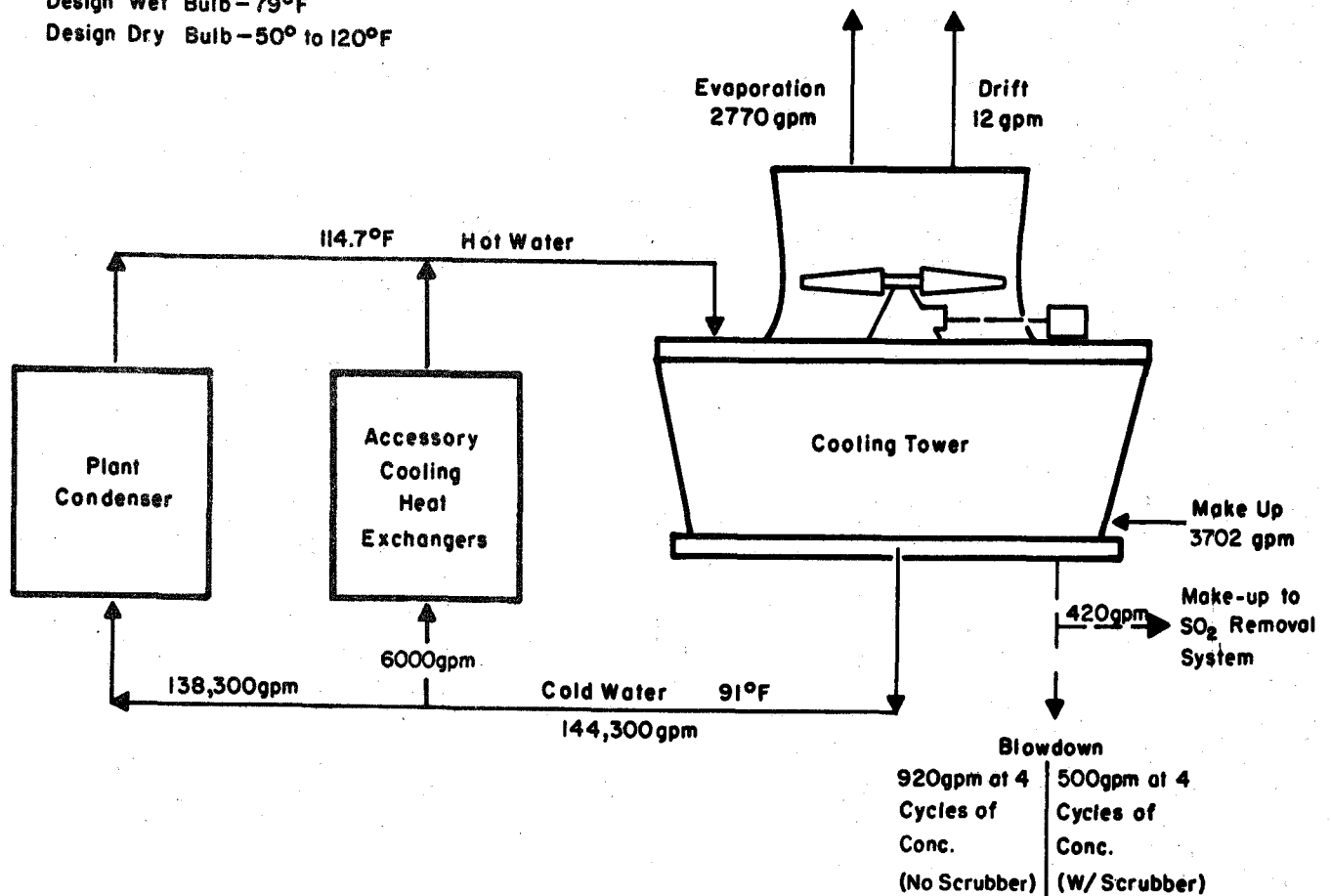
The tower will have a total circulating water flow of 144300 GPM with a design inlet water temperature of 114.7°F and a design outlet water temperature of 91°F. The tower will be designed to dissipate 1636 MMBTUH with a 79°F inlet wet bulb air temperature.

Condenser cooling water will comprise 138300 GPM of the circulating water flow and 6000 GPM will be utilized to cool a secondary fluid for accessory equipment cooling.

Blowdown from the tower will be utilized as make-up for the SO₂ Removal System on the boiler. Any excess blowdown will be returned to Lakeland Sewage Treatment System.

Figure 3.4.1 shows all flows and temperatures in the circulating water system. Table 3.4.1 tabulates all quantities for maximum plant conditions.

Design Wet Bulb - 79°F
 Design Dry Bulb - 50° to 120°F



CIRCULATING WATER FLOW DIAGRAM
 (MAXIMUM QUANTITIES)

P. 3.4-2

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by M. FIEBER	Date 2-16-78	FIGURE 3.4.1		Dwg. No.	Rev. No.
App. by					

TABLE 3.4.1

MECHANICAL DRAFT COOLING TOWER DATA

Height, ft.	60
Flow Rate, Air, ACFM	7,915,500
Heat rejected, MMBTU/Hr	1636
Circulating Water Flow, GPM	144300
Water Inlet Temperature, °F	114.7
Water Outlet Temperature, °F	91
Wet Bulb Temperature, °F	79
Temperature Drop Across Tower, °F	23.7
Evaporation Loss, GPM	2770
Drift Loss, GPM	12
Blowdown, GPM	920 (@4 cycles of concentration)
Make-up, GPM	3702
Make-up, GPD	5,330,880

DISCHARGE BACK TO SEWAGE TREATMENT PLANT:

(a) With scrubbers in use	496 GPM @ 4 cycles
(b) Without scrubbers in use	920 GPM @ 4 cycles

3.5 CHANGES IN CHEMICAL AND BIOCIDES WASTES

The flow diagram shown in Figure 3.3.1 shows the major wastewater flow paths. The figure shows that Unit #3 will not discharge waste streams to any water body, waste streams will be reused to the extent practicable and that all remaining wastes (except for cooling tower blowdown not reused in the scrubber system) will be conveyed to a spray evaporation pond. Excess cooling tower blowdown will still go to the Lakeland Sewage Treatment Plant. Figure 3.3.1 shows that after the scrubber make-up water is taken from the cooling tower blowdown stream, approximately 500 gpm or 720,000 gallons per day will be returned to the sewage treatment plant. The City of Lakeland has instructed the C.T.Main Co., the architect-engineer for Unit #3, to investigate the possibility of reusing more of the cooling tower blowdown in other plant systems to further reduce the amount being returned to the sewage treatment plant. This study is currently in progress.

The wastewater treatment scheme shown in Figure 3.3.1 is essentially the same which was originally presented in the 250 MW application. The most notable change in the system is the addition of bottom ash dewatering bins for separating bottom ash and sluice water in lieu of a 5 acre sluice pond. This change was made to facilitate the handling of bottom ash for the sludge stabilization process. The flow diagram shows a settling and spray pond which will be used as a back-up system to the ash dewatering bin system, a storage area for sluice water makeup, and a holding area for the collection of run-off from the coal pile and coal handling area and water

used in the dust suppression system.

The settling pond will be sized to collect and contain all the coal pile run-off from the 12 acre coal storage area that is expected from the 10 year, 24 hour storm event.

The 10 year, 24 hour storm event in the Lakeland area is 6.60 inches so the pond will be sized to contain 2.151 million gallons of water or 6.60 acre feet which would be expected from this event. The settling pond will be clay lined to prevent leaching of the water to shallow ground water supplies.

As described in the original 250 MW application, all storage or holding areas shown on Figure 3.3.1 will be clay lined.

3.5.1 COAL PILE RUNOFF IN EXCESS OF 10 YEAR, 24 HOUR STORM
EVENT (Revised 5-15-78)

According to Charles T. Main, Inc., the Unit #3 design engineers, the design of the coal pile run-off system has not proceeded sufficiently to identify the specific means of flow monitoring for the excess above the 10 year storm. However, several options are available. One such scheme would involve using an open channel and measuring liquid level to determine the head and flow on primary devices such as V-notch, rectangular, or Cippoletti weirs, or Parshall flumes. A float-and-cable device could be used, or alternately an electronic analog or pulse duration signal could be produced by a flow transmitter.

No matter which system is used, coal pile run-off in excess of the 10 year, 24 hour storm event will be discharged to Fish Lake.

3.6 CHANGES IN SANITARY AND OTHER WASTE SYSTEMS

3.6.1 SANITARY AND LABORATORY WASTES

According to proviso IXX located on page 12 of the "Special Conditions" all sanitary wastes shall be collected and discharged, along with excess cooling tower blowdown, to the sanitary sewerage system of the City of Lakeland. The sanitary waste system is shown on Figure 3.3.1.

All liquid wastes from the plant chemical laboratory will drain into the unit's floor drain system and go to the retention basin prior to ultimate disposal in the spray evaporation pond. The lab drain system is shown in Figure 3.3.1.

3.6.2 FLYASH AND BOTTOM ASH

The change from 250 MW to 364 MW will result in the formation of more bottom ash and the collection of more flyash during the coal only, coal/refuse and oil/refuse firing modes. For purposes of this report it is assumed that no ash will be collected during the oil only firing mode since the amount of bottom ash formed during oil firing is essentially negligible.

Based on a coal ash content of 12%, a refuse ash content of 15.8%, a bottom ash to fly ash ratio from total ash of 15% bottom ash and 85% fly ash and an electrostatic precipitator collection efficiency of 99.5%, the following are the expected annual amounts of ash that will be collected at the plant site:

<u>Type Ash</u>	<u>Tons/Year Collected</u>
Bottom	16,450
Fly	<u>92,800</u>
TOTAL	109,250

All quantities of collected ash from the operation of Unit #3 will be used as an integral ingredient in the sludge stabilization process described in Sections 3.6.3 and 5.6.2.

3.6.3 FLUE GAS DESULFURIZATION SCRUBBER SLUDGE

As reported in Section 3.7, sulfur dioxide in the flue gas from the coal only and coal/refuse firing modes will comply with the State and Federal new source performance standard of 0.80 lbs/mmBTU by using a limestone slurry flue gas scrubber with an 80% removal efficiency.

The end product of the SO₂ scrubbing system will be a 50% solids sludge consisting of the following materials:

<u>Constituent</u>	<u>% By Weight</u>
CaCO ₃	33
CaSO ₃ ·2H ₂ O	58
CaSO ₄ ·2H ₂ O	9

The quantity of sludge expected to be produced from Unit #3 is shown in Table 3.6.1.

In order to dispose of the annual amounts of sludge shown in Table 3.6.1 and the amounts of flyash and bottom ash described in Section 3.6.2 in an acceptable manner, all sludge and ash quantities will be brought to an on-site stabilization process. In this process, ash and scrubber sludge will be combined with lime and other aggregates to form a cementitious material suitable for use as landfill material, road base material, embankments and impermeable liners.

SO₂ SCRUBBER SLUDGE
GENERATION RATES⁽¹⁾

TABLE 3.6.1

<u>FIRING MODE</u>		<u>MAXIMUM⁽²⁾</u> <u>LOAD</u>	<u>AVERAGE⁽³⁾</u> <u>LOAD</u>
COAL ONLY	tons/hr (Wet)	46.6	37.5
	tons/hr (Dry)	23.3	18.8
COAL/REFUSE	tons/hr (Wet)	43.1	34.0
	tons/hr (Dry)	21.5	17.0
TOTAL ANNUAL PRODUCTION	tons/yr (Wet)	-	271,455
	tons/yr (Dry)	-	135,730

Notes:

(1) based on 80% Removal Efficiency

(2) 364 Mw

(3) 272 Mw

P.3.6-3

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by <i>M. GREGG</i>	Date <i>3-30-78</i>	<u>C.D. McINTOSH, JR. POWER PLANT</u>		Dwg. No.	Rev. No.
App. by		<u>UNIT NO. 3</u>			

COMPARISON OF WASTE DISPOSAL VOLUMES
FLY ASH, BOTTOM ASH, SCRUBBER SLUDGE

TABLE 3.6.2

<u>PRODUCT</u>	<u>GENERATED</u> tons/yr	<u>VOLUME</u> yd ³ /ton	<u>ANNUAL</u> <u>VOLUME</u> yd ³ /yr
BOTTOM ASH	16,450	1.14	18,753
FLY ASH	92,800	1.65	153,120
SCRUBBER SLUDGE	271,455	1.21	328,460
TOTAL	380,705	-	500,333
STABILIZED ⁽¹⁾ SLUDGE	190,353	1.9	361,670

224 acre-ft/yr

NOTE:

(1) based on addition of 1 ton SO₂ sludge to 1 ton Ash.

≈ 850 tons/acre-ft
(fixed sludge)

109,000
218,000

3.64
MW

P. 3.6-5

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA ✓		Proj. No.	Scale
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by <u>M. BIGGER</u>	Date <u>3-21-78</u>	C.D. McINTOSH, JR. POWER PLANT		Dwg. No.	Rev. No.
App. by		UNIT NO. 3			

Once the ash and sludge have been stabilized, the material will be used to build a 20 foot high berm around the coal handling facility. The berm construction will be a continuing process throughout the life of the plant.

The advantages of the stabilizing process are that it forms a stable, beneficial product from SO_2 scrubber sludge and it significantly reduces the large volume of containment ponds that would be required to store the ash and sludge separately. Table 3.6.2 is a comparison of the required volumes necessary to store the ash and sludge separately and the resultant volume achieved through stabilization.

3.7 AIR EMISSIONS

3.7.1 AIR EMISSIONS COMPLIANCE STANDARDS

Unit #3 will be required to meet or exceed the State and Federal new source emission limits for Nitrous Oxide (NO_x), Sulfur Dioxide (SO_2), Total Suspended Particulate matter (TSP) and Opacity as listed in chapter 17-3 (FAC) and 40 CFR 60. As discussed in Section 3.2, Unit #3 will be capable of burning three different fuels in four firing modes which will require meeting various emission limits depending on the firing mode. The following are the emission limits for each firing mode:

<u>FIRING MODE</u>	<u>SO_2 LB/MMBTU</u>	<u>NO_x LB/MMBTU</u>	<u>TSP LB/MMBTU</u>	<u>OPACITY %</u>
Coal only	1.2	0.7	0.1	20
Coal/Refuse	1.2	0.7	0.1	20
Oil only	0.8	0.3	0.1	20
Oil/Refuse	0.8	0.3	0.1	20

3.7.2 NITROUS OXIDES (NO_x) COMPLIANCE METHOD

NO_x will be maintained within new source performance standards (NSPS) through either boiler, burner or a combination of boiler and burner design. Each of the boiler companies that are currently bidding on this project uses a different method, however each company guarantees that applicable NO_x emission limits will be met.

3.7.3 PARTICULATE (TSP) COMPLIANCE METHOD

Particulate emissions resulting from the coal only, coal/refuse and oil/refuse firing modes will be maintained within the new source performance standard of 0.1 lb/mmBTU with a cold side

precipitator with a minimum removal efficiency of 99.5%.

Particulate compliance during the oil only firing mode will not require the use of the precipitator since the ash content of 0.77% sulfur oil results in TSP emission levels of less than the emission standard.

A certain amount of particulate removal will also take place in the SO₂ limestone scrubbing system during the coal only and coal/refuse firing mode when use of the scrubber will be required. However, for the purposes of determining the TSP emission rates for these two modes, it was assumed that no removal would take place in the scrubber.

3.7.4 SULFUR DIOXIDE (SO₂) COMPLIANCE METHOD

As discussed above, compliance with SO₂ emission limits for the coal only and coal/refuse firing modes will be achieved with limestone slurry scrubbing system. The system that will be used in the 364 MW size will have a minimum removal efficiency of 80% and is the same as described in the 250 MW Unit #3 certification application. SO₂ emissions in the oil only and oil/refuse firing modes will comply with SO₂ emission limits due to the low amounts of sulfur in both the fuels.

3.7.5 EMISSIONS DISPERSION METHOD

As reported in the 250 MW application, flue gas exiting the boiler and pollution control equipment will be discharged from a 250 foot stack. Flue gas from the coal only and coal/refuse firing modes which require SO₂ scrubbing will be reheated to approximately 200°F and exit the stack at 170°F. Flue gas from the oil only

and oil/refuse firing modes which do not require SO₂ scrubbing will exit the stack at 250°F.

3.7.6 ANNUAL EMISSIONS

The annual emissions of TSP, SO₂ and NO_x which would be expected during a typical operating year are as follows:

<u>POLLUTANT</u>	<u>ANNUAL EMISSIONS (TONS)</u>
TSP	541
SO ₂	11,640
NO _x	7,140

3.7.7 HOURLY EMISSION RATES

Table 3.7.1 shows pertinent data on flue gas volumes, velocities, temperatures, and emission rates in both pounds per hour (lbs/hr) and pounds per million BTU heat input (lbs/mmBTU) for all four (4) firing modes at maximum (364 MW) and average (272 MW) load conditions.

TABLE NO. 3.7.1

FLUE GAS AND POLLUTANT FLOWS BURNING
VARIOUS FUEL COMBINATIONS

FUEL	LOAD	FUEL FLOW ⁽¹⁾	<u>PRECIPITATOR</u> <u>INLET GAS</u>		<u>SCRUBBER</u> <u>INLET GAS</u>		<u>SCRUBBER</u> <u>OUTLET GAS</u>			<u>STACK EXIT</u> <u>GAS</u>			<u>SO₂</u> <u>EMISSIONS</u>		<u>T.S.P.</u> <u>EMISSIONS</u>		<u>NO_x</u> <u>EMISSIONS</u>	
			°F	A.C.F.M.	°F	A.C.F.M.	°F	A.C.F.M.	% H ₂ O	°F	ft/sec	A.C.F.M.	lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
COAL ONLY	364	4695	300	1027360	300	1027360	130	914483	13.1	170	80.8	974852	3720	1.15	143.7	0.044	2268	0.7
	272	3784.4	300	828102	300	828102	130	737117	13.1	170	65.0	785778	2997	1.15	115.8	0.044	1828	0.7
COAL/REFUSE	364	4315/875	300	1027500	300	1027500	130	908112	13.2	170	80.1	965915	3438	1.06	167.3	0.050	2268	0.7
	272	3404/875	300	828136	300	828136	130	728182	13.3	170	64.4	776304	2717	1.04	139.4	0.053	1828	0.7
OIL ONLY	364	371.8	-	-	-	-	-	-	-	250	76.2	919121	2495	0.77	226.8	0.070	972	0.3
	272	299.7	-	-	-	-	-	-	-	250	61.4	740810	2011	0.77	182.8	0.070	783	0.3
OIL/REFUSE	364	341.7/875	300	987627	-	-	-	-	-	250	76.5	922415	2397	0.74	243.7	0.075	972	0.3
	272	269.5/875	300	796741	-	-	-	-	-	250	61.7	744134	1914	0.73	199.7	0.076	783	0.3

NOTE:

364Mw = MAXIMUM LOAD

272Mw = AVERAGE LOAD

(1)

COAL & COAL/REFUSE = lbs/min

OIL = gals/min

OIL/REFUSE = gals/min & lbs/min

P.3.7-4

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale 1/4"
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by <i>M. Kieper</i>	Date 11-22-77	C.D. MCINTOSH, JR. POWER PLANT		Dwg. No.	Rev. No.
App. by		UNIT NO. 3			

TABLE NO. 3.7.1

FLUE GAS AND POLLUTANT FLOWS BURNING
VARIOUS FUEL COMBINATIONS

FUEL	LOAD	FUEL FLOW ⁽¹⁾	PRECIPITATOR INLET GAS		SCRUBBER INLET GAS		SCRUBBER OUTLET GAS			STACK EXIT GAS			SO ₂ EMISSIONS		T.S.P. EMISSIONS		NO _x EMISSIONS	
			°F	A.C.F.M.	°F	A.C.F.M.	°F	A.C.F.M.	%H ₂ O	°F	ft/sec	A.C.F.M.	lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
COAL ONLY	364	4695	300	1027360	300	1027360	130	914483	13.1	170	80.8	974852	3720	1.15	143.7	0.044	2268	0.7
	272	3784.4	300	828102	300	828102	130	737117	13.1	170	65.0	785778	2997	1.15	115.8	0.044	1828	0.7
COAL/REFUSE	364	4315/875	300	1027500	300	1027500	130	906112	13.2	170	80.1	965915	3438	1.06	167.3	0.050	2268	0.7
	272	3404/875	300	828136	300	828136	130	728182	13.3	170	64.4	776304	2717	1.04	139.4	0.053	1828	0.7
OIL ONLY	364	371.8	-	-	-	-	-	-	-	250	76.2	919121	2495	0.77	226.8	0.070	972	0.3
	272	299.7	-	-	-	-	-	-	-	250	61.4	740810	2011	0.77	182.8	0.070	783	0.3
OIL/REFUSE	364	341.7/875	300	987627	-	-	-	-	-	250	76.5	922415	2397	0.74	243.7	0.075	972	0.3
	272	269.5/875	300	796741	-	-	-	-	-	250	61.7	744134	1914	0.73	199.7	0.076	783	0.3

NOTE:

364Mw = MAXIMUM LOAD

272Mw = AVERAGE LOAD

- (1) COAL & COAL/REFUSE = lbs/min
 OIL = gals/min
 OIL/REFUSE = gals/min & lbs/min

R 3.7-5

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale 1/4"
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by M. Kieper		C.D. MCINTOSH, JR. POWER PLANT		Dwg. No.	Rev No
App. by		UNIT NO. 3			
Date	11-22-77				

3.8 ASSOCIATED TRANSMISSION FACILITIES

The 364 megawatt generating unit of the McIntosh Power Plant will require new 230,000 volt [230 kilovolt (kV)] transmission facilities to integrate the power output of the plant into the transmission systems.

The purpose of the proposed Orlando-Lakeland 230 kV Transmission Line is to transmit power from the McIntosh Power Plant to the Orlando Utilities Commission's Taft Substation. Load flow studies indicate that this transmission line will also contribute significant benefits to the interconnected electric transmission system in this region of Florida.

The proposed route location of this transmission line is shown on Figure 3.8-1. Figure 3.8-5 shows existing transmission lines of the Tampa Electric Company, Florida Power Corporation, Lakeland and Orlando Utilities Commission systems which are in the vicinity of the proposed Orlando-Lakeland 230 kV Transmission Line.

3.8.1 TRANSMISSION LINE DESCRIPTION

The Orlando-Lakeland 230 kV Transmission Line will originate at the McIntosh Power Plant and terminate at the Taft Substation south of Taft, Florida.

The Proposed transmission route will be approximately 51 miles in length. Of this total length, 32.75 miles (64.4 per cent) of the route will require routing through areas where existing transmission lines do not presently occur, while 13.30 miles (26.1 per cent) of the route will parallel existing transmission route segments and 4.80 miles (9.5 per cent) will use existing Orlando Utilities Commission transmission structures. Table 3.8-1 tabulates

this information by major segments. Figure 3.8-2 indicates the major transmission line segments as discussed above.

The proposed in service date of 1981.

3.8.2 NOISE, GROUND CURRENTS, AND OZONE

Design and construction standards employed and operating experience to date indicate that no adverse environmental impact is expected to occur during normal operation of the 230 kV transmission facilities.

3.8.2.1 RADIATED ELECTRICAL AND ACOUSTIC NOISE

Radiated electrical noise is caused by partial electrical discharges, such as corona, and by electrical discharge across small gaps. Acoustic noise is caused by corona-generated noise, usually described as crackling noise, from conductors and hardware during foul weather. Foreign deposited particles such as airborne contaminants or sharp points and abrasions on electrical conductors and equipment are the usual sources of corona discharges on these items. Transmission line hardware and electrical equipment for operation at 230 kV is required to be factory tested and guaranteed to assure corona-free performance up to the maximum operating voltage level.

The normal line design and construction standards should result in essentially corona-free operation for these transmission facilities. Accordingly, radiated electrical noise generation (1, 2, 3, 4, 5) and acoustic noise generation (6, 7) are expected to be minimal for normal operation of these transmission facilities.

During foul weather and unusual atmospheric conditions, it is possible that an audible hum may be heard directly under the 230 kV lines.

3.8.2.2 INDUCED OR CONDUCTED GROUND CURRENT

During normal operating conditions for the balanced three-phase operation of the 230 kV line, the ground-level electromagnetic field produced is insignificant under the line. This small field results in minimal induced and conducted ground currents. The electrostatic field produced at ground level for this operating condition is expected to be below the level of human perception (8).

3.8.2.3 OZONE PRODUCTION

Ozone can form in the air around the conductors of high-voltage transmission lines, particularly during bad weather, due to ionization of the air molecules by corona discharge. Due to ambient wind and atmospheric mixing conditions these effluents are dispersed away from the transmission line.

In 1972, Columbus Laboratories of Battelle Memorial Institute completed extensive field tests to determine the ozone concentration in the vicinity of energized 765 kV lines, under a variety of terrain and meteorological conditions (9). In 1975, the Westinghouse Apple Grove 750 kV Project was designed and built to provide long term statistical data on corona and related phenomena such as ozone generation. The results of these tests and studies confirm that ozone emanating from EHV transmission lines is extremely small under all conditions, and does not create adverse effects on vegetation, animals, or humans (10). The proposed transmission line voltage is well below the test level, and ozone generation will not constitute an environmental problem.

3.8.3 ACCESS ROADS AND FACILITIES

Access to the transmission line right-of-way will be from county roads, highways and existing roads where possible. Creation of access roads may be required in corridor segments presently inaccessible. The access roads are required for construction and periodic inspection and maintenance. The vehicles used for maintenance and inspection will be capable of traversing the transmission line right-of-way in its natural state without the need for road improvements with the exception of inundated marshes and swamps. Figure 3.8-3 shows where construction of access road on the right-of-way will be required through marshes and swamps.

Where access roads are necessary through wetlands, corrugated metal pipe (CMP) culverts will be constructed at regular intervals to maintain equal water level between the sides of the road. Timber bridges will be constructed over deeper water channels and the main flow of Mattie Marsh, Bonnet Creek, Reedy Creek and Horse Creek. Bridge bulkheads will be located away from the centerline of streams and will not interfere with the normal stream bed. Only vertical timber supports, for floor beam and stringer support, will be installed in the stream bed.

3.8.4 LAND USE ALONG RIGHT-OF-WAY

Presently, Orlando Utilities Commission is not planning any other uses of its transmission line right-of-way. Existing ground cover will be left in place and maintained. Orlando Utilities Commission will obtain an easement from the property owners. These property owners will be allowed to continue to utilize the land within the right-of-way for agricultural, recreational, or other uses consistent with construction, operation, and maintenance of the transmission line itself.

New or additional right-of-way will need to be acquired for the approximately 46 miles of the 51 mile transmission line corridor. Approximately two-thirds of the proposed corridor will require acquisition of a new corridor while the other one-third will parallel existing corridors. The predominant land use along the proposed corridor route is open grassland and grassland with scattered trees. This type of land utilization comprises approximately 25 miles of the proposed route (15 and 10 miles, respectively). The largest single land use type is marshland/cypress domes, consisting of approximately 16 miles. Approximately 5 miles of citrus groves and approximately 4 miles of active or reclaimed strip mining areas will also be crossed. Only about one-mile of the proposed corridor will be crossing developed land containing structures of various kinds.

The proposed corridor area with the greatest number of buildings or structures is where the corridor crosses Florida Highway 547 and U.S. Highways 17 and 92, north of Davenport, Florida.

All trees and other vegetation which would interfere with the operation and maintenance of the transmission line will be removed within the entire right-of-way. Tall timber outside of the right-of-way which could fall into the transmission line as a result of high winds or storms will be trimmed or removed. No changes in topography other than indicated elsewhere herein are expected from the physical disturbances associated with the movement and use of machinery to be employed in various aspects of clearing, construction, and maintenance of the corridor.

3.8.5 AESTHETICS OF TRANSMISSION LINES AND SUBSTATIONS

The transmission line will be visible from frequently traveled roads and highways as shown on Figure 3.8-4. The Orlando Utilities Commission will improve the visual impact of the transmission line by the following methods:

- A. The transmission line right-of-way limits will be defined by a natural boundary of vegetation rather than man made fences.
- B. Orlando Utilities Commission will select transmission line structure designs that will minimize visual impact.
- C. Trees and foliage remaining after clearance of the right-of-way will provide a natural screen.
- D. The route used by maintenance vehicles will leave public roads and angle to the transmission line right-of-way. Clearing at adjacent roads will be performed in a manner to retain small trees and low growing natural vegetation to screen the right-of-way from public view.

The substation at the Taft site is currently being planned in connection with another transmission line project and will be expanded to accommodate the termination of this transmission line. Taft substation will be adjacent to an existing 230 kV transmission line and adjacent to an existing Seaboard Coast Line Railroad right-of-way. Figure 3.8-6 shows a typical 115/230 kV substation. The structures in the substation will be of steel, and bus work will be low-profile tubing (See Figure 3.8-7). The substation area will be fenced with seven foot chain link fencing and three strands of barbed wire mounted on 45 degree extension arms.

Four (4) typical designs of transmission structures which Orlando Utilities Commission would use are shown in Figures 3.8-8 through 11. Orlando Utilities Commission will select transmission line structures to suite the particular construction conditions and to minimize visual impact.

3.8.6 COMPARISON OF OVERHEAD AND UNDERGROUND 230 KV TRANSMISSION LINES

The estimated cost per mile of a 1000 amp overhead circuit for installation in 1978 would be approximately \$161,000. Estimates indicate that the per-mile cost of a similar underground circuit would be \$1,100,000. With this major cost differential, Orlando Utilities Commission cannot justify the expense to its customers of installing an underground circuit where an overhead circuit could be constructed.

3.8.7 TRANSMISSION LINE MAINTENANCE

Orlando Utilities Commission will inspect and maintain its transmission line, and line right-of-way by the following activities:

- A. Periodic inspection on foot or by vehicle.
- B. Emergency patrol by vehicle, land and/or air, in the event of damage to the line by severe weather, etc.
- C. Use of farm type tractors with mowing and brush-cutting attachment and/or by hand as required to maintain the initial clearing of vegetation. Subsequent clearing of brush in low ground areas at intervals as necessary.
- D. Clearing of dry areas of upland brush with mowing machinery as necessary.

3.8.8 VEGETATION COMMUNITIES

The principal vegetation communities within the project area include pine flatwoods, pasture, cypress domes and strands, mixed cypress-hardwood swamps, freshwater marshes, ruderal areas, and citrus groves. A discussion of each of these communities follows. Figure 3.8-12 shows the location of the communities along the proposed transmission line route.

3.8.8.1 PINE FLATWOODS

As the name implies, the flatwood community characteristically is associated with flat topography. Such communities are widely distributed throughout Florida on flat areas which were formed between old marine terraces and overlain with a thin layer of poorly drained marine sands. There are three variants of the flatwood community based on the dominance of common southern yellow pines, i.e., the longleaf, slash, and pond pine flatwoods.

Longleaf pine flatwoods dominate the drier sites and may be considered a transition community linking the longleaf pine-turkey oak sandhills and the wetter flatwoods. Flora species composing this variant are those commonly considered to be of the sandhills and the slash pine flatwoods.

Slash pine flatwoods are not as well drained as the longleaf variant, but are not flooded for as extended periods as is the pond pine variant. Since gradations between slash pine and pond pine flatwoods variants often are as common as the typical variant, it is sometimes difficult to distinguish one from another unless the community is dominated by a single pine species.

Along the proposed transmission line route, the longleaf pine is the dominate flatwood community. The understory is generally composed of gallberry, saw palmetto, way myrtle, oak saplings (live, laurel and water). Ground cover is composed of wire grass and other grasses.

3.8.8.2 PASTURE

Pastures along the proposed transmission route have a variety of grasses and other plants. Predominant species are listed in Table 3.8-3. Scattered pine trees also occur in most pasture areas.

3.8.8.3 CYPRESS DOMES AND STRANDS

Cypress dome communities occur in areas of low topography over an impervious clay lens or pan. The clay pan holds waters within the confined area of the dome and is seldom dry. The rounded dome appearance is because of larger cypress trees occurring in the center with progressively smaller trees radiating toward the perimeter. The pond cypress is the characteristic dome cypress and growth may also occur in strands along wet areas. Other floral components of the cypress dome communities include black gum, wax myrtle, slash pine, common buttonbush, sweet bay, red maple, longleaf pine, and holly. Pickerelweed and saw-grass also are common.

3.8.8.4 MIXED CYPRESS - HARDWOOD SWAMP

This community is a mixture of cypress and hardwoods such as oaks, maples, and gum. Drier areas of the swamp favor the growth of hardwoods, and cypress dominate the wetter areas.

3.8.8.5 FRESHWATER MARSHES

There are three freshwater marshes along the proposed transmission route. They are Shingle Creek, Reedy Creek, and Mattie Marsh (see Figure 3.8-12 Sheet 3 of 3). The dominate vegetation in the community are maidencane, cordgrass, pickerelweed, cattail, bulrush, rushes, and saw-grass.

3.8.8.6 RUDERAL AREAS

Ruderal areas are areas that have been disturbed by agricultural or urban activities. Along the proposed transmission line route, they include existing transmission line corridors and phosphate mining sites.

The transmission line corridors are fairly productive areas which provide habitat and grazing vegetation for a variety of animals.

The phosphate sites have limited vegetation and primarily provide habitat for a few reptiles and amphibians.

3.8.8.7 CITRUS GROVES

Citrus groves within the project area consist primarily of orange and grapefruit trees.

A list of conifers and hardwoods potentially occurring in the study area is given in Table 3.8-2. Table 3.8-5 lists the major communities and the percentage of each occurring within a given segment of the proposed corridor.

3.8.9 WILDLIFE COMPONENTS

The vegetation communities within the project area provide habitat for a variety of wildlife. A list of vertebrates known or expected to occur in the region of Orange, Osceola, and Polk Counties together with their preferred habitats and present status is given in Table 3.8-4.

3.8.10 REFERENCES

- (1) Gary, C. and M. Moreau. Predetermination of the RI Level of High Voltage Transmission Lines: Part I - Predetermination of the Excitation Function, IEEE Trans. PAS, Vol. 91, pp. 284-291, January-February, 1972.
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- (3) Warburton, F. W., T. Liao, and N. Hogland. Power Line Radiation and Interference Above 15 MHz. IEEE Trans. PAS, Vol. 88, pp. 1492-1501, October, 1969.
- (4) Pakala, W. E. and V. L. Chartier. Radio Noise Measurements on Overhead Power Lines from 2.4 to 800 kV, IEEE Trans. PAS, Vol. 90, pp. 1155-1165, May-June 1971.
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- (6) Perry, D. E. An Analysis of Transmission Line Audible Noise Levels Based Upon Field and Three-Phase Test Line Measurements. IEEE Trans. PAS, Vol. 91, pp. 857-865, May-June, 1972.
- (7) A Guide for the Measurement of Audible Noise from Transmission Lines. Audible Noise Task Force of the Radio Noise Subcommittee of the IEEE, IEEE Trans. PAS, Vol. 91, pp. 853-856, May-June, 1972.
- (8) Electrostatic and Electromagnetic Effects of Overhead Transmission Lines, REA Bulletin 62-4, May 1976.
- (9) Frydman, M. A. Levy, and S. E. Miller. Oxidant Measurements in the Vicinity of Energized 765 kV Lines, IEEE T and O Committee paper IEEE Trans. PAS, Vol. 92, pp. 1141-1148, May-June, 1973.
- (10) Dietrich, F. M. and N. Kolcio. Corona and Electric Field Effects at the Apple Grove Project and an 800 kV Line in the USA, CIGRE, Report No. 31-08, 1976.

TABLE 3.8-1

MAJOR TRANSMISSION CORRIDOR SEGMENTS COMPARING LENGTHS AND
PERCENTAGES OF PARALLEL ROUTING AND NEW ROUTING REQUIREMENTS

TRANSMISSION CORRIDOR SEGMENT (See Figure 3.8-2) Plant Switchyard	LENGTH			PER CENT	WIDTH (FEET)	AREA (ACRES)
	NEW (MILES)	PARALLEL EXIST (MILES)	*EXIST STRUCTURES (MILES)			
(PS)-A	0.25	-	-	0.5	160	4.85
A - B	26.90	-	-	53.1	160	521.70
B - C	-	13.30	-	26.1	160	257.93
C - D	5.60	-	-	10.9	160	108.60
D - E	-	-	4.80	9.5	0	0
NEW ROUTING	32.75					
PARALLEL ROUTING		13.30				
EXISTING STRUCTURES			4.80			
TOTAL (NEW + PARALLEL + EXISTING) 50.85						

*Existing structures are double circuit lattice steel towers with one circuit existing. New circuit will occupy second circuit positions.

TABLE 3.8-2

CONIFERS AND HARDWOODS POTENTIALLY OCCURRING IN THE STUDY AREA

<u>Scientific Name</u>	<u>Common Name</u>
<i>Juniperus silicicola</i>	Southern red cedar
<i>Pinus clausa</i>	Sand pine
<i>Pinus elliotii</i>	Slash pine
<i>Pinus palustris</i>	Longleaf pine
<i>Pinus serotina</i>	Pond pine
<i>Pinus taeda</i>	Loblolly pine
<i>Taxodium distichum</i>	Bald cypress
<i>Acer rubrum</i>	Red maple
<i>Carya aquatica</i>	Water hickory
<i>Carya glabra</i>	Pignut hickory
<i>Celtis laevigata</i>	Sugarberry
<i>Diospyros virginiana</i>	Common persimmon
<i>Cornus florida</i>	Flowering dogwood
<i>Ilex apaca</i>	American holly
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Liriodendron tulipifera</i>	Yellow poplar
<i>Morus rubra</i>	Red mulberry
<i>Magnolia grandiflora</i>	Southern magnolia
<i>Magnolia virginiana</i>	Sweetbay
<i>Nyssa sylvatica</i>	Black tupelo, blackgum
<i>Prunus serotina</i>	Black cherry
<i>Quercus laurifolia</i>	Laurel oak
<i>Quercus nigra</i>	Water oak
<i>Quercus stellata</i>	Post oak
<i>Quercus virginiana</i>	Live oak
<i>Sabal palmetto</i>	Cabbage palmetto
<i>Sassafras albidum</i>	Sassafras
<i>Ulmus alata</i>	Winged elm
<i>Ulmus americana</i>	American elm

Source: Elbert L. Little, Vol. 1 Conifers and Important Hardwoods of the
Atlas of United States Trees, Miscellaneous Pub. No. 1146,
 U.S. Department of Agriculture Forest Service, March 1971.

TABLE 3.8-3

GRASSES AND MISCELLANEOUS PLANTS POTENTIALLY OCCURRING IN
THE STUDY AREA

<u>Scientific Name</u>	<u>Common Name</u>
<i>Andropogon scoparius</i>	Bluestem
<i>Aristida</i> spp.	Three awn grass
<i>Bromeliaceae</i>	Bromeliads
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Leersia</i> sp.	Cut grass
<i>Myrica cerifera</i>	Wax-myrtle
<i>Paspalum notatum</i>	Bahiagrass
<i>Seveno repens</i>	Saw palmetto
<i>Tillandsia usneoides</i>	Spanish moss

Source: Environmental Science and Engineering, Inc., Gainesville,
Florida, 1977.

TABLE 3.8-4
(Sheet 1 of 8)

VERTEBRATES KNOWN OR EXPECTED TO OCCUR ALONG THE PROPOSED TRANSMISSION LINE CORRIDOR,
THEIR PREFERRED HABITATS AND PRESENT STATUS

Scientific Name	Common Name	Ruderal	Pine Flatwoods	Freshwater Marshes	Cypress Domes	Cypress- Hardwoods Swamps	Pasture	Status
<i>Dideuphis marsupialis</i>	Opposum	X	A	A	A	A	X	
<i>Blarina brevicauda</i>	Shorttail Shrew	X	X	X	C	C	X	
<i>Crypicitiis parva</i>	Least Shrew	X	C		C	C	X	
<i>Scalopus aquaticus</i>	Eastern Mole	X	X				X	
<i>Myotis austroriparius</i>	Mississippi Myotis	X		X	X	X		
<i>Pipistrellus subflavus</i>	Eastern Pipistrel Bat	X	X	X	C	C		
<i>Eptesicus fuscus</i>	Big Brown Bat	X	X	X	X	X		
<i>Lasiurus cinereus</i>	Hoary Bat		X	X	C	C		R
<i>Lasiurus seminolus</i>	Seminole Bat		X	X	C	C		
<i>Nyctiofius humeralis</i>	Evening Bat	X	X	X	X	X		
<i>Lasiurus intermedius</i>	Eastern Yellow Bat		X	X	X	X		
<i>Plecotus rafinesquet</i>	Eastern Big-eared Bat	X						R
<i>Tadarida brasiliensis</i>	Mexican Freetail Bat	X						
<i>Ursus americanus</i>	Black Bear		R	R	R	R		T
<i>Procyon lotor</i>	Raccoon	A	A	A	A	A	A	
<i>Mustela frenata peninsulae</i>	Florida Weasel	O	O	O	O			R
<i>Mustela vison</i>	Mink			X	X	X		
<i>Lutra canadensis</i>	River Otter			O	O			
<i>Mephitis mephitis</i>	Striped Skunk	X	X	X			X	
<i>Spilogale putorius</i>	Spotted Skunk	X	X	X			X	
<i>Urocyon cinereoargenteus</i>	Gray Fox	X	X	X	O	O	X	
<i>Canis canis</i>	Feral Dog	X	X				X	
<i>Felis concolor</i>	Florida Panther		R	R	R	R		E
<i>Lynx rufus</i>	Bobcat	X	X	X	X	X		
<i>Felis domesticus</i>	Feral Cat	X	X	X	X	X	X	
<i>Sciurus carolinensis</i>	Eastern Gray Squirrel	X	X					
<i>Sciurus niger niger</i>	Eastern Fox Squirrel	X	X					
<i>Glaucomys volans</i>	Southern Flying Squirrel	X						
<i>Geomys pinetis</i>	Pocket Gopher	X						
<i>Reithrodontomys humilis</i>	Eastern Harvest Mouse	X					X	
<i>Peromyscus polionotus</i>	Old Field Mouse	X					X	

Key: X=Present (Abundance Unknown) A=Abundant C=Common O=Occasional R=Rare
E=Endangered T=Threatened U=Status Undertermined S=Species of Special Concern
WR=Winter Resident SR=Summer Resident PR=Permanent Resident AV=Accidental Visitor MO=Migrant

TABLE 3.8-4
(Sheet 2 of 8)

VERTEBRATES KNOWN OR EXPECTED TO OCCUR ALONG THE PROPOSED TRANSMISSION LINE CORRIDOR,
THEIR PREFERRED HABITATS AND PRESENT STATUS
(Continued)

Scientific Name	Common Name	Ruderal	Pine Flatwoods	Freshwater Marshes	Cypress Domes	Cypress- Hardwoods Swamps	Pasture	Status
<i>Peromyscus gossyrinus</i>	Cotton Mouse	X	X					
<i>Peromyscus floridanus</i>	Florida Mouse		X					
<i>Peromyscus nattali</i>	Golden Mouse		X	X	C	X		
<i>Neotoma florida</i>	Eastern Woodrat		X	X	C	C		
<i>Oryzopys palustris</i>	Rice Rat		X	A	X	X		
<i>Sigmodon hispidus</i>	Hispid Cotton Rat	X	X	X	X	X	X	
<i>Neofiber alleni</i>	Round-tailed Muskrat			R	R	R		U
<i>Rattus norvegicus</i>	Norway Rat	A					C	
<i>Rattus rattus</i>	Black Rat	A					C	
<i>Mus musculus</i>	House Mouse	A					A	
<i>Myocastor coypus</i>	Nutria			O	O			
<i>Sylvilagus floridanus</i>	Eastern Cottontail	A	C	O			A	
<i>Sylvilagus palustris</i>	Marsh Rabbit			A	A	A		
<i>Sus scrofa</i>	Wild Boar, Feral Hog		X	X	X	X		
<i>Odocoileus virginianus</i>	White Tail Deer	C	A	C	O	C	C	
<i>Dasypus novemcinctus</i>	Armadillo	A	A	O			A	
<i>Kinosternon bauri bauri</i>	Striped Mud Turtle				O			
<i>Alligator mississippiensis</i>	American Alligator			C	C	C		S
<i>Chelydra serpentina osceola</i>	Florida Snapping Turtle			X	O	C		
<i>Sternotherus minor minor</i>	Loggerhead Musk Turtle				A	X		
<i>Terrapene carolina bauri</i>	Florida Box Turtle	X	C	O				
<i>Pseudemys floridana peninsularis</i>	Peninsula Cooter				O	O		
<i>Pseudemys nelsoni</i>	Fla. Red-bellied Turtle				O	O		
<i>Trionyx ferox</i>	Florida Softshell				O	O		
<i>Gopherus polyphemus</i>	Gopher Tortoise		O					T
<i>Anolis carolinensis</i>	Green Anole	X	O	X			X	
<i>Sceloporus undulatus undulatus</i>	Southern Fence Lizard	X	C	O			X	
<i>Cnemidophorus sexlineatus</i>	Sixlined Racerunner	X	O				X	
<i>Leiocopsis laterale</i>	Ground Skink	X	O	O			X	
<i>Eumeces inexpectatus</i>	SE. Five-lined Skink		C					
<i>Eumeces egregius onocrepis</i>	Brown Red-tailed Skink	X	X					
<i>Ophisaurus venirealis</i>	Eastern Glass Lizard	X	C					
<i>Ophisaurus compressus</i>	Island Glass Lizard	X	X					
<i>Ophisaurus attenuatus longic.</i>	E. Slender Glass Snake	X						
<i>Natrix cyclopion floridana</i>	Fla. Green Water Snake				C	C		
<i>Natrix taxispilota</i>	Brown Water Snake			X	A	A		

TABLE 3.8-4
(Sheet 3 of 8)

VERTEBRATES KNOWN OR EXPECTED TO OCCUR ALONG THE PROPOSED TRANSMISSION LINE CORRIDOR,
THEIR PREFERRED HABITATS AND PRESENT STATUS
(Continued)

Scientific Name	Common Name	Ruderal	Pine Flatwoods	Freshwater Marshes	Cypress Domes	Cypress- Hardwoods Swamps	Pasture	Status
<i>Natrix sipedon pictiventris</i>	Florida Water Snake			X	C	C		
<i>Seminatrix pygaea cyclas</i>	S. Florida Swamp Snake			X	X	X		
<i>Storeria dekayi victa</i>	Florida Brown Snake		0	C	C	C		
<i>Thamnophis sirtalis sirtalis</i>	Eastern Garter Snake	X	0	0	0	0	X	
<i>Thamnophis sauritus sackeni</i>	Southern Ribbon Snake	X	0	C	C	C	X	
<i>Liodytes alleni</i>	Striped Swamp Snake			C	C	C		
<i>Heterodon platyrhinos</i>	Eastern Hognose Snake	X	0				X	
<i>Heterodon simus</i>	Southern Hognose Snake	X	0	X			X	
<i>Rhadinaea flavilata</i>	Yellowlipped Snake		R	X	X	X		
<i>Diadophis punctatus punctatus</i>	Southern Ringnecked Snake		0	0	X	X		
<i>Abaster erythrogrammus</i>	Rainbow Snake	X		X	X	X	X	
<i>Fernacia abacura abacura</i>	Eastern Mud Snake			0	0	0		
<i>Coluber constrictor priapus</i>	Southern Black Racer	X	A	0	C	C	X	
<i>Masticophis flagellum flagellum</i>	Eastern Coachwhip		0		X			
<i>Ophedrys aestivus</i>	Rough Greensnake	X	0	0	0	0	X	
<i>Drymarchon coralais couperi</i>	Eastern Indigo Snake	X	X				X	S
<i>Elaphe guttata guttata</i>	Corn Snake	X	0	0	0	0	X	
<i>Elaphe obsoleta quadrivittata</i>	Yellow Rat Snake	X	0	0	0	0	X	
<i>Lampropeltis getulus getulus</i>	Eastern Kingsnake		0	0	0	0		
<i>Lampropeltis gelulus floridana</i>	Florida Kingsnake		C	C	C	C		
<i>Lampropeltis traingulum elapsoid</i>	Scarlet Kingsnake	0	0				0	
<i>Cemophora coccinea</i>	Scarlet Snake		0	0	0	0		
<i>Tintilla relicta meilli</i>	Florida Crowned Snake		0					
<i>Micrurus fulvius fulvius</i>	Eastern Coral Snake		0	0	0	0		
<i>Agkistrodon piscivorus piscivor.</i>	Eastern Cottonmouth		0	X	C	C		
<i>Sistrurus miliaris barbouri</i>	Dusky Pigmy Rattlesnake		0	X	X	X		
<i>Crotalus adamanteus</i>	E. Diamondback Rattlesnake	X	0	0	0	0	X	
<i>Zenaidura macroura</i>	Mourning Dove	A	X				X	
<i>Zenaida asiatica</i>	Eastern White-winged Dove	X	X				X	
<i>Columbina passerina</i>	Ground Dove	X					X	
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo			X	X	X		
<i>Crotophaga ani</i>	Smooth-billed Ani	X					X	
<i>Tyto alba</i>	Barn Owl	C	C	C	C	C	C	
<i>Otus asio</i>	Screech Owl	X	X				X	
<i>Bubo virginianus</i>	Great Horned Owl	X	X	X	X	X	X	
<i>Strix varia</i>	Barred Owl	0	0				0	S

TABLE 3.8-4
(Sheet 4 of 8)

VERTEBRATES KNOWN OR EXPECTED TO OCCUR ALONG THE PROPOSED TRANSMISSION LINE CORRIDOR,
THEIR PREFERRED HABITATS AND PRESENT STATUS
(Continued)

Scientific Name	Common Name	Ruderal	Pine Flatwoods	Freshwater Marshes	Cypress Domes	Cypress- Hardwoods Swamps	Pasture	Status
<i>Caprimulgus carolinensis</i>	Chuck-Will's-Widow	C	C				X	
<i>Caprimulgus vociferus</i>	Whip-Poor-Will	X	X				X	
<i>Chordeiles minor minor</i>	Eastern Nighthawk	X	X				X	
<i>Chordeiles minor chapmani</i>	Florida Nighthawk	X	X				X	
<i>Chaetura pelagica</i>	Chimney Swift	X						
<i>Archilochus colurris</i>	Ruby-throated Hummingbird	X		X				
<i>Colaptes auratus auratus</i>	Southern Flicker	C	C				X	
<i>Dryocopus pileatus</i>	S. Pileated Woodpecker	X	X	X	X	X	X	
<i>Centurus carolinus</i>	Red-bellied Woodpecker	A	A	A	A	A	X	
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	C	C				X	
<i>Sphyrapicus varius</i>	Yellow-bellied Sapsucker	A	A	A	A	A	X	
<i>Picoides villosus</i>	Southern Hairy Woodpecker		O	O	O	O		S
<i>Picoides pubescens</i>	Southern Downy Woodpecker	O	C	C	C			
<i>Picoides borealis</i>	Red-cockaded Woodpecker		C		X	X		E
<i>Tyrannus tyrannus</i>	Eastern Kingbird	C	C				X	
<i>Tyrannus dominicensis</i>	Gray Kingbird	X					X	
<i>Myiarchus crinitus crinitus</i>	S. Crested Flycatcher	X	X				X	
<i>Sayornis phoebe</i>	Eastern Phoebe	X	X				X	
<i>Empidonax virescens</i>	Acadian Flycatcher			X	X	X		
<i>Contopus virens</i>	Eastern Wood Pewee		X					
<i>Iridoprocne bicolor</i>	Tree Swallow	A						
<i>Riparia riparia</i>	Bank Swallow	X						
<i>Stelgidopteryx ruficollis</i>	Roughwinged Swallow	X						
<i>Hirundo rustica</i>	Barn Swallow	X						
<i>Petrochelidon pyrrhonota</i>	Northern Cliff Swallow	X						
<i>Progne subis</i>	Purple Martin	X	X				X	
<i>Cyanocitta cristata cristata</i>	Florida Blue Jay	A	A				X	
<i>Aphelocoma coerulescens</i>	Scrub Jay	X						T
<i>Corvus brachyrhynchos pascuus</i>	Florida Crow	X	X				X	
<i>Corvus ossifragus</i>	Fish Crow		X					
<i>Parus carolinensis</i>	Caroline Chickadee	X	X				X	
<i>Sitta carolinensis</i>	White-breasted Nuthatch	X	X				X	S
<i>Sitta pusilla caniceps</i>	Gray-headed Nuthatch		X					
<i>Siren lacertina</i>	Greater Siren			C				
<i>Siren intermedia intermedia</i>	Lesser Siren		R					
<i>Pseudobranchius siriatus axanthus</i>	Narrowstriped Dwarf Siren				X			

TABLE 3.8-4
(Sheet 5 of 8)

VERTEBRATES KNOWN OR EXPECTED TO OCCUR ALONG THE PROPOSED TRANSMISSION LINE CORRIDOR,
THEIR PREFERRED HABITATS AND PRESENT STATUS
(Continued)

Scientific Name	Common Name	Ruderal	Pine Flatwoods	Freshwater Marshes	Cypress Domes	Cypress- Hardwoods Swamps	Pasture	Status
<i>Amphiuma means means</i>	Two-toed Amphiuma		R		C	O		
<i>Notophthalmus viridescens</i>	Peninsula Newt		X	X	X	X		
<i>Plethodon glutinosus glutinosus</i>	Slimy Salamander			A				
<i>Mamulus quadridigitatus</i>	Dwarf Salamander			O	C	O		
<i>Scaphiopus holbrooki</i>	Eastern Spadefoot Toad	X	O					
<i>Eleutherodactylus ricordi plan.</i>	Greenhouse Frog	X	X					
<i>Bufo terrestris</i>	Southern Toad	X	C	C			X	
<i>Bufo quercicus</i>	Oak Toad		A					
<i>Gastrophryne carolinensis</i>	East. Narrow-mouthed Toad	X	C	O			X	
<i>Hyla cinerea</i>	Green Treefrog		O	C	O			
<i>Hyla femoralis</i>	Pine Woods Treefrog	X	C		X	O	X	
<i>Hyla squirella</i>	Squirrel Treefrog	X	C	C	O	O		
<i>Hyla gratiosa</i>	Barking Treefrog		O	X		O		
<i>Limnadedus ocularis</i>	Little Grass Frog		C	O	O	O		
<i>Pseudacris ornata</i>	Ornate Chorus Frog	X	O					
<i>Rana catesbeiana</i>	Bull Frog			C	C	C		
<i>Rana grylio</i>	Pig Frog			X	C	C		
<i>Anhinga anhinga</i>	Anhinga	X						
<i>Ardea herodias</i>	Great Blue Heron			C	C	C		
<i>Casmerodius albus</i>	Great Egret			C	C	C		
<i>Burulus ibis</i>	Cattle Egret	A	X				X	
<i>Egretta tricolor</i>	Louisiana Heron			X	X	X		S
<i>Egretta caerulea</i>	Little Blue Heron			X	X	X		S
<i>Butorides striatus</i>	Green Heron			X	X	X		
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron			X	X	X		
<i>Nycticorax violacea</i>	Yellow-crowned Night Heron			X	X	X		
<i>Botaurus lentiginosus</i>	American Bittern				X	X		
<i>Ixobrychus exilis</i>	Least Bittern			X	X	X		
<i>Mycteria americana</i>	Wood Stork		X	X	X			E
<i>Plegadis falcinellus</i>	Eastern Glossy Iris			X	X	X		
<i>Eudocimus albus</i>	White Ibis			X	X	X		
<i>Aix sponsa</i>	Wood Duck			C	C	C		
<i>Aythya collaris</i>	Ring-necked Duck			X	X	X		
<i>Cathartes alba</i>	Turkey Vulture	A	A				A	
<i>Coragyps atratus</i>	Black Vulture	C	C			X	C	

TABLE 3.8-4
(Sheet 6 of 8)

VERTEBRATES KNOWN OR EXPECTED TO OCCUR ALONG THE PROPOSED TRANSMISSION LINE CORRIDOR,
THEIR PREFERRED HABITATS AND PRESENT STATUS
(Continued)

Scientific Name	Common Name	Ruderal	Pine Flatwoods	Freshwater Marshes	Cypress Domes	Cypress- Hardwoods Swamps	Pasture	Status
<i>Elanoides forficatus</i>	Swallow-tailed Kite		X	X	X	X		
<i>Accipiter striatus</i>	Sharp-shinned Hawk	X	X				X	
<i>Buteo lineatus alleni</i>	Red-shouldered Hawk	X	X	X			X	
<i>Buteo platypterus</i>	Broad-winged Hawk	X	X				X	
<i>Buteo brachyurus</i>	Short-tailed Hawk		X	X	X	X		
<i>Circus cyaneus</i>	Marsh Hawk	A		X	X	X	X	
<i>Caracara cheriway</i>	Caracara	R	R					T
<i>Falco columbarius</i>	Merlin	X						U
<i>Falco sparverius</i>	American Kestrel	C	C				X	
<i>Falco sparverius paulus</i>	American Kestrel	C	C				X	T
<i>Colinus virginianus floridanus</i>	Florida Bobwhite	A	C				X	
<i>Meleagris gallopavo osceola</i>	Florida Turkey		X	X	X	X		
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	X	O		O			T
<i>Laterallus jamacensis</i>	Black Rail	R						
<i>Porphyrula martinica</i>	Purple Gallinule			X	C	C		
<i>Charadrius vociferus</i>	Killdeer	C	X				C	
<i>Trianga solitaria</i>	Solitary Sandpiper					C		
<i>Accipiter cooperii</i>	Cooper's Hawk	C	O					
<i>Buteo jamaicensis borealis</i>	Eastern Red-tailed Hawk	X	X				X	
<i>Troglodytes aedon</i>	House Wren	X	X				X	
<i>Troglodytes troglodytes</i>	Eastern Winter Wren		X					
<i>Thryomanes bewickii</i>	Rewick's Wren		X					
<i>Thryothorus ludovicianus</i>	Carolina Wren	X	X				X	
<i>Cistothorus platensis</i>	Short-billed Marsh Wren	X					X	
<i>Mimus polyglottos polyglottos</i>	Eastern Mockingbird	X	X				X	
<i>Dumetella carolinensis</i>	Gray Catbird	X	X				X	
<i>Toxostoma rufum</i>	Brown Thrasher	X	X				X	
<i>Turdus migratorius migratorius</i>	Eastern Robin	A	X	X			X	
<i>Turdus migratorius achrusteus</i>	Southern Robin	X	X	X			X	
<i>Hylocichla mustelina</i>	Wood Thrush	X	X	X	X	X	X	
<i>Hylocichla ustulata</i>	East Olive-backed Thrush			X	X	X		
<i>Hylocichla fuscens</i>	Veery			X	X	X		
<i>Sialia sialis grata</i>	Florida Bluebird	X	X				X	
<i>Poliophtila caerula</i>	Blue-gray Gnatcatcher	X	X	X	X	X	X	

TABLE 3.8-4
(Sheet 7 of 8)

VERTEBRATES KNOWN OR EXPECTED TO OCCUR ALONG THE PROPOSED TRANSMISSION LINE CORRIDOR,
THEIR PREFERRED HABITATS AND PRESENT STATUS
(Continued)

Scientific Name	Common Name	Ruderal	Pine Flatwoods	Freshwater Marshes	Cypress Domes	Cypress- Hardwoods Swamps	Pasture	Status
<i>Regulus calendula</i>	East Ruby-crowned Kinglet		X					
<i>Anthus spinoletta</i>	Water Pipit	A						
<i>Anthus spragueii</i>	Sprague's Pipit	R						
<i>Bombycilla cedrorum</i>	Cedar Waxwing	A	A				X	
<i>Lanius ludovicianus</i>	Loggerhead Shrike	X					X	
<i>Sturnus vulgaris</i>	Starling	X					X	
<i>Bireo griseus</i>	White-eyed Vireo	A		A	A	A	X	
<i>Vireo flavifrons</i>	Yellow-throated Vireo			X	X	X		
<i>Vireo solitarius</i>	Solitary Vireo	X					X	
<i>Vireo olivaceus</i>	Red-eyed Vireo	X					X	
<i>Mniotilta varia</i>	Black and White Warbler		X					
<i>Protonotaria citrea</i>	Prothonotary Warbler			C	C	C		
<i>Helminthophila vermivorus</i>	Worm-eating Warbler			X	X	X		
<i>Vermivora chrysoptera</i>	Golden-winged Warbler	R						
<i>Vermivora pinus</i>	Blue-winged Warbler	R	R					
<i>Parula americana</i>	Northern Parula			C	C	C		
<i>Parula americana pusilla</i>	Northern Parula Warbler			X	X	X		
<i>Dendroica petechia aestiva</i>	Eastern Yellow Warbler	C		C	C	C	X	
<i>Dendroica magnolia</i>	Magnolia Warbler			R	R	R		
<i>Dendroica tigrina</i>	Cape May Warbler	A					X	
<i>Dendroica caerulescens caerules.</i>	Black-throated Blue Warbler			C	C	C		
<i>Dendroica coronata</i>	Yellow-rumped Warbler	A	A	X	X	X	X	
<i>Dendroica virens</i>	Black-throated Green Warbler		O	O	C	C		
<i>Dendroica striata</i>	Blackpoll Warbler	A					X	
<i>Dendroica pinus florida</i>	Florida Pine Warbler		X					
<i>Dendroica discolor discolor</i>	Northern Prairie Warbler	X		X	X	X		
<i>Dendroica discolor collinsi</i>	Florida Prairie Warbler	X		X	X	X		
<i>Dendroica palmarum</i>	Palm Warbler	A		C	C	C		
<i>Seiurus aurocapillus aurocap.</i>	Oven-Bird							
<i>Seiurus noveboracensis notabilis</i>	Grinnell's Water-Thrush			C	C	C		
<i>Seiurus motacilla</i>	Louisiana Water-Thrush			X	X	X		
<i>Oporornis formosus</i>	Kentucky Warbler			R	R	R		
<i>Setophaga ruticilla</i>	American Redstart			X	X	X		R
<i>Passer domesticus</i>	House Sparrow	A					C	
<i>Dolichonyx oryzivorus</i>	Bobolink	A					C	

TABLE 3.8-4
(Sheet 8 of 8)

VERTEBRATES KNOWN OR EXPECTED TO OCCUR ALONG THE PROPOSED TRANSMISSION LINE CORRIDOR,
THEIR PREFERRED HABITATS AND PRESENT STATUS
(Continued)

Scientific Name	Common Name	Ruderal	Pine Flatwoods	Freshwater Marshes	Cypress Domes	Cypress- Hardwoods Swamps	Pasture	Status
<i>Sturnella magna</i>	Eastern Meadowlark	A	A				A	
<i>Agelaius phoeniceus mearnsi</i>	Fla. Redwing Blackbird	C					X	
<i>Icterus spurius</i>	Orchard Oriole	X	X				X	
<i>Quiscalus quiscula</i>	Common Grackle	A					X	
<i>Piranga rubra</i>	Summer Tanager	C	C				X	
<i>Cardinalis cardinalis</i>	Cardinal	X	X	X	X	X	X	
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak			X	X	X		
<i>Passerina cyanea</i>	Indigo Bunting	X					X	
<i>Passerina ciris</i>	Painted Bunting	X	X				X	
<i>Carduelis pinus</i>	Pine Siskin	X	X				X	
<i>Pipilo erythrophthalmus</i>	Rufous-sided Towhee	X	X				X	
<i>Passerculus sandwichensis</i>	East. Savannah Sparrow	A					X	
<i>Ammodramus savenarum</i>	East. Grasshopper Sparrow	C						E
<i>Ammodramus savannarum floridanus</i>	Fla. Grasshopper Sparrow	X						E
<i>Passerherbulus caudacutus</i>	Le Conte's Sparrow	X						
<i>Poocetes cramineus</i>	Eastern Vesper Sparrow	X						
<i>Chondestes grammacus grammacus</i>	Eastern Lark Sparrow	X						
<i>Aimophila aestivalis bachmani</i>	Bachman's Sparrow	X						
<i>Aimophila aestivalis aestivalis</i>	Pinewoods Sparrow		X					
<i>Spizella passerina</i>	Eastern Chipping Sparrow	X						
<i>Spizella pusilla</i>	Eastern Field Sparrow	C						
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	R					X	
<i>Melospiza georgiana</i>	Swamp Sparrow			X	X	X		
<i>Melospiza melodia melodia</i>	Eastern Song Sparrow	X					X	
<i>Phalacrocorax auritus floridanus</i>	Florida Cormorant	X						
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo			X	X	X		
<i>Parus bicolor</i>	Tufted Titmouse	X		X	X	X	X	

TABLE 3.8-5.

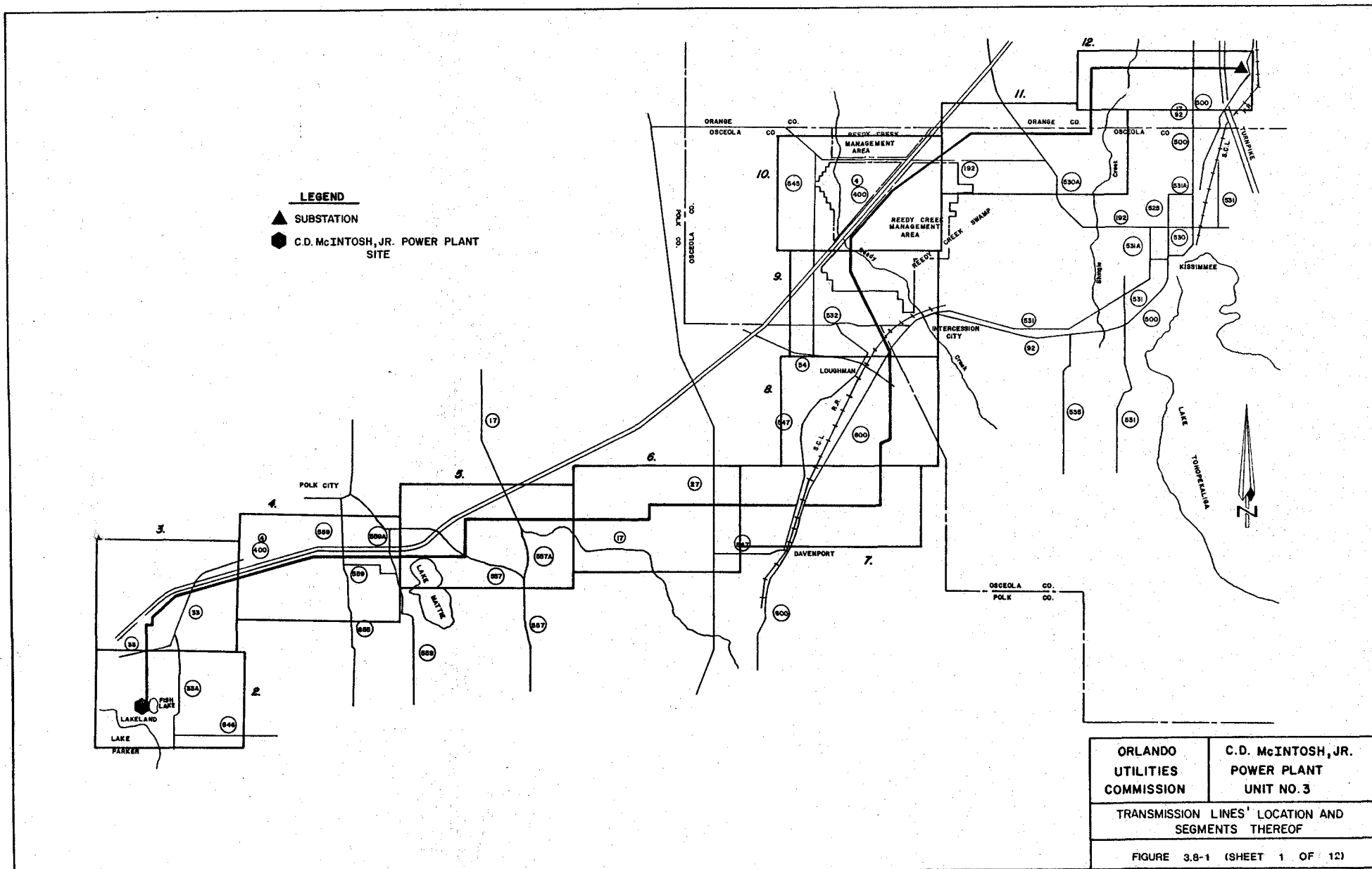
PER CENT COMPOSITION OF MAJOR COMMUNITY TYPES WITHIN A 0.5* MILE CORRIDOR

Vegetational Community Type	CORRIDOR SECTION**					TOTAL**
	Plant Switchyard (PS)-A	A-B	B-C	C-D	D-E	
Pine Flatwoods	50.0	24.9	52.1	75.9	30.9	38.7
Pasture		2.0	14.6	11.6	35.1	9.6
Cypress Domes and Strands		11.9	10.6	8.9		10.1
Mixed Cypress- Hardwood Swamps		25.6	22.7	3.6	34.0	23.1
Ruderal Areas		8.2				4.3
Citrus Groves		15.7				8.1
Open Water	50.0	0.7				0.6
Other***		11.0				5.5
TOTALS	100.0	100.0	100.0	100.0	100.0	100.0

*The 0.5 mile wide corridor is the zone of study. The actual transmission line right-of-way corridor width for the new corridors will be between 80 and 160 feet.

**All numbers shown are percentages. Location of sections are shown on Figure 3.8-2.

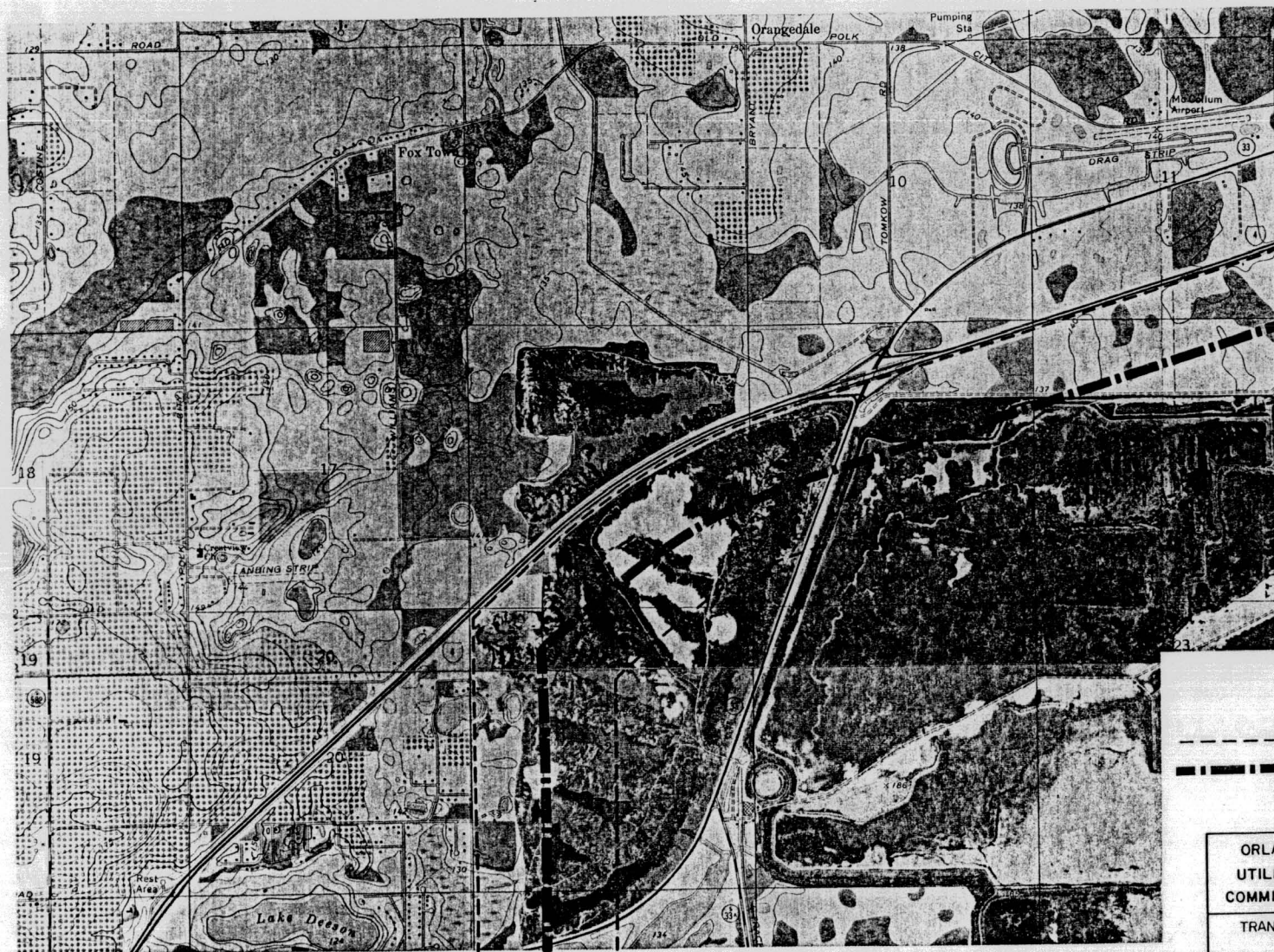
***Includes major highways and urbanized areas.





LEGEND
 - - - - - TRANSMISSION STUDY AREA
 - - - - - NEW 230-kv TRANSMISSION LINE

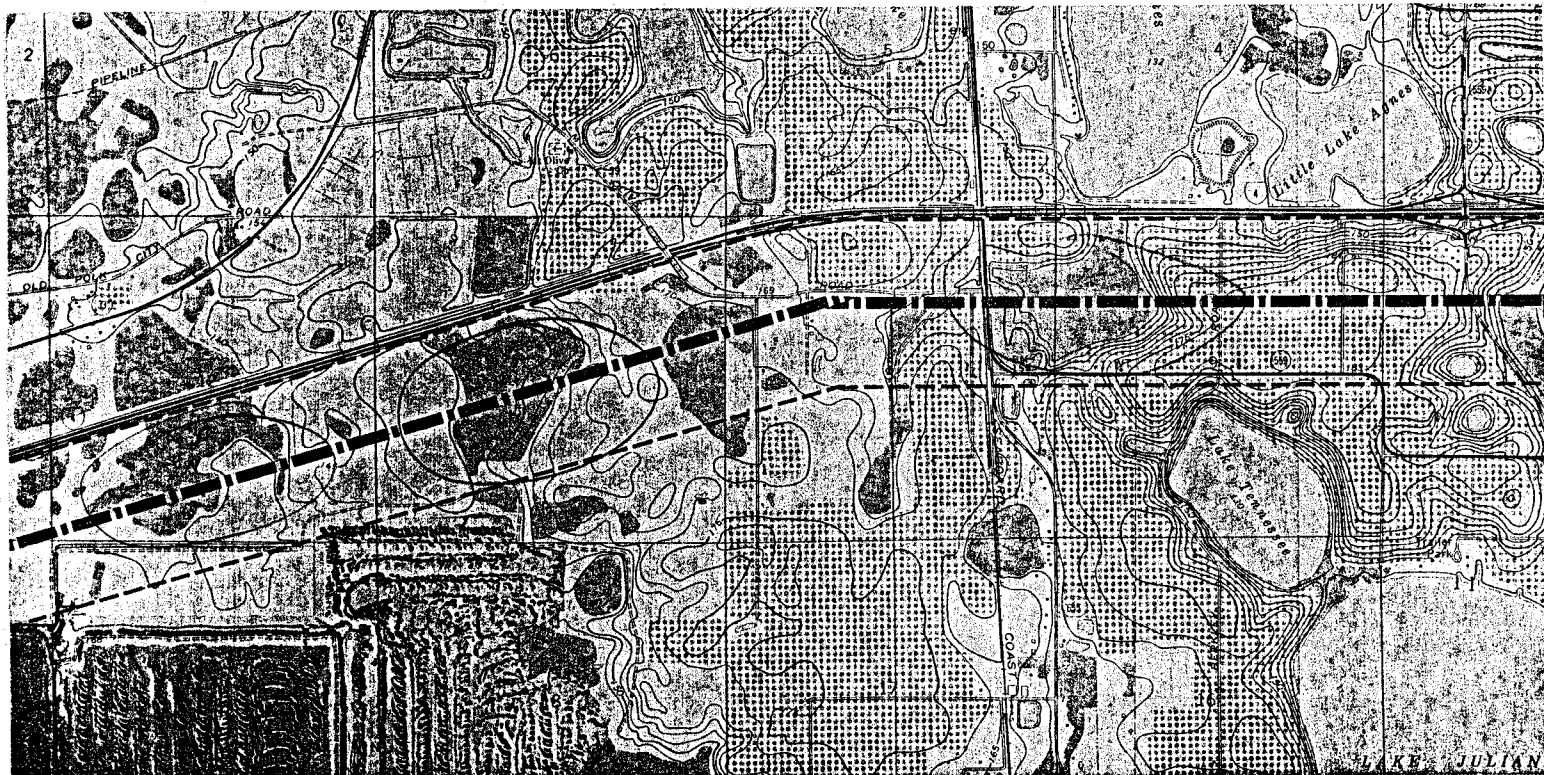
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 2 OF 12)	



LEGEND

- TRANSMISSION STUDY AREA
 - - - - - NEW 230-kv TRANSMISSION LINE

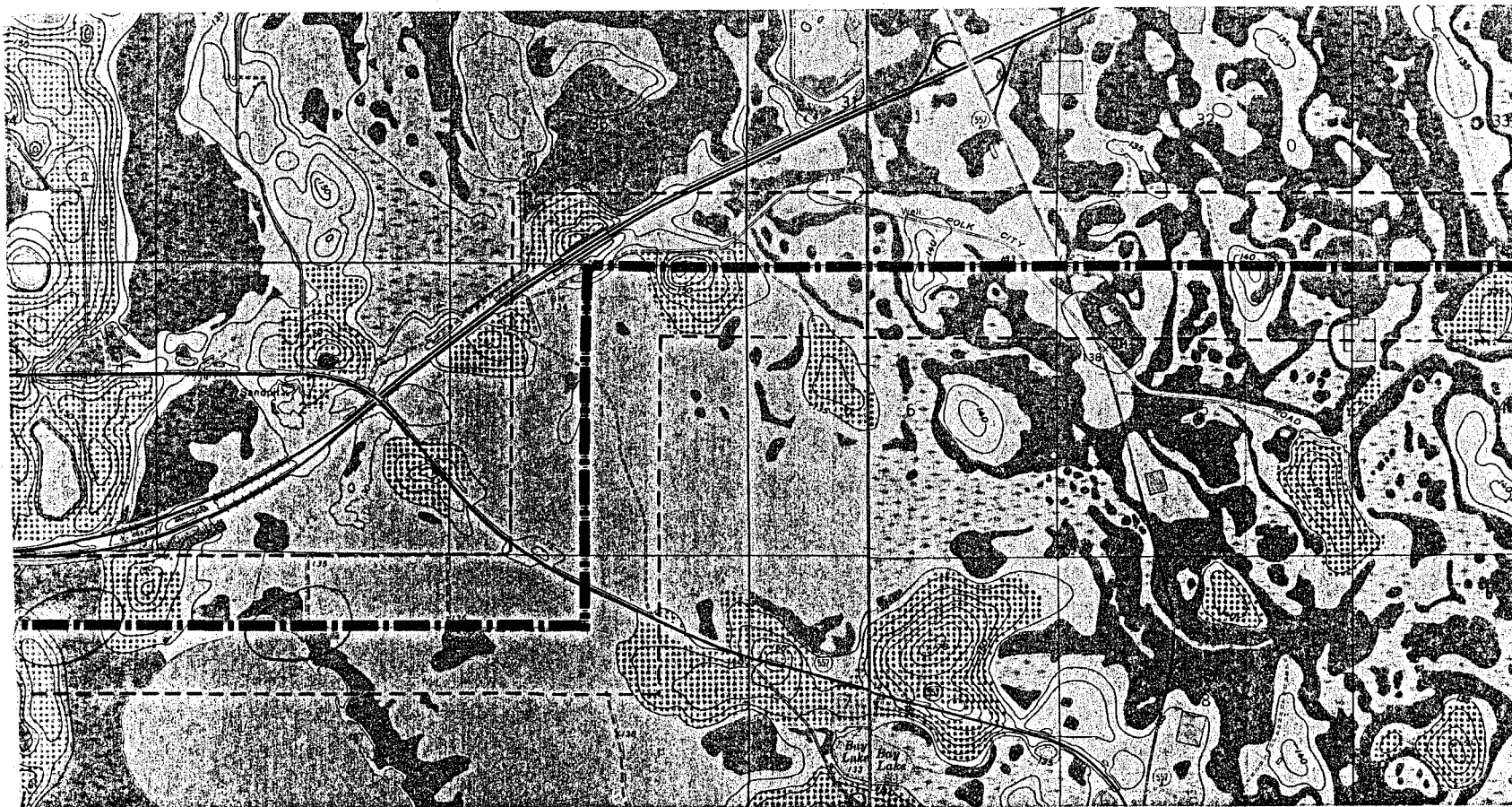
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 3 OF 12)	



LEGEND
 - - - - - TRANSMISSION STUDY AREA
 ■ ■ ■ ■ ■ NEW 230-kv TRANSMISSION LINE



ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 4 OF 12)	

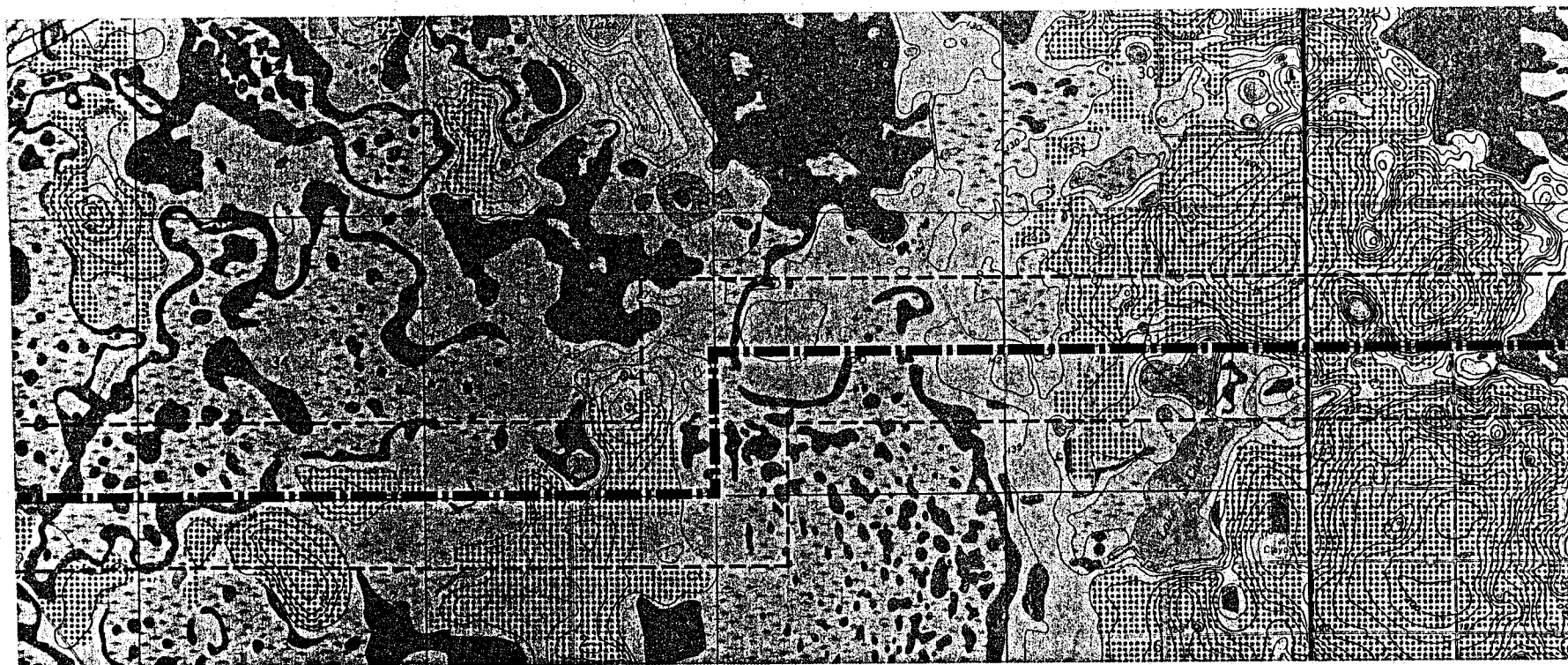


LEGEND

- TRANSMISSION STUDY AREA
 - - - - - NEW 230-kv TRANSMISSION LINE

ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 5 OF 12)	

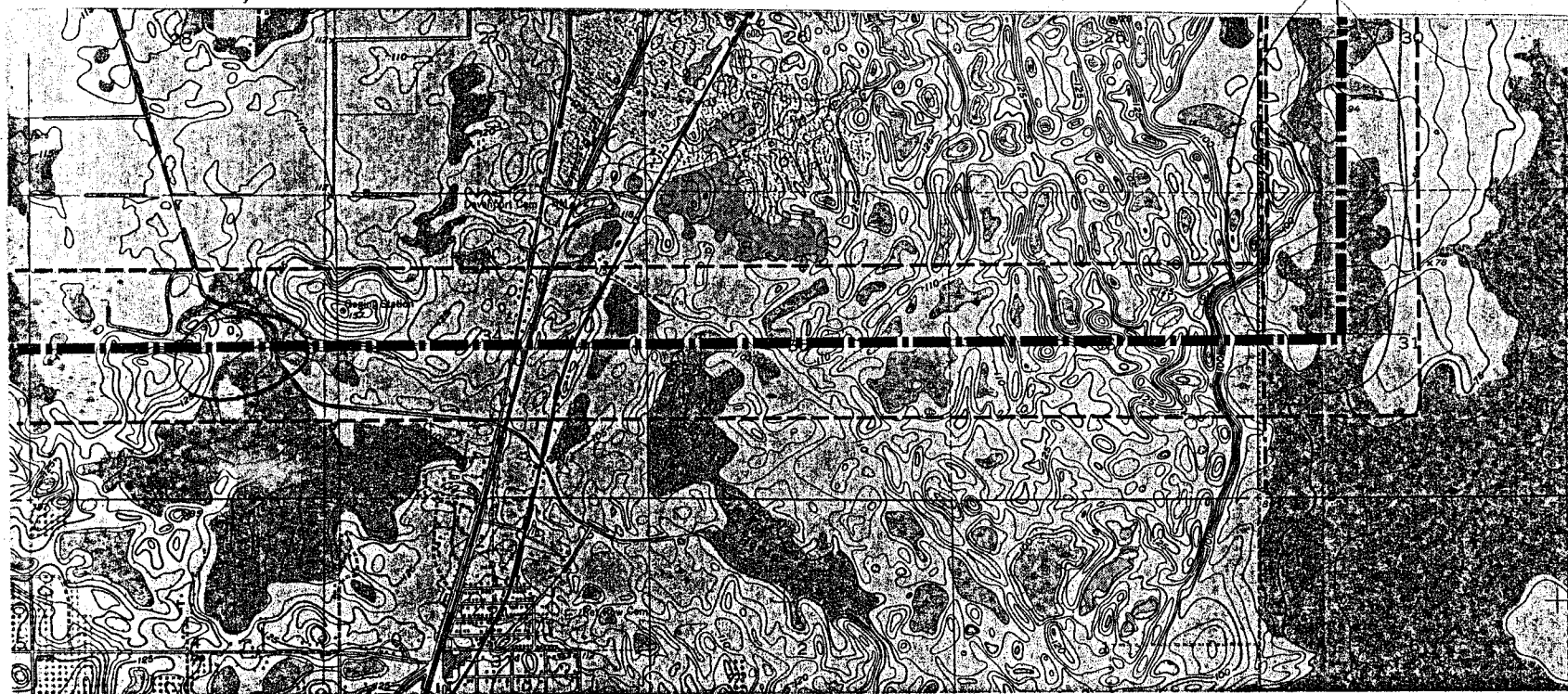
X



LEGEND

- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE

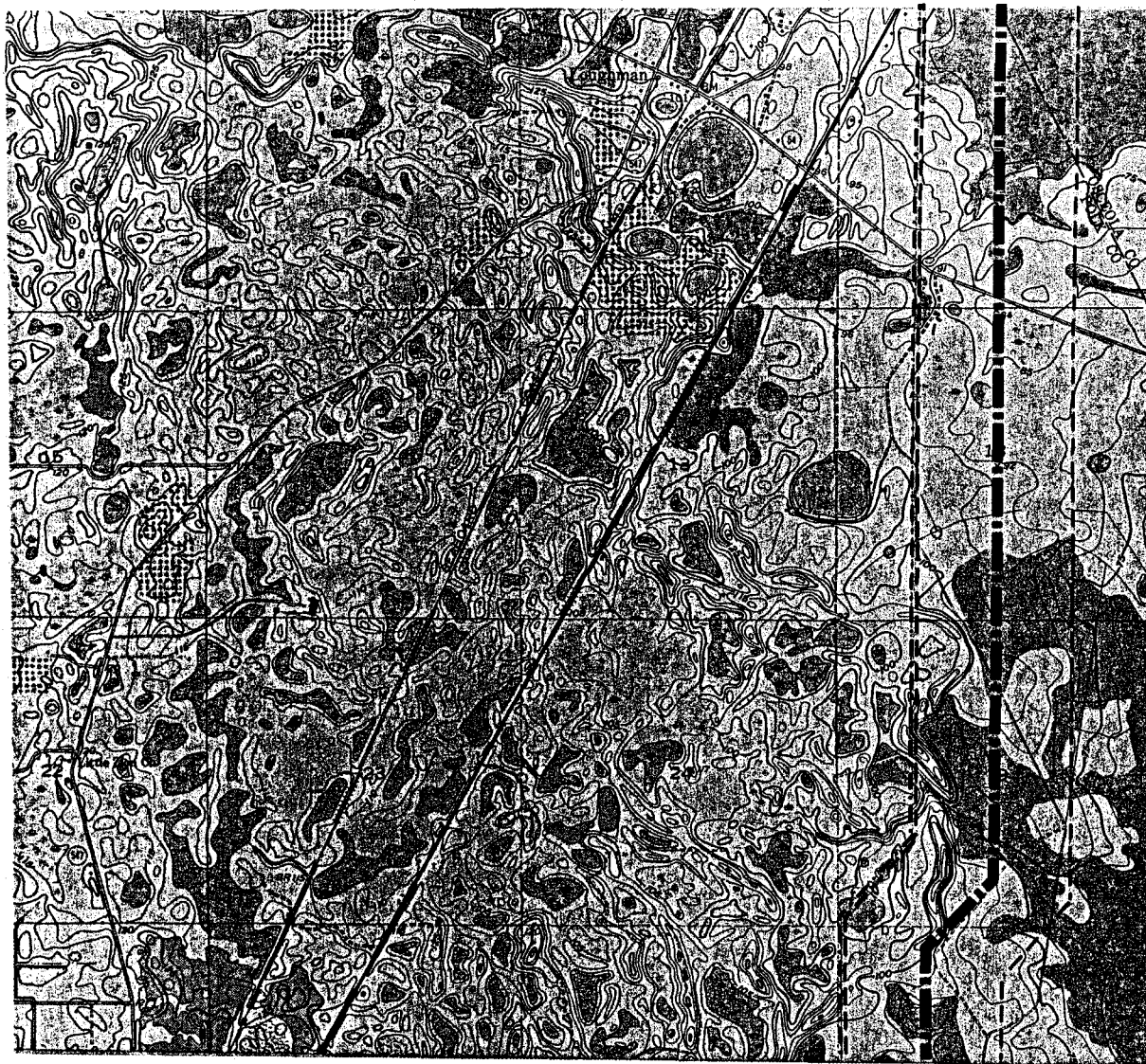
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 8 OF 12)	



LEGEND

- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE
- - - EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

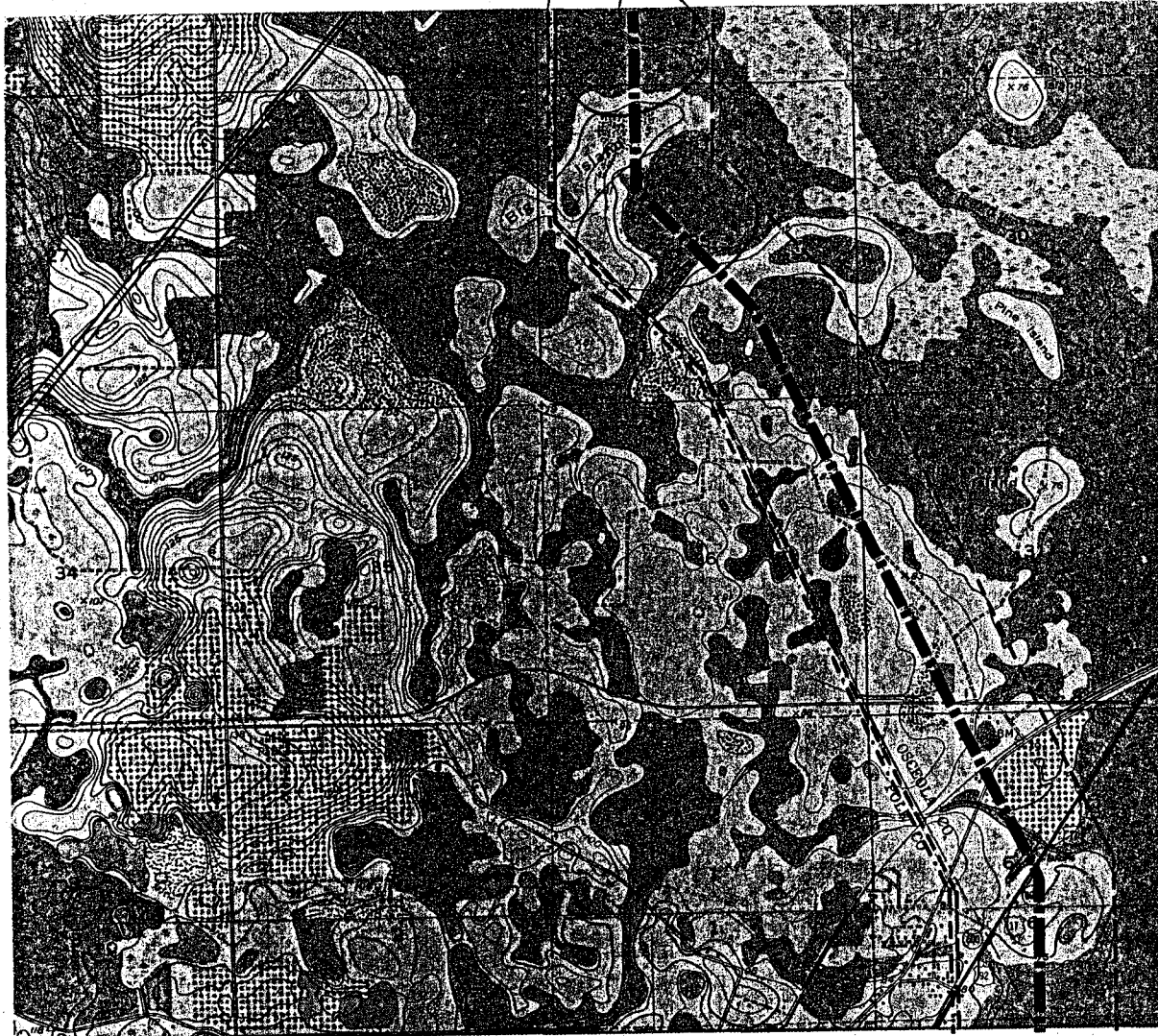
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 7 OF 12)	



LEGEND

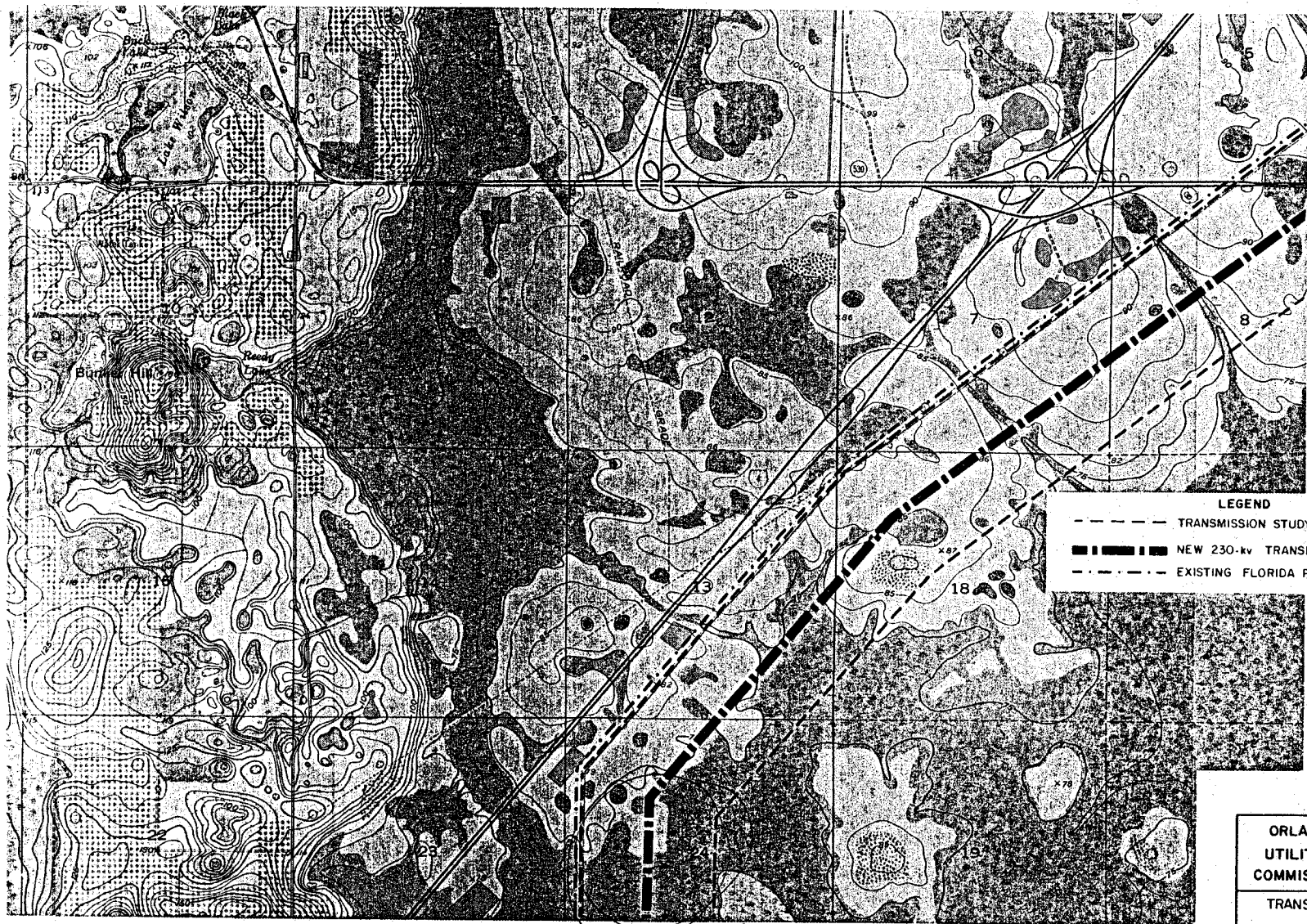
- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE
- EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 8 OF 12)	



- LEGEND**
- TRANSMISSION STUDY AREA
 - ===== NEW 230-kv TRANSMISSION LINE
 - - - - - EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

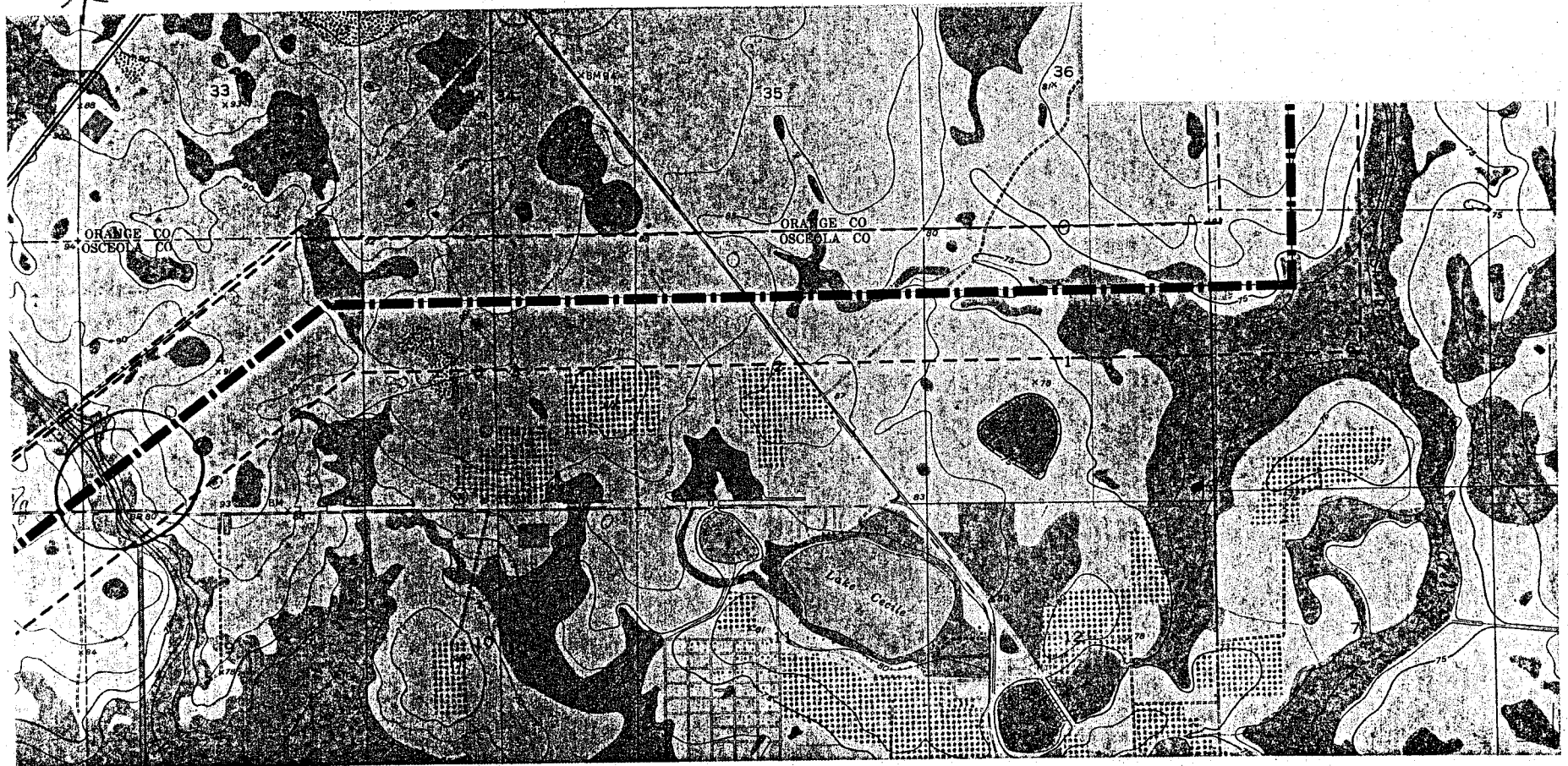
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 9 OF 12)	



LEGEND

- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE
- EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

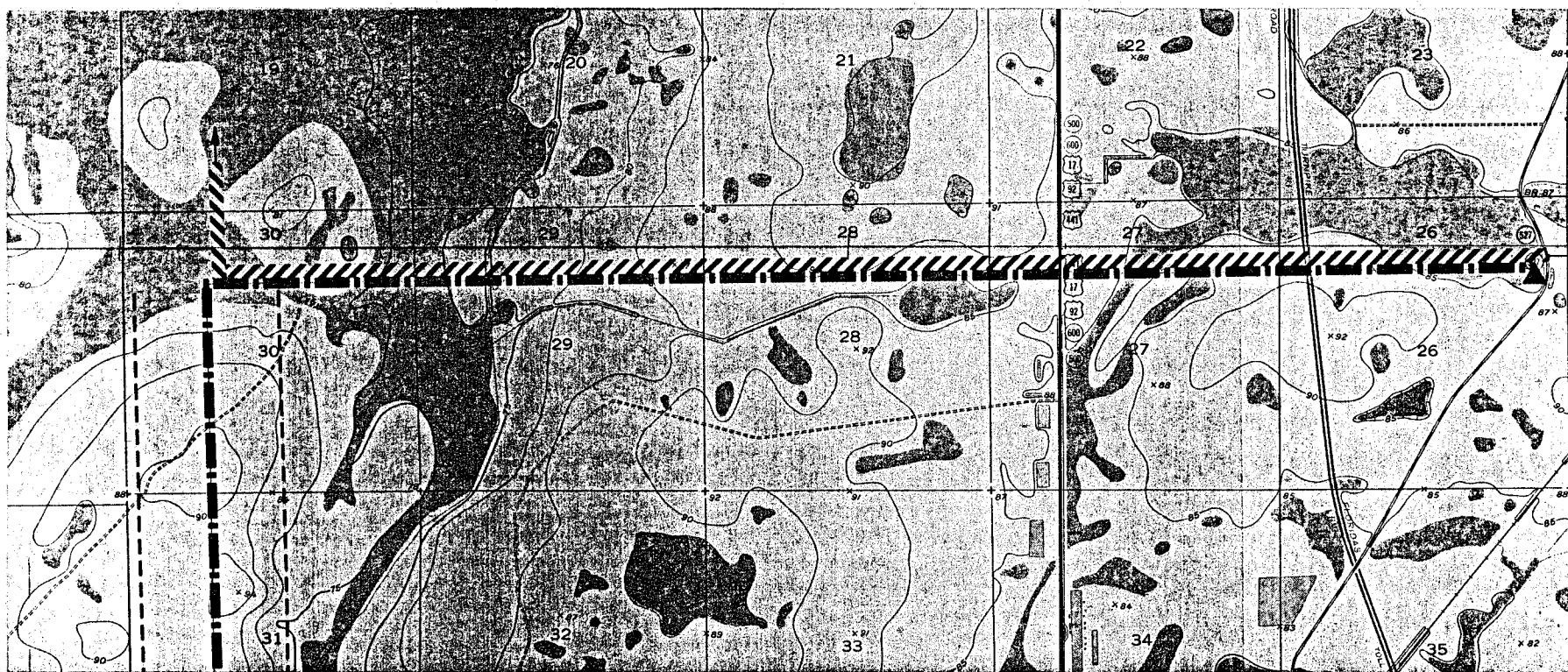
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 10 OF 12)	



- LEGEND**
- TRANSMISSION STUDY AREA
 - NEW 230-kv TRANSMISSION LINE
 - EXISTING FLORIDA POWER CORP. TRANSMISSION LINE



ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 11 OF 12)	



LEGEND

--- TRANSMISSION STUDY AREA

— NEW 230-kv TRANSMISSION LINE

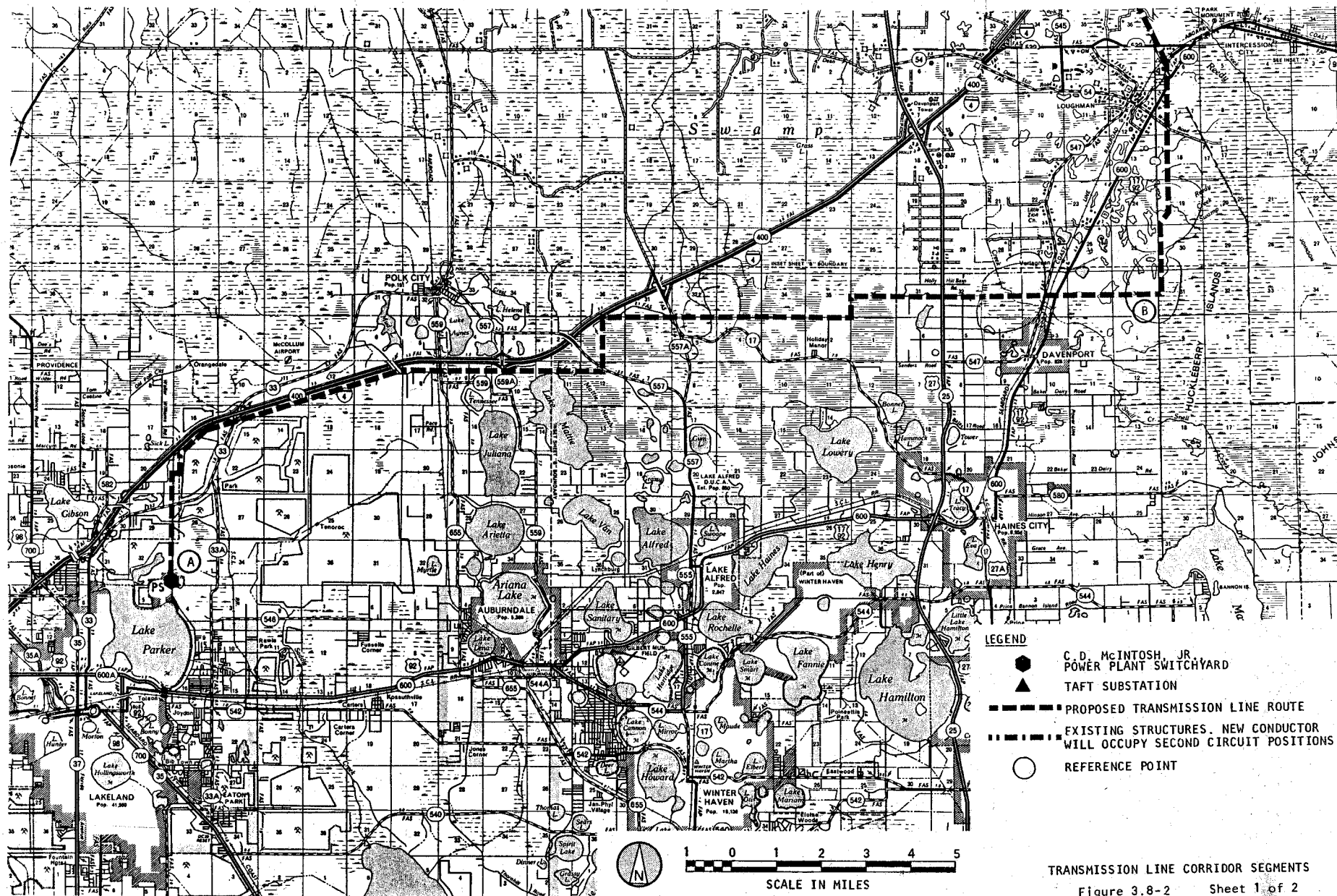
— EXISTING ORLANDO UTILITIES COMM. 230-kv TRANSMISSION LINE

▲ PROPOSED SUBSTATION

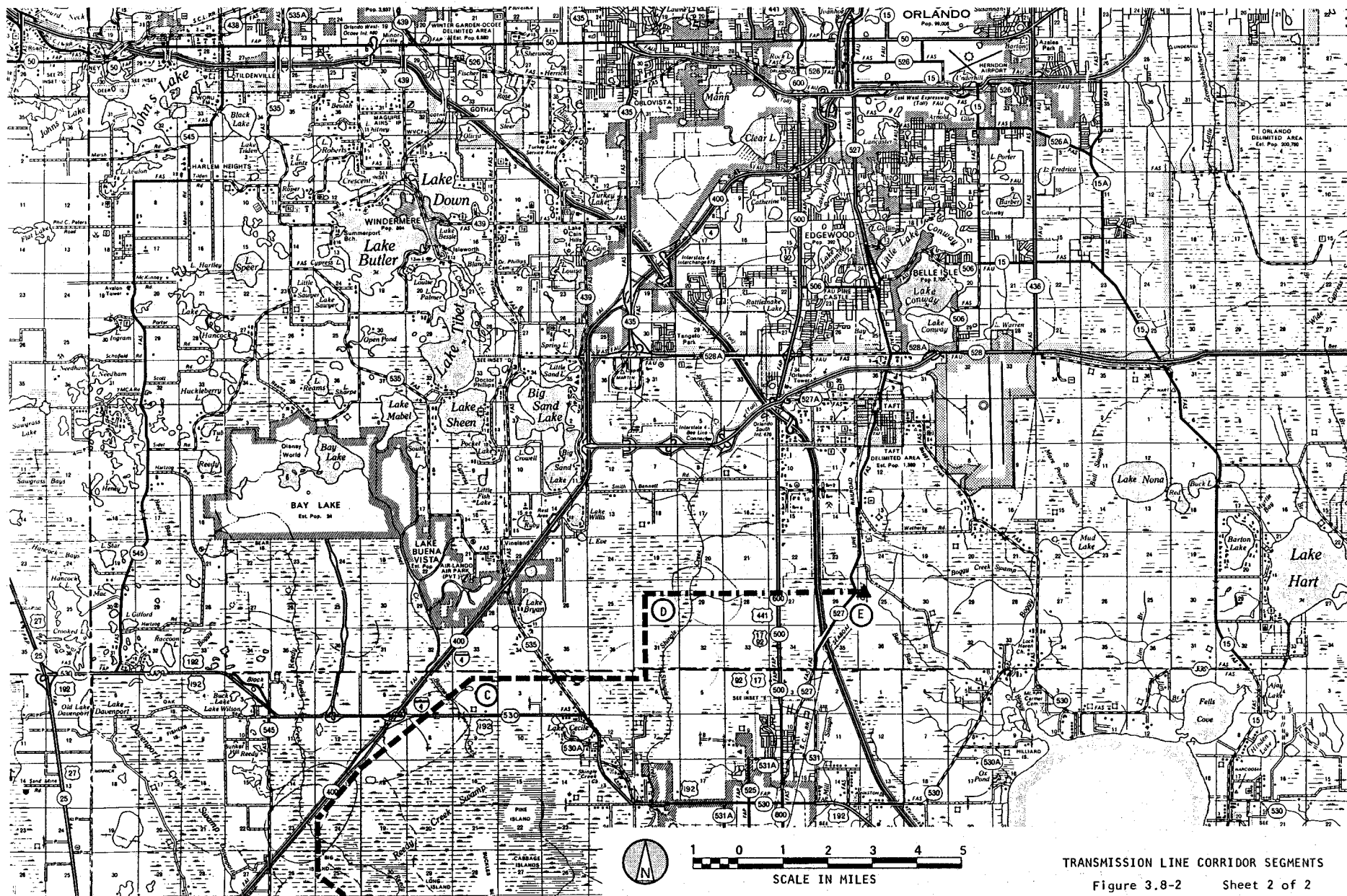


ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT, UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 12 OF 12)	

CONTINUED ON SHEET 2 OF 2



TRANSMISSION LINE CORRIDOR SEGMENTS
Figure 3.8-2 Sheet 1 of 2

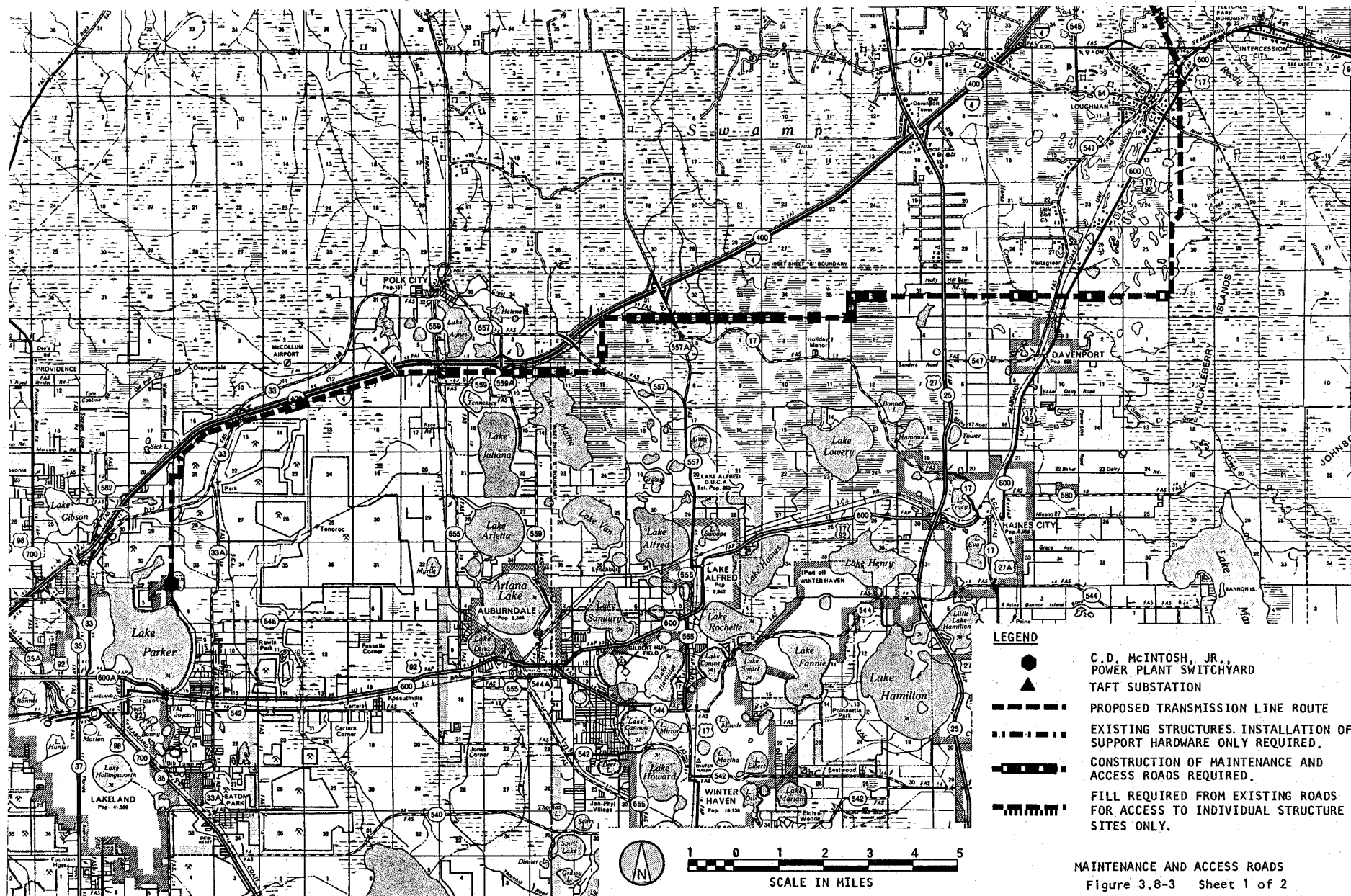


TRANSMISSION LINE CORRIDOR SEGMENTS

Figure 3.8-2 Sheet 2 of 2

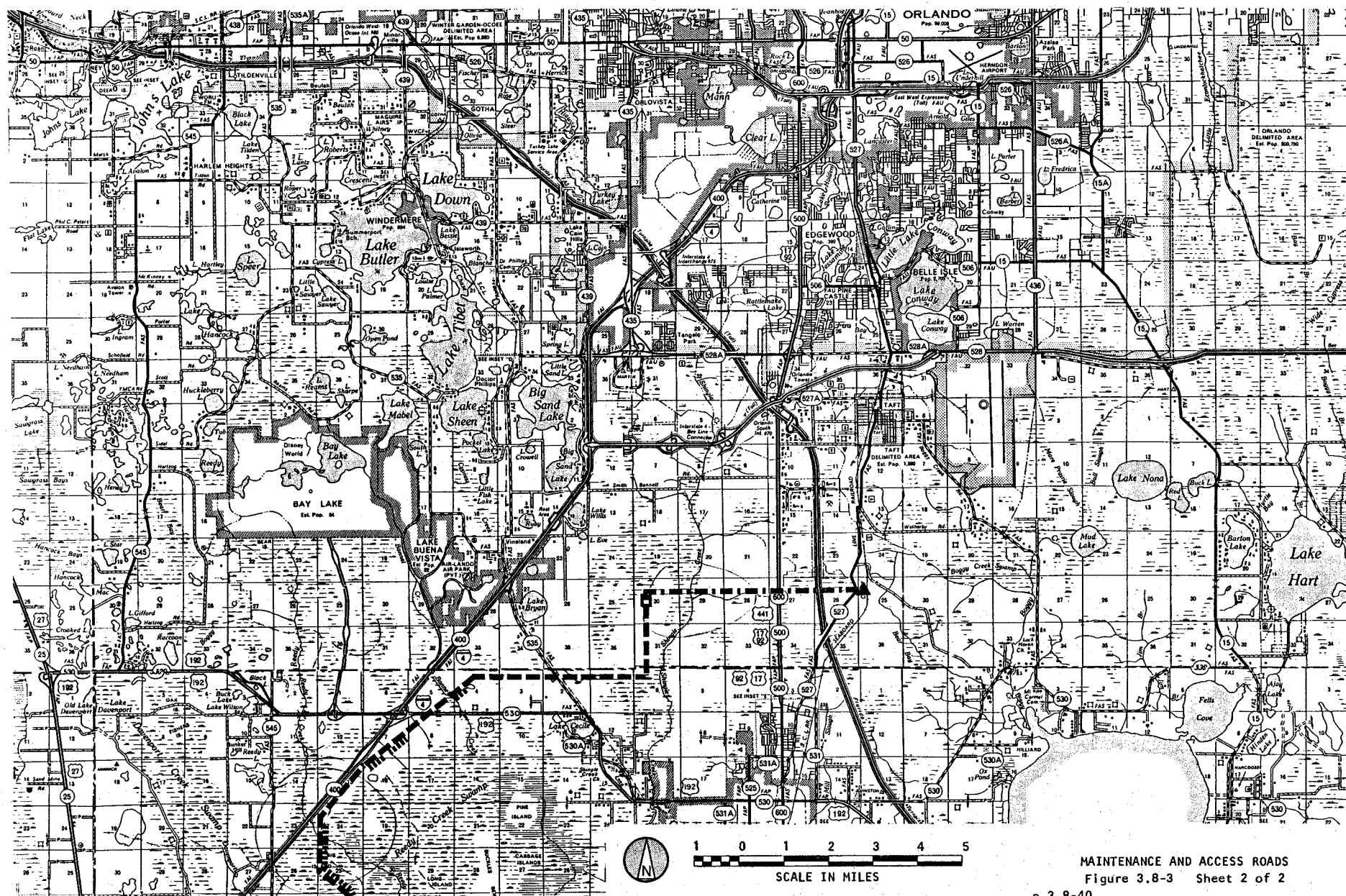
p 3.8-38

CONTINUED ON SHEET 2 OF 2

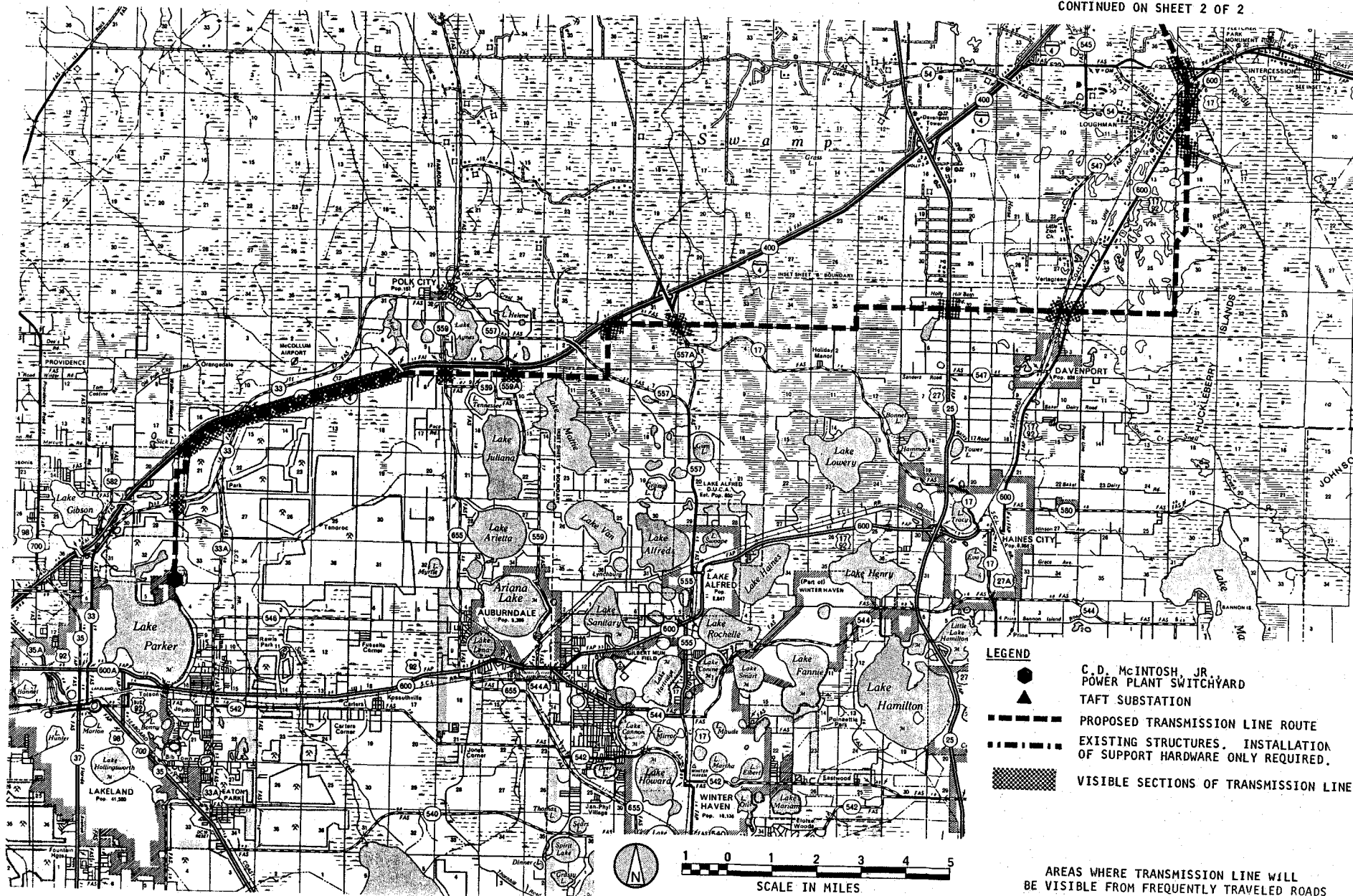


MAINTENANCE AND ACCESS ROADS

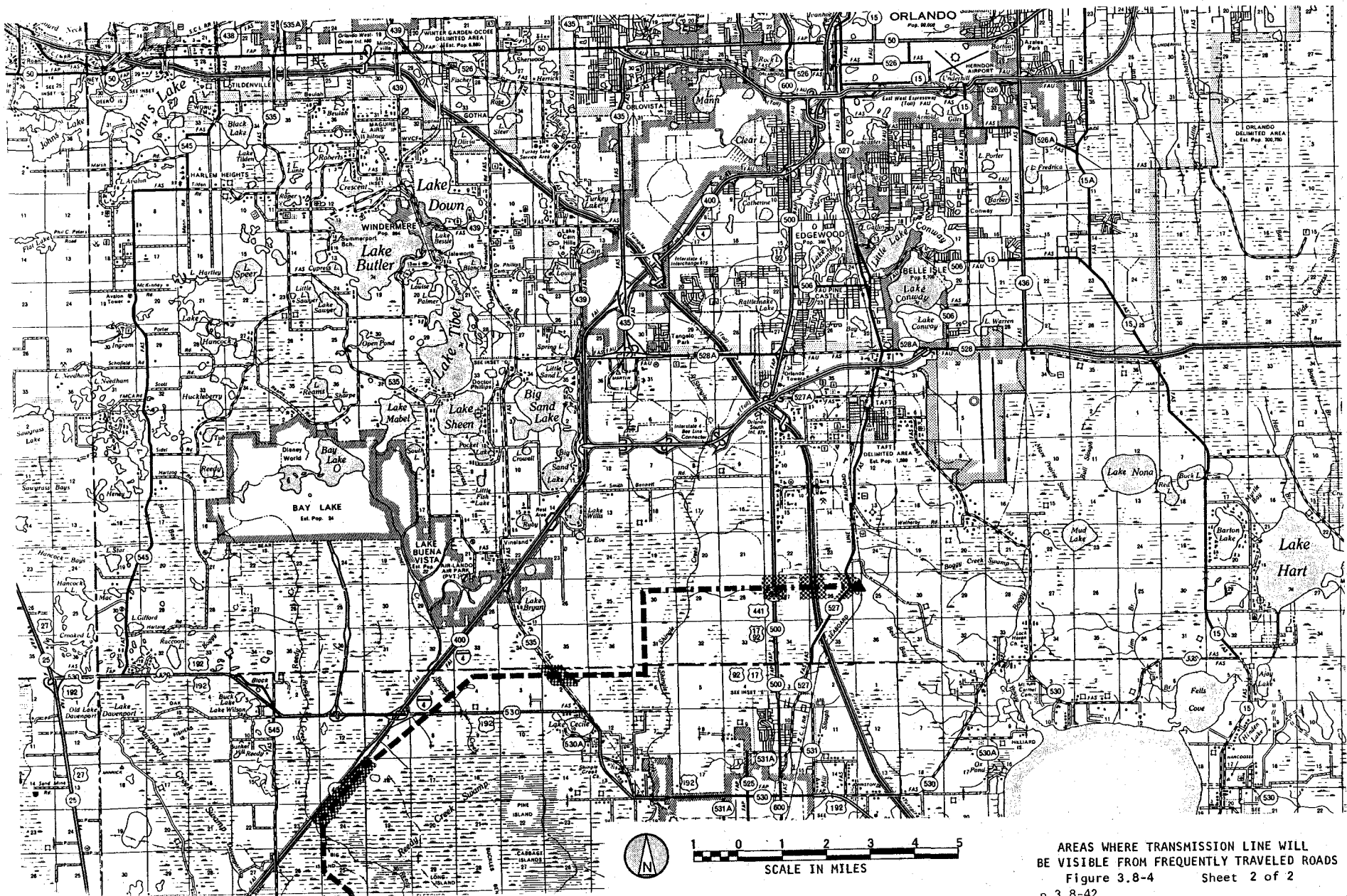
Figure 3.8-3 Sheet 1 of 2



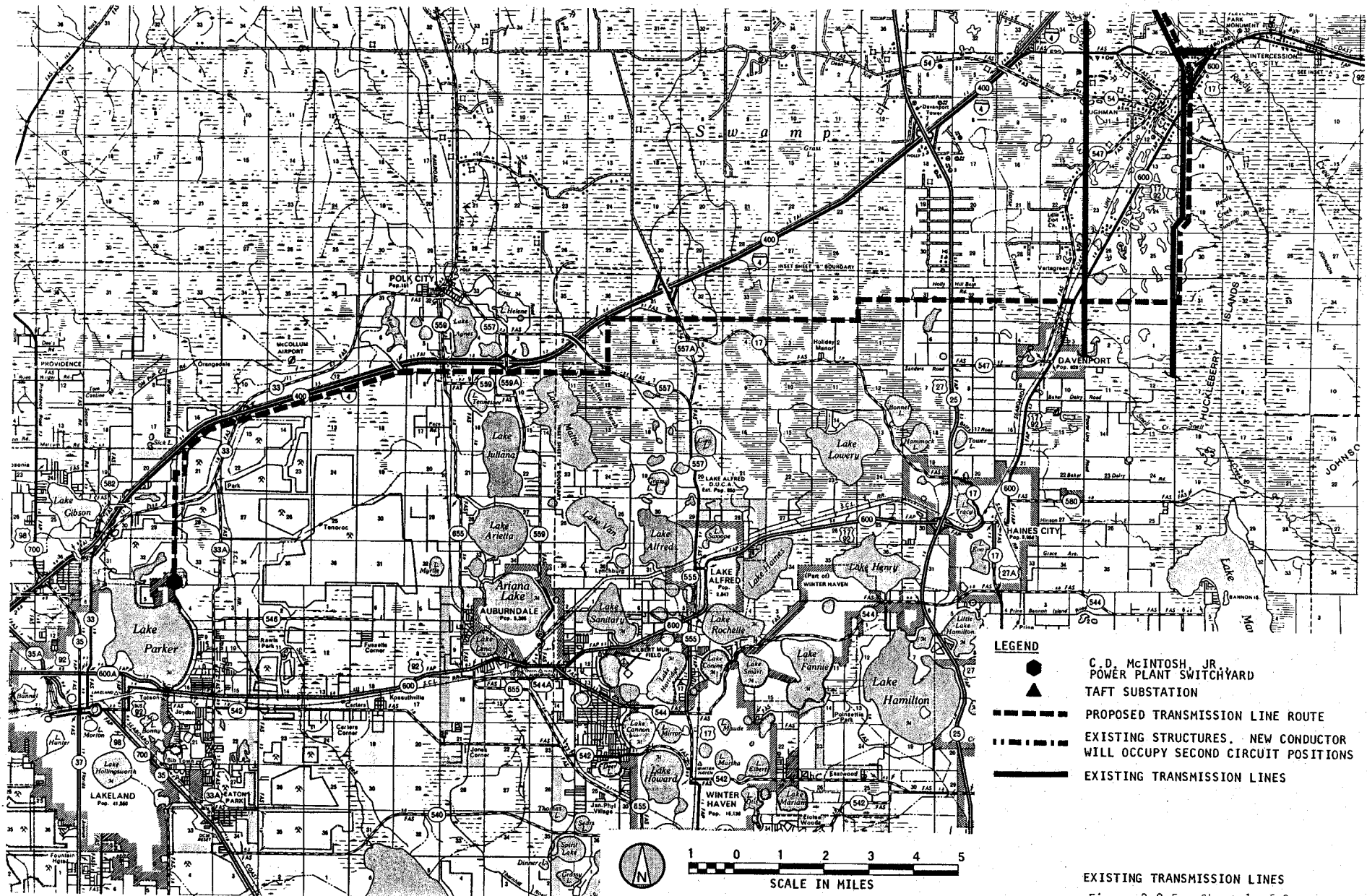
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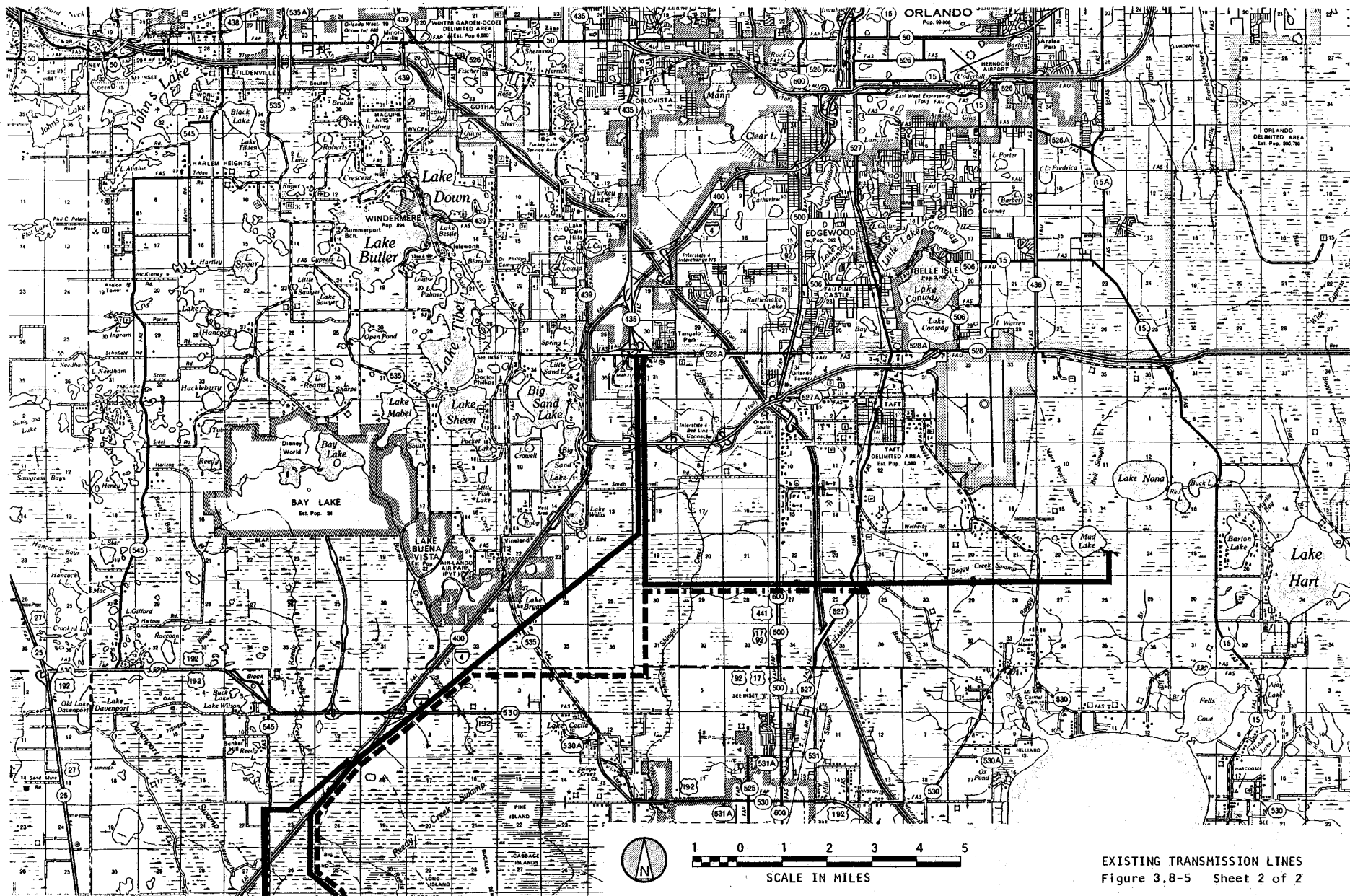
AREAS WHERE TRANSMISSION LINE WILL
BE VISIBLE FROM FREQUENTLY TRAVELED ROADS
Figure 3.8-4 Sheet 1 of 2



CONTINUED ON SHEET 2 OF 2



EXISTING TRANSMISSION LINES
Figure 3.8-5 Sheet 1 of 2



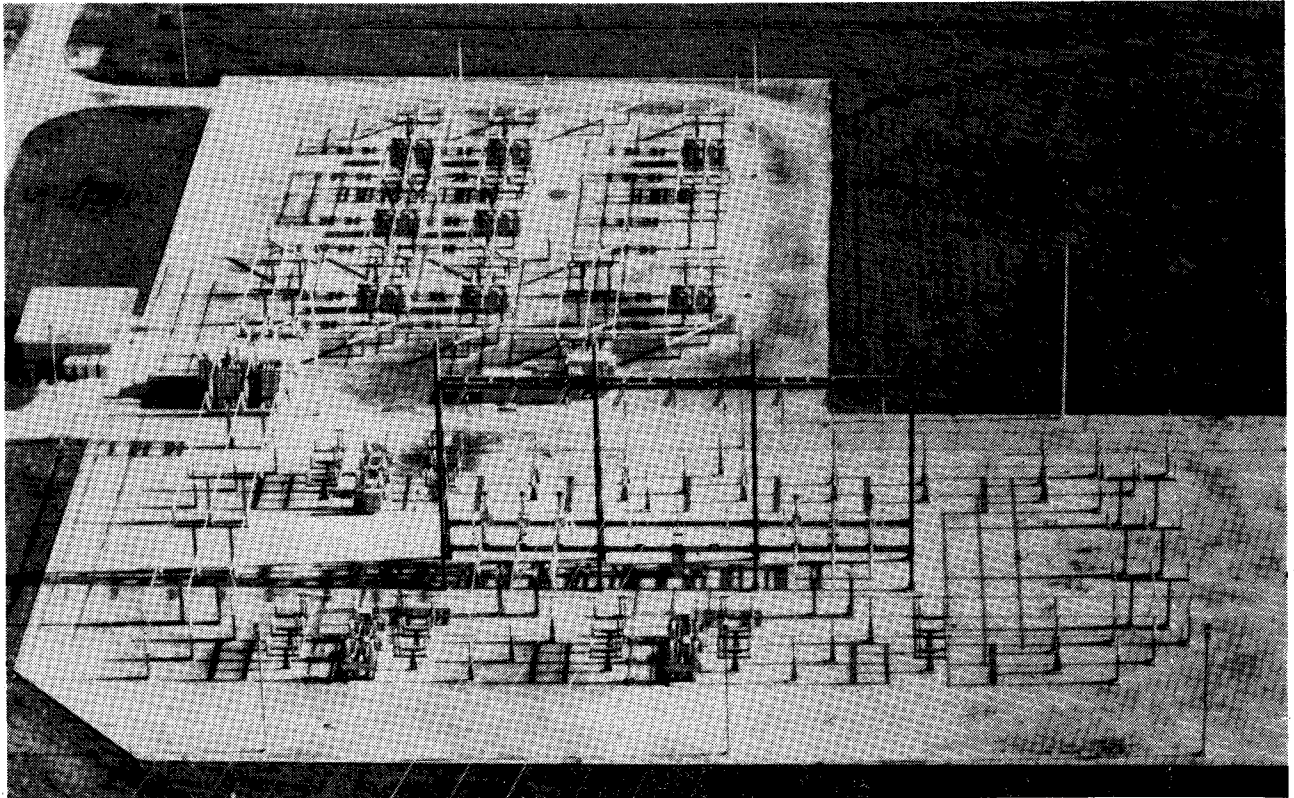


Figure 3.8-6. 115/230 kilovolt (kV) switchyard.

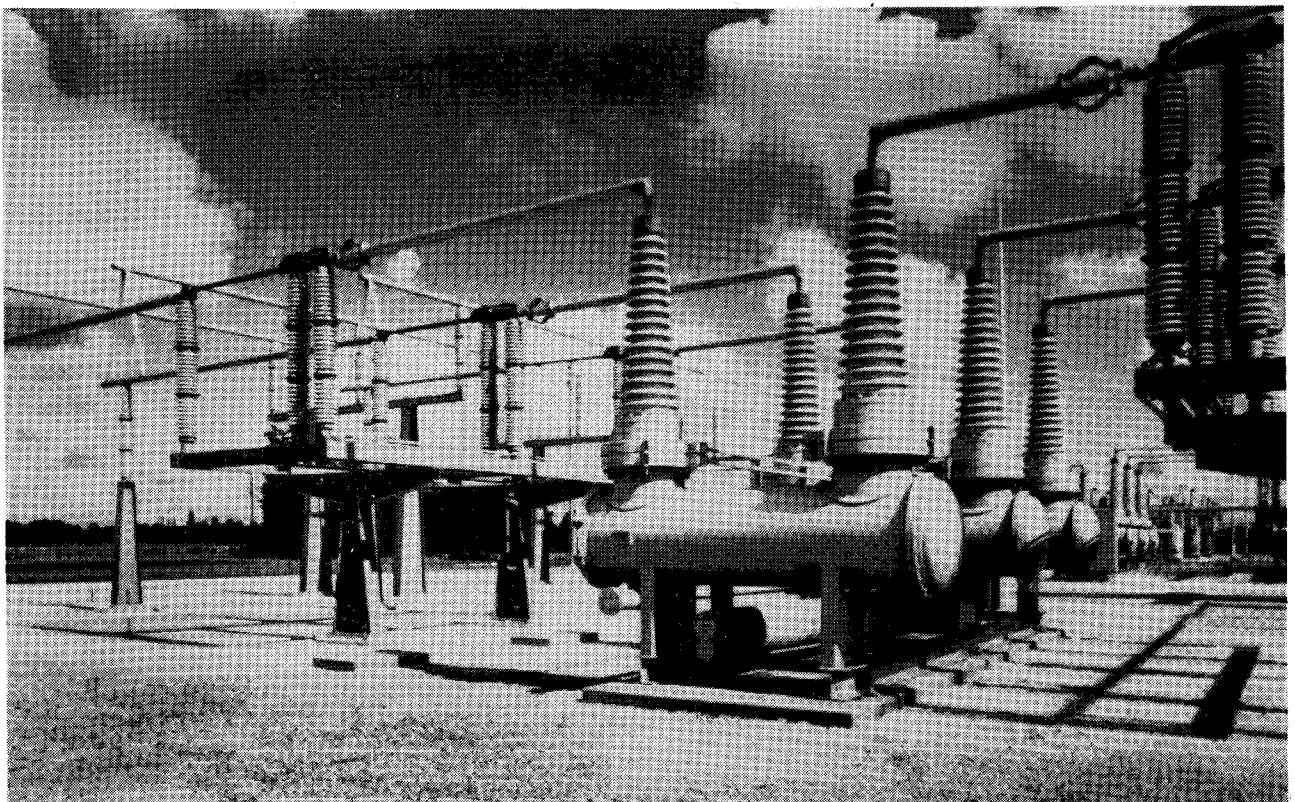


Figure 3.8-7. Typical low profile bus work.

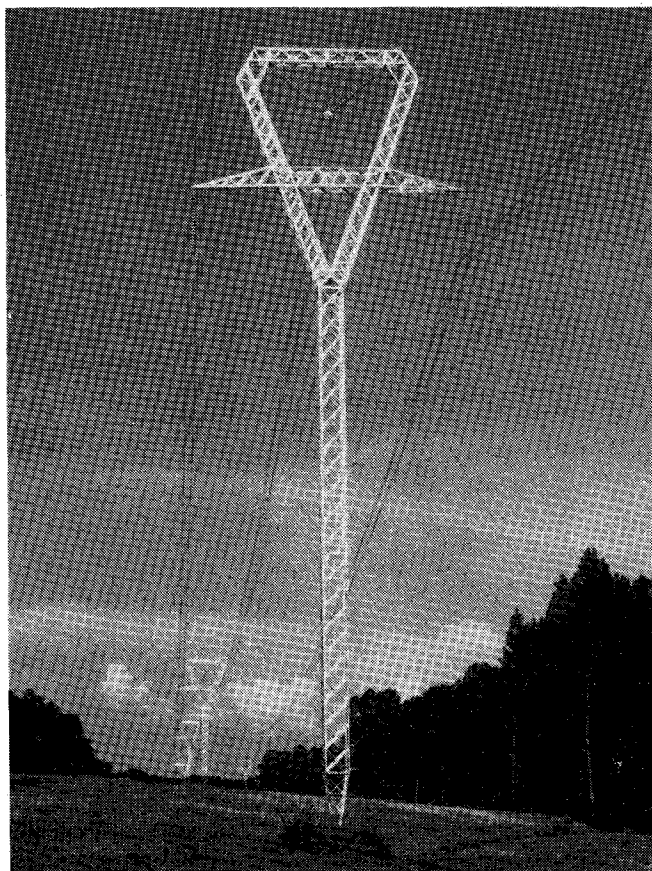


Figure 3.8-8. Typical aluminum "DELTA" structure.

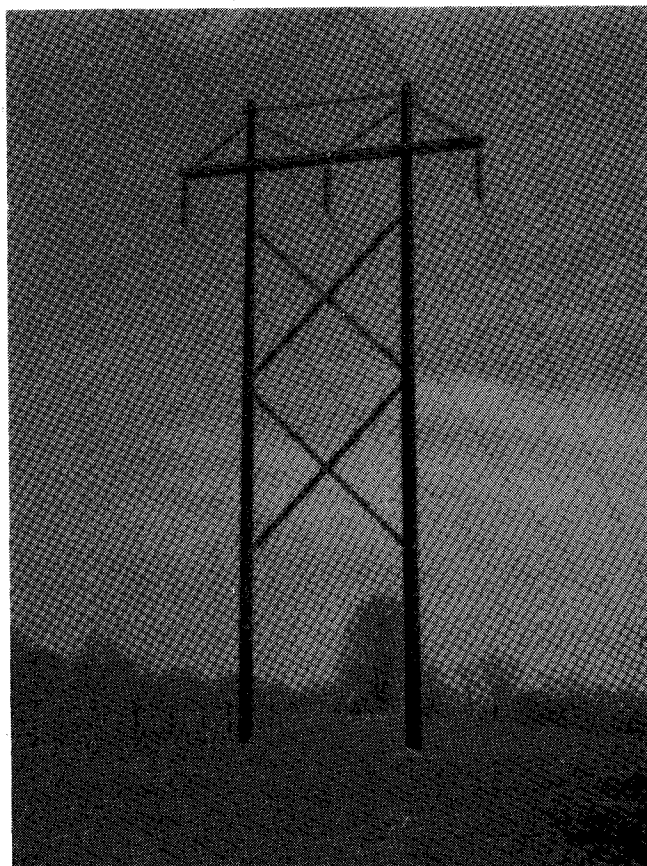


Figure 3.8-9. Typical H-frame structure using wood or concrete poles.

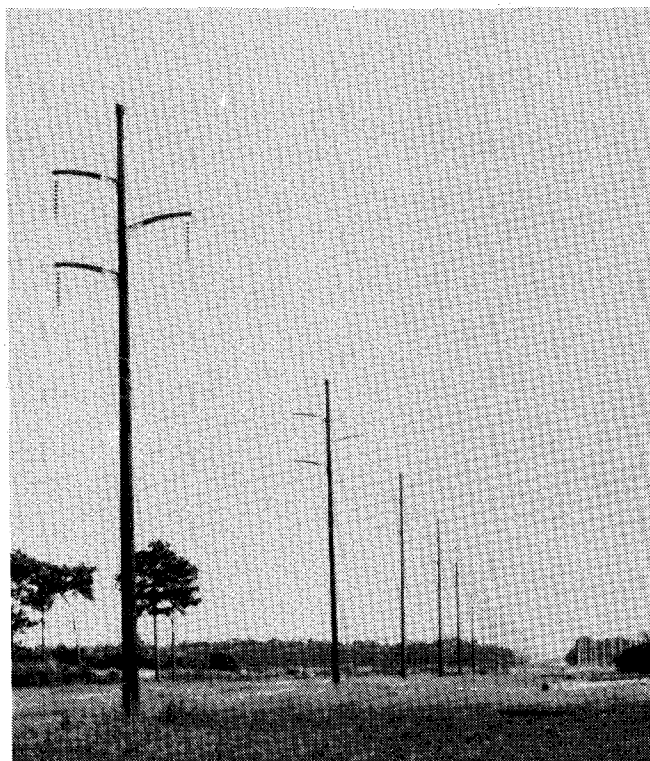


Figure 3.8-10. Typical upswept arm structure using wood or concrete poles.

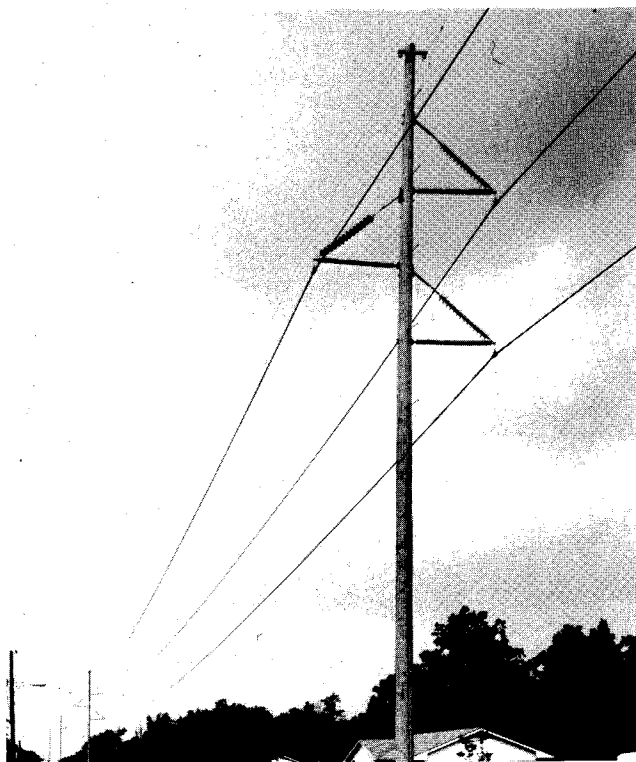


Figure 3.8-11. Typical horizontal vee structure using wood or concrete poles.

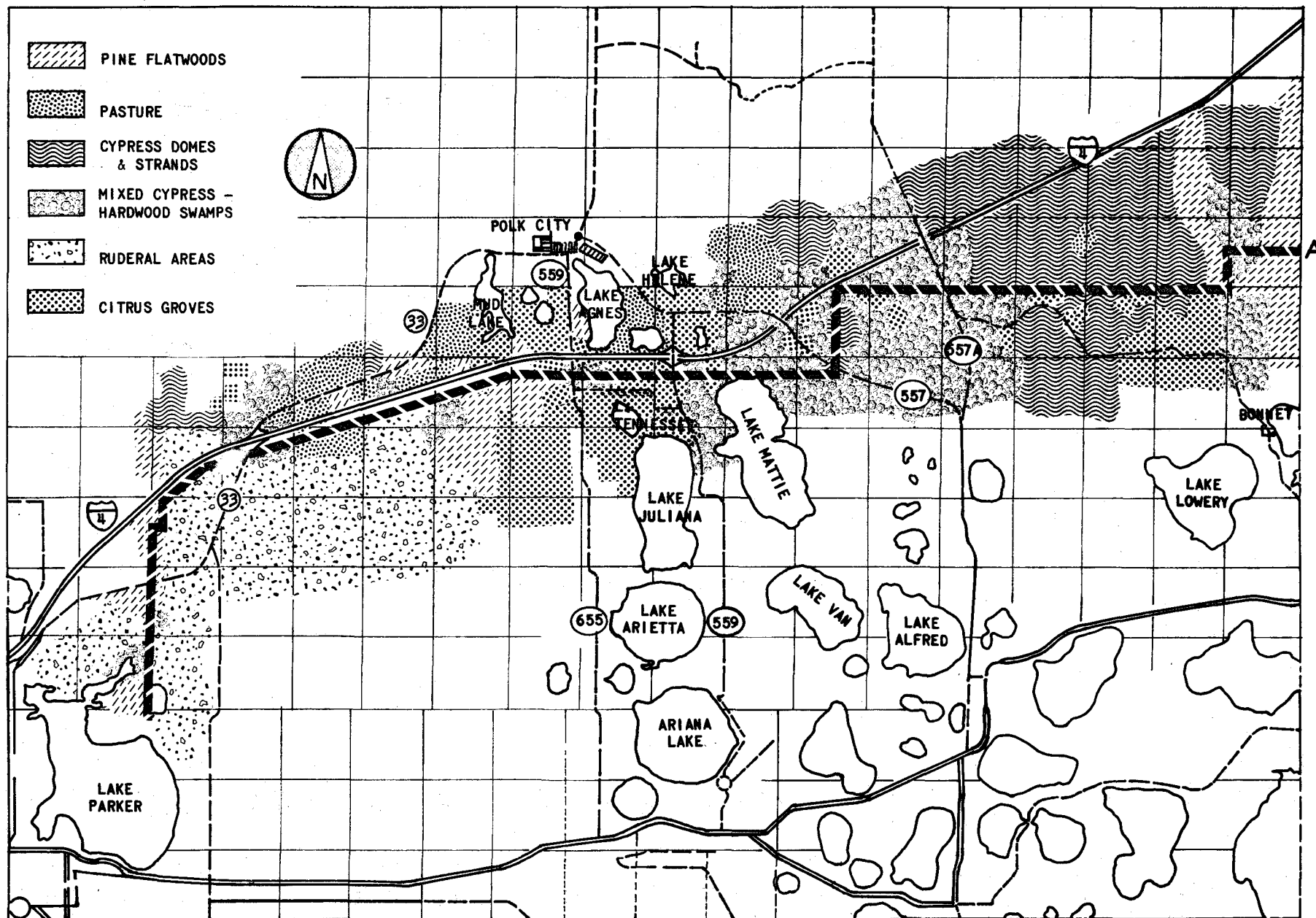


FIGURE 3.8-12
PRINCIPLE VEGETATION COMMUNITIES
ALONG THE TRANSMISSION LINE ROUTE (SHEET 1 OF 3)

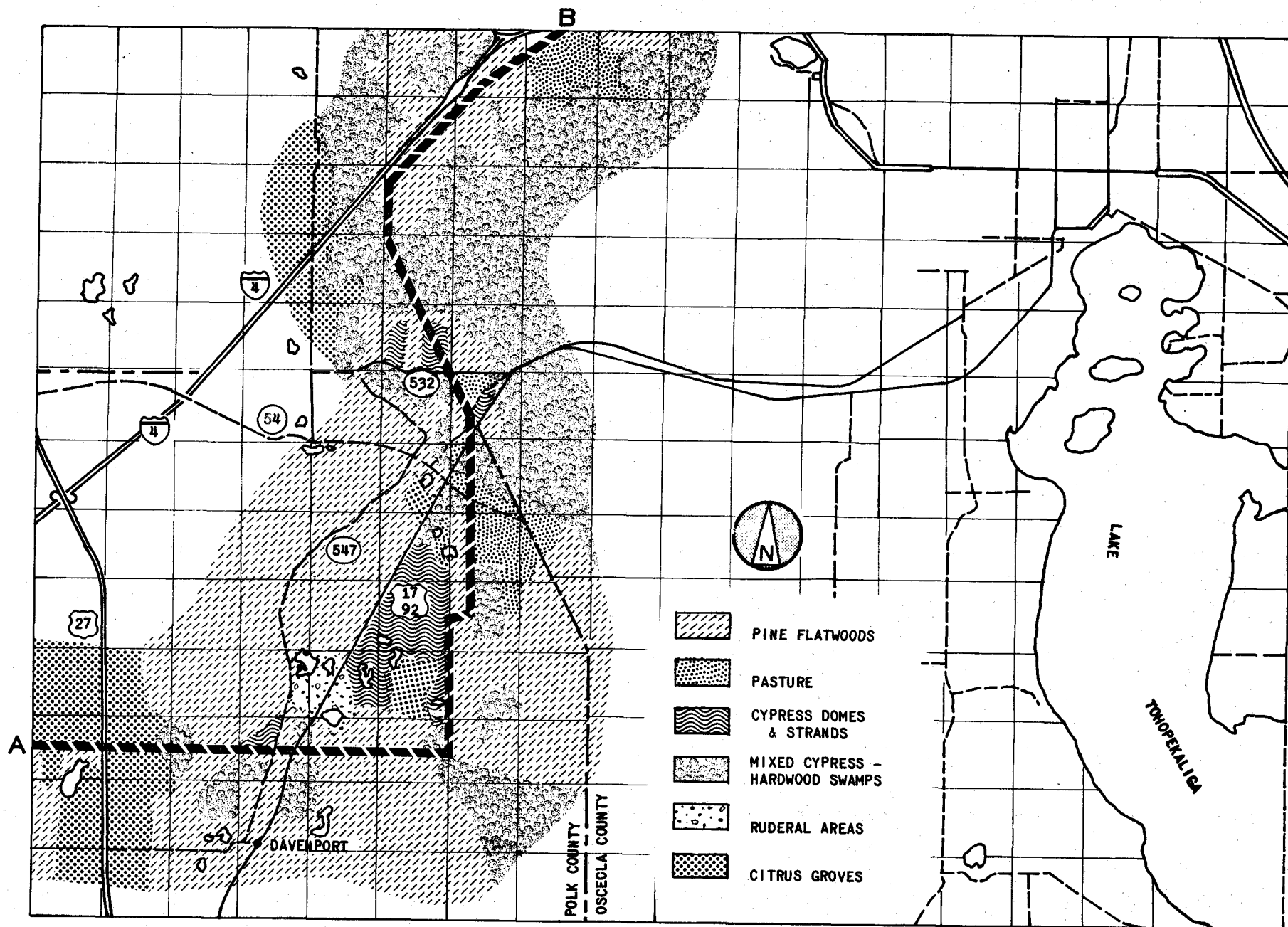
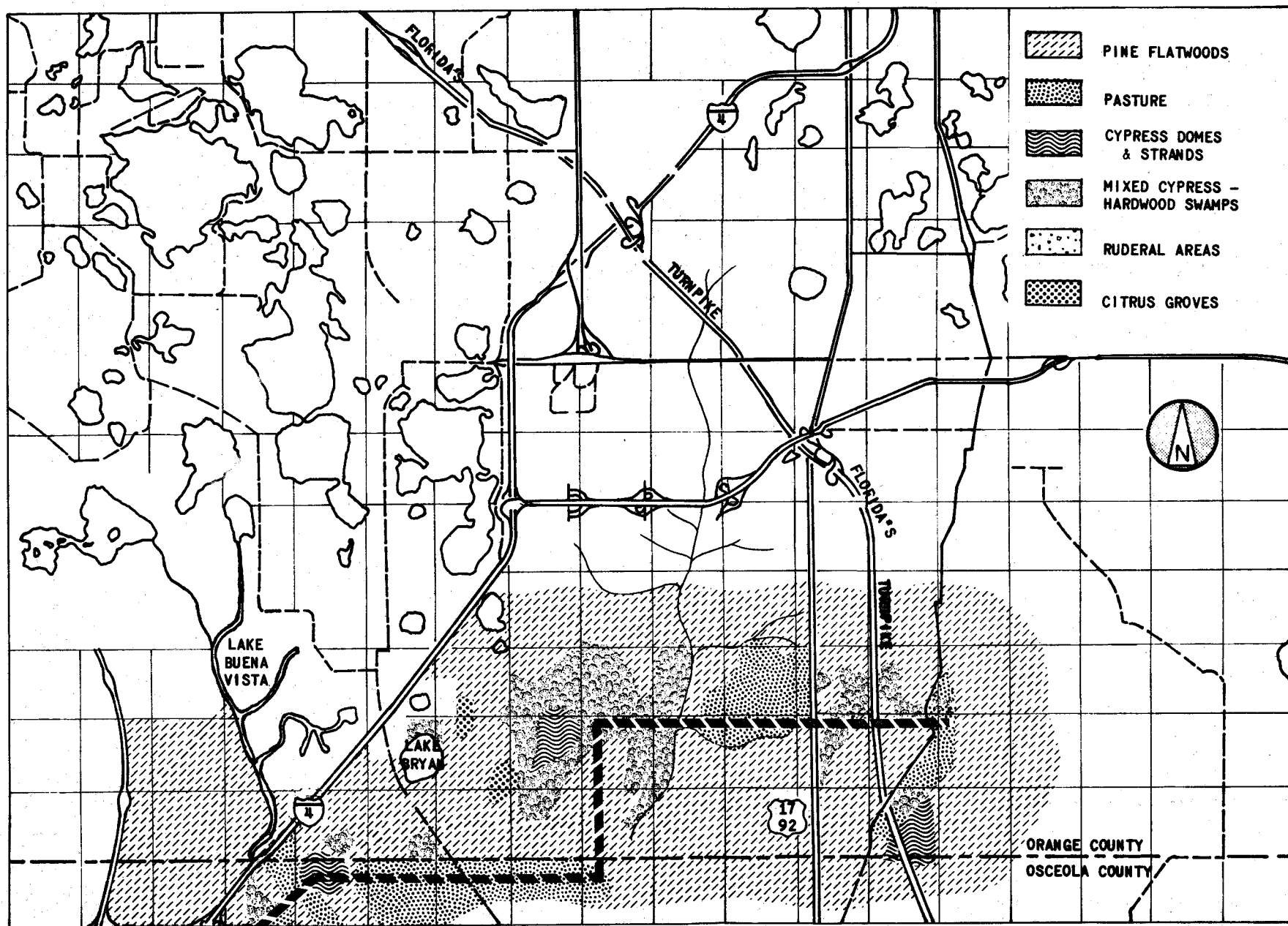


FIGURE 3.8-12
PRINCIPLE VEGETATION COMMUNITIES
ALONG THE TRANSMISSION LINE ROUTE (SHEET 2 of 3)



B

FIGURE 3.8-12
PRINCIPLE VEGETATION COMMUNITIES
ALONG THE TRANSMISSION LINE ROUTE (SHEET 3 of 3)

SECTION 4
ENVIRONMENTAL EFFECTS OF
SITE PREPARATION, PLANT
AND ASSOCIATED TRANSMISSION
FACILITIES CONSTRUCTION.

4.1 SITE PREPARATION AND CONSTRUCTION

4.1.1 LAND USE

The site of the proposed Unit #3 is presently in use as a power generation site with two oil fired steam generators. Twenty five acres of the present total of 274 have been cleared for the existing units.

The steam generator, flue gas cleaning equipment, turbine-generator, stack, and refuse processing facility will be constructed in the existing twenty five cleared acres. An economic analysis by the architect-engineer indicates that additional property east of the existing site should be purchased and utilized for the coal handling facilities, limestone preparation equipment, scrubber sludge stabilization equipment, and a settling pond. The additional ninety five acres is shown on Map 2.1.1 and how it will be utilized is shown on Map 2.1.2.

The new property involves approximately forty acres north of Fish Lake and approximately fifty-five acres south of Fish Lake. The area north and east of Fish Lake will be utilized for the railroad spur line into the coal handling facility. This area is presently wooded with scrub oaks, pines, and live oaks. The railroad will require only minimal clearing through the area, and part of the area involved is reclaimed phosphate land as can be seen on Map 2.1.1.

The area south of Fish Lake will be utilized for the materials handling facility. As can be seen on Map 2.1.1 the area has very sparse vegetation and is predominantly reclaimed phosphate land.

Site preparation in this area will involve extensive grading and excavation, but the impact on the area will be minimal due to the nature of the land.

There are no changes from the previous application in the existing plant property. The new property will in effect, reduce the overall impact of construction on the area, due to the lesser amount of vegetation requiring removal.

All precautions and controls as defined in the previous application will be followed in the new area. As before, every effort will be made to minimize any impact on the area from construction or site preparation.

4.1.2 WATER USE

As described in the previous application, water requirements during construction will be provided from the existing well water system and should have no impact on the environment of the new or existing property.

4.1.3 AIR QUALITY

There are no changes from the previous application as every possible effort will be made to limit any contaminants produced during construction. There are no new sources of air contamination involved in the new property.

4.1.4 AMBIENT NOISE LEVELS

There are no changes from the previous application. The distance from the property to any residential areas is sufficient to

reduce any construction noise to an acceptable level and due to existing conditions, construction noise should have no adverse effect on the immediate area around the plant.

4.2 SPECIAL FEATURES

4.2.1 GARBAGE DISPOSAL

There are no changes from the previous application. The new property will create no new disposal problems.

4.3 ASSOCIATED TRANSMISSION FACILITIES CONSTRUCTION

4.3.1 INTRODUCTION

The construction of the transmission facilities will be performed in such a manner that environmental changes will be minimized. Careful planning will be carried out in the implementation of right-of-way selection and existing corridors will be utilized to the maximum extent. Changes expected as the result of the construction of the transmission facilities are as follows.

- A. There will be a removal of approximately 893.09 acres of land from vegetation production. The transmission corridor can be used for agricultural purposes and only land that is actually occupied by structures cannot be utilized.
- B. A total of approximately 986.17 acres of land within the transmission corridor will be maintained in subclimax vegetation. The 93.09 acres of existing rights-of-way that will be utilized for the new transmission line will continue to be maintained. The periodic removal of vegetation greater than six inches in height will favor the development of grasses, other herbaceous plants, and wood shrubs. A subclimatic condition similar to an "old field" successional status will develop.
- C. Construction of a transmission line from Lakeland to Orlando, Florida will require the conversion of land use from various types of agricultural production to the transmission of electrical power. The economic productivity as a transmission line corridor will be greater than the present economic productivity from much of the

agricultural or other uses. Land involved in the transmission line right-of-way will, however, be available for use by the property owner throughout the life of the project. The land may be used in any manner that is consistent with the operation and maintenance of the transmission line. At the end of the projected life of the transmission facilities, the land dedicated to that use could be restored to full agricultural production or for other uses.

4.3.2 ENVIRONMENTAL GUIDELINES

Environmental guidelines were developed by Orlando Utilities Commission for use in the corridor study and selection process. Ecological concerns played a major part in the establishment of them. Guidelines were established which were applicable for the construction, operation, and maintenance phases of the proposed project. Consideration also was given to potential problems that might occur in the construction and maintenance periods. A discussion of the environmental guidelines developed follows.

4.3.2.1 GUIDELINES FOR CORRIDOR SELECTION

In selecting the proposed transmission line corridors, the guidelines followed were as follows.

- A. Selection of right-of-way was made with consideration for preserving important ecological systems and retaining compatibility with present and future regional land-use planning.
- B. Existing transmission line corridors will be utilized where feasible to minimize the environmental impact resulting from the development of new corridors.
- C. Sensitive areas (see 4.3.3) have been avoided where possible.

4.3.2.2 GUIDELINES FOR CORRIDOR CONSTRUCTION

Guidelines were developed for: construction wastes, debris, and facilities; clearing; stream crossings; erosion and discharge; dust control; waste disposal; and encounters of threatened, endangered, or protected species.

A discussion of the construction guidelines follows.

A. Construction Wastes, Debris, and Facilities.

Construction facilities and storage areas will be located to minimize impacts on the natural community. Sanitary facilities will be provided as needed, and work sites will be maintained in a neat, clean, and sanitary condition.

B. Clearing

1. Initial clearing will be carried out using mowing and brush-cutting tractors or by hand cutting as necessary. All trees and other vegetation which would interfere with the operation of the transmission line will be removed within the right-of-way. Grass will be left intact.
2. In marshes and swamps, the stumps of felled trees will be left in place to retain the integrity of the bottom soils and to maintain the hydraulic characteristics of the areas.

C. Stream Crossings

1. Higher ground bordering streams and low areas will be utilized as much as possible when siting transmission line support structures.
2. Soil will not be moved into stream channels.

D. Erosion and Discharge

1. Erosion could result from the following construction activities.

- a. Clearing of vegetation from unstable soils.
- b. Changes in surface water drainage patterns.
- c. The exposure of unconsolidated soils as the result of the movement and operation of construction vehicles.

Control measures that will be carried out as necessary to prevent or minimize erosion are as follows.

- a. Control of runoff.
- b. Use of sediment trap, if appropriate.
- c. Advise construction personnel about areas of erodible soils where there is a potential for erosion.

In addition to the erosion control measures to be carried out during the construction period, altered areas will be filled, terraced, or planted following completion of construction activities.

2. Streams that likely would be subject to erosion and sedimentation as a result of construction activities will be anticipated. Sediment trapping procedures will be carried out if necessary. The kind of technique employed will depend on such factors as the proximity of construction to a stream, weather, susceptibility of the soil to erosion, and slope.

E. Dust Control

1. Dust produced from construction activities will be controlled.
2. Water sprinkling will be used as the method for controlling dust.

F. Waste Disposal

1. Domestic wastes will be properly collected and disposed.
2. Care will be taken to prevent the spillage of cement and concrete during handling and cleaning of concrete trucks at designated sites.
3. Streams will be protected from contamination by construction debris. Materials like wood, litter, steel cuttings, wire, oil, and grease will be maintained or stored in specific areas and periodically transported to disposal sites.
4. Felled trees will be trimmed of their branches and cut into logs. Logs will be stacked at the edge of the right-of-way. Underbrush, tree limbs and other vegetation will be windrowed or chipped and used as mulch to control erosion. Such a procedure would be economically and ecologically sound for maximizing resource use. Environmental benefits would include (a) increased number of nesting and foraging sites for small animals, (b) control of soil erosion, (c) return of nutrients to the soil, and (d) building and binding of topsoil because of the slow decomposition of organics in place.

G. Encounters of Endangered or Protected Animals. Any endangered or protected animals encountered during construction of the proposed transmission line corridor will be reported to the Florida State Game and Freshwater Fish Commission. Animals most likely to be encountered within the project area include the Little Blue Heron (Florida caerula), White Ibis (Eudocimus albus), Wood Stork (Mycteria americana), Southern Hairy Woodpecker (Picoides villosus

audubonii), Southeastern Shrew (Sorex longirostris longirostris), Eastern Indigo Snake (Drymurchon corais couperi), and the Gopher Tortoise (Gopherus polyphemus). A more comprehensive list of animals potentially present and their status is given in Table 3.8-4.

4.3.3 POTENTIALLY SENSITIVE AREAS

Sections of the proposed transmission line are routed through or near areas considered visually sensitive. Visually sensitive areas include such areas as natural shoreline, marshland, wildlife refuges, parks, national and state monuments, scenic areas, recreation areas, historic areas, national forests and heavily timbered areas, shelter belts, steep slopes, and wilderness areas.

The length of transmission lines through different categories of visually sensitive land is summarized as follows.

<u>Category</u>	<u>Length of New Lines</u> (miles)
Parks	None
National or State Monuments	None
Scenic Areas	None
Recreation Areas	None
Historic Areas	None
National or State Forests	None
Marshland	9.2--New Lines
	4.7--Along Parallel Lines
	<u>1.8--Along Existing Lines</u>
	15.7--Total

Utilizing onsite inspections and briefings, the Orlando Utilities Commission will alert clearing and grading contractors about problems associated with working in sensitive areas.

Visually sensitive areas identified as applicable to the proposed transmission line project include streams and lowlands. A discussion of these land types is given in Subsection 4.3.3.1.

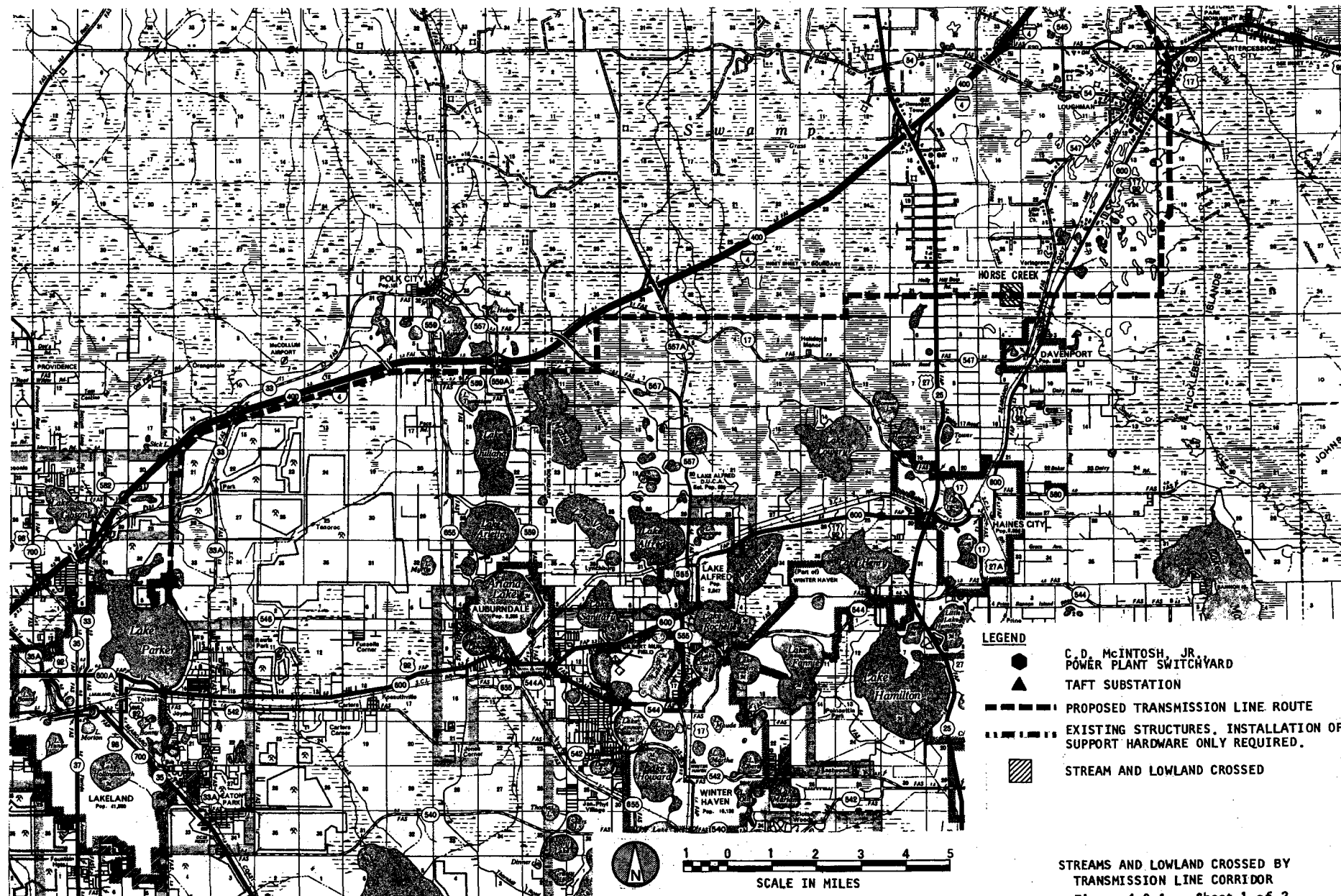
4.3.3.1 STREAMS AND LOWLAND CROSSED BY PROPOSED TRANSMISSION LINE CORRIDOR

4.3.3.1.1 HORSE CREEK. As shown in Figure 4.3-1, Sheet 1 of 2, the new transmission corridor will cross Horse Creek about one mile east of Highway 26. Guidelines for stream crossings (Section 4.3.2.2, C) will be followed.

4.3.3.1.2 REEDY CREEK. The transmission line will cross Reedy Creek just south of Interstate Highway 4 as shown in Figure 4.3-1, Sheet 2 of 2. Guidelines for crossing streams will be followed.

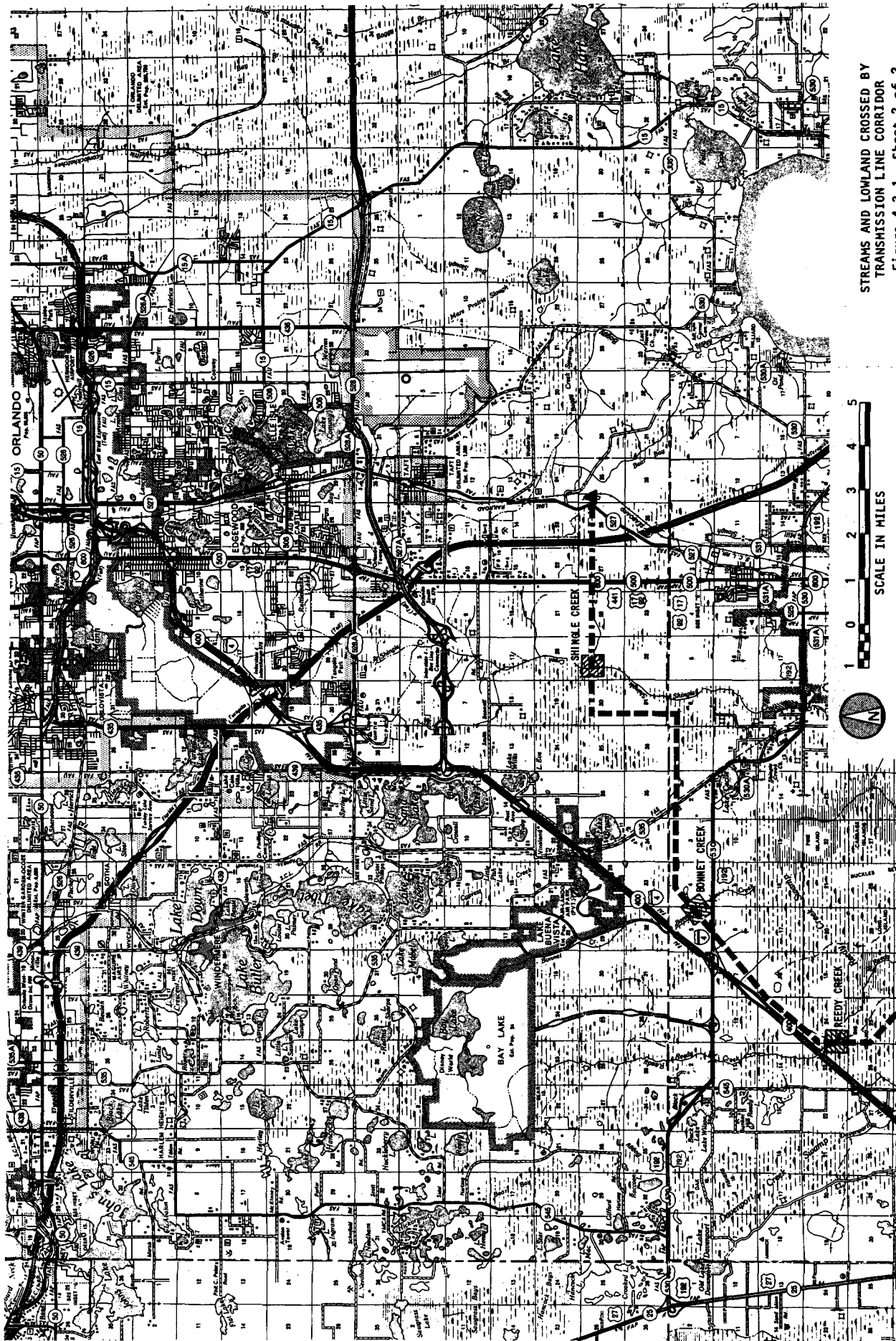
4.3.3.1.3 BONNET CREEK. The stream will be crossed at a location about two miles northeast of Reedy Creek (see Figure 4.3-1, Sheet 2 of 2). Guidelines for crossing streams will be followed.

4.3.3.1.4 SHINGLE CREEK. The existing transmission line corridor will be utilized for the new proposed line. The vacant positions on the existing towers will be used and construction activities will be minimal. The transmission line presently crosses Shingle Creek as shown in Figure 4.3-1, Sheet 2 of 2.



STREAMS AND LOWLAND CROSSED BY
TRANSMISSION LINE CORRIDOR

Figure 4.3-1 Sheet 1 of 2



STREAMS AND LOWLAND CROSSED BY
TRANSMISSION LINE CORRIDOR
Figure 4.3-1 Sheet 2 of 2
p 4.3-9

CONTINUED FROM SHEET 1 OF 2

5.0 ENVIRONMENTAL EFFECTS OF
PLANT OPERATION

5.1 EFFECTS OF OPERATION OF THE HEAT DISSIPATION SYSTEM

The proposed Unit #3 will utilize a mechanical draft cooling tower for heat dissipation as described in Section 3.4.

The location of the tower has been revised subsequent to the previous application. Map 2.1.2 shows the proposed location of the cooling tower as north and west of the present fuel oil storage yard. This area is a wooded section of the plant and, as can be seen from Map 2.1.1, the areas north and south of the tower site are predominantly wooded.

As a probability exists that fog will be produced by the tower at different times during the year, the tower location has been selected to minimize the effect of the fogging on any highways or residential areas. The prevailing wind is from the northeast, so drift produced would be carried over Lake Parker. The tower is designed to reduce drift to .008% of the circulating water flow or a total of 12gpm. The nearest utilized land in a southwest direction from the tower is approximately 2.0 miles away. Fog and drift from the tower would be dissipated before it traveled that distance.

The negligible effect of cooling tower drift on Lake Parker was described in the previous application in detail. The reduced quantities involved with this application will practically eliminate any effect on the lake.

5.2 EFFECTS OF CHEMICAL AND BIOCIDES DISCHARGES

Since there will be no discharge of any waste streams to either surface or groundwater, there will be no effects on either of the above. The only point of discharge will be cooling tower blowdown, not used as scrubber make-up water, to the Lakeland sewerage system. The effect of biocides and chemicals in the blowdown were discussed in the 250 MW application. No changes are anticipated due to the increase in size to 364 MW.

5.3 EFFECTS OF SANITARY AND OTHER WASTE DISCHARGES

The discharge of all sanitary wastes to the Lakeland sewerage system as shown in Figure 3.3.1 will have no effect on any water bodies or groundwater sources.

The effect of bottom ash, fly ash, and scrubber sludge as described in Section 3.6 is included in Section 5.6, "Other Effects".

5.4 EFFECTS OF AIR EMISSIONS

The effects of the air emissions from the proposed unit on the ambient air quality in the Lakeland area was determined by an Air Quality Dispersion Model that was conducted by Environmental Science and Engineering, Inc. Their report is presented in Appendix I.

5.5 EFFECTS OF THE OPERATION AND MAINTENANCE OF THE ASSOCIATED TRANSMISSION SYSTEM

Orlando Utilities Commission will inspect and maintain its transmission lines, and line right-of-way by the following activities:

- A. Periodic inspection on foot or by vehicle.
- B. Emergency patrol by vehicle, land and/or air, in the event of damage to the line by severe weather, etc.
- C. Use of farm type tractors with mowing and brush-cutting attachment and/or by hand as required to maintain the initial clearing of vegetation. Subsequent clearing of brush in low ground areas at intervals as necessary.
- D. Clearing of dry areas of upland brush with mowing machinery as necessary.

Other aspects of the operation and maintenance of the transmission line include access roads and electrical effects as discussed in the following articles.

5.5.1 NEW ACCESS ROADS

As stated in Subsection 3.8.3, "Access to the transmission line right-of-way will be from county roads, highways and existing roads where possible."

5.5.2 ELECTRICAL EFFECTS

The evaluation of electrical effects of the transmission system described in Subsection 3.8.1, "Noise, Ground Currents, and Ozone," indicates no potential adverse effect to either the environment, resident wildlife, or humans.

5.6 OTHER EFFECTS OF PLANT OPERATION

5.6.1 ENERGY RECOVERY FROM SOLID WASTE

As discussed in the 250 MW Unit #3 application, processed municipal refuse will be used as a supplemental fuel supply to the unit. The processing system will still consist of shredding, magnetic separation of ferrous materials and air classification prior to combustion in the boiler. However, with the 364 MW Unit #3, refuse will be burned with both coal and oil rather than just with coal as in the 250 MW Unit #3.

For calculation purposes, the amount of refuse that will be burned has been limited to what is collected within the city limits of Lakeland and from contiguous outlying areas. This will produce approximately 300 tons per day of raw refuse and 210 tons per day of combustible material to be used as a refuse derived fuel (RDF).

In addition to the use of the RDF, the Unit #3 architect-engineers are currently studying the possibility of burning the sewage sludge from the Lakeland Sewage Treatment Plant. Sewage sludge has a heating value of 4000 to 7000 BTU/per pound and its use would eliminate another City of Lakeland disposal problem.

Another important aspect of the refuse burning capability of Unit #3 is that Polk County has been designated by the Florida Department of Environmental Regulation to develop a countywide plan for resource recovery, and while the plan is in its beginning stages, preliminary discussions with Polk County representatives have indicated that the processing facility

at the McIntosh site and the Unit #3 RDF capability could be an integral part of the Polk County resource recovery plan.

Tests from the pilot RDF burning project in St. Louis at Union Electric's Merrimac Station have concluded that up to 20% of a boiler heat requirement can be from RDF without noticeable boiler damage. Based on this assumption, Unit #3 could burn over 1000 tons per day of the County's refuse. In order to produce the 1000 tons per day of RDF, over 1450 tons per day, essentially all the raw refuse projected to go to landfills in 1983 would have to be processed.

5.6.2 SCRUBBER SLUDGE DISPOSAL

The 250 MW Unit #3 application indicated that at the time of submittal, four (4) methods of disposing of sulfur sludge were being considered. The methods under consideration were:

1. Stabilized landfill with load bearing capacity.
2. Returning the sludge to the limestone mine where the limestone for the SO₂ scrubber was taken.
3. Using the sludge as a reclamation fill for phosphate strip mines.
4. Permanent ponding of the sludge on site in clay lined ponds.

The "Conditions of Certification" for the 250 MW Unit #3 stipulated that "Flue gas desulfurization sludge shall be stabilized prior to disposal in other than a lined pond or 'basin.'" In keeping with this stipulation, the 364 MW Unit #3 will combine all the sludge and ash generated by the unit to form a stabilized fill material.

The disposal technique of stabilized sludge used will be to construct a 20 foot high berm around the coal unloading and handling area. Once the berm has been formed, it will be covered with topsoil and landscaped with grass trees.

The construction of the berm will accomplish the following:

1. Result in a beneficial use for the estimated annual production of 275,000 tons of scrubber sludge and 117,300 tons of bottom and flyash.
2. Result in a visual barrier of part of the coal area.
3. Result in a barrier from noise generated in the coal area.

6.0 ENVIRONMENTAL MEASUREMENTS AND
MONITORING PROGRAMS

6.1 SURFACE WATERS

Since there will be no impact on Lake Parker from any direct discharge to this lake during the operation or construction of this unit, no biological data was submitted on the lake in this report. The proposed unit has been designed for a zero discharge of any liquid wastes to the lake thereby avoiding any possible impact on the lake.

6.2 PHYSICAL AND CHEMICAL PARAMETERS

Since there is no impact to any surface water body as described in Section 6.1, there are no methods to be covered.

6.3 METHODS USED IN THE TRANSMISSION LINE CORRIDOR STUDY

The proposed transmission line route traverses major ecosystems which were identified by the following four methods:

- A. Research of technical publications and reference books of the State of Florida.
- B. The relating of information developed in aerial photo survey, detailed topological and soil surveys of previous transmission lines design and construction to aerial photo and topological map study of the proposed transmission line corridor.
- C. On-site inspection of the route on foot and four-wheel drive vehicle.
- D. Reconnaissance of the proposed route by low level flyover.

6.3.1 CORRIDOR ZONE STUDIED

A corridor zone 0.5 to 1.0 mile wide was analyzed. This width was used to allow flexibility in the evaluation of alternatives for avoiding potentially sensitive areas along the proposed transmission line route. The actual right-of-way width could vary between 80 and 160 feet.

6.3.1.1 AERIAL PHOTOGRAPH AND MAP

Aerial photographic study was performed on U.S. Department of Agriculture mosaic photographs of 1:7920 scale and Real Estate Data, Inc. mosaic photographs of 1:10800 and 1:21600 scale. Map study was performed using U.S. Geological Survey quadrangle maps, of 1:24000 scale and State of Florida Department of Transportation maps of 1:63360 scale.

6.4 GROUNDWATER

Need more detail

There will be no significant effect on the groundwater at the plant site during the major portion of construction. Those portions which could effect groundwater include excavation for structures and piping and construction of ponds.

Well point dewatering operations in the effected areas will considerably reduce or eliminate the effect of construction, however, a series of monitoring wells will be provided at the plant site to allow periodic monitoring of shallow ground water. These well points will consist of test wells strategically placed so as to detect any changes in shallow groundwater chemistry resulting from a particular aspect of plant construction. Regular samples will be taken and analyzed before and during construction.

There will be a series of permanent test wells installed around each of the lined ponds required for unit. This will allow monitoring of groundwater during operation of the ponds as well as during construction.

The deep groundwater at the plant site will not be effected by plant construction. Existing wells at the site have been monitored since construction in 1969 and other wells in the City of Lakeland's water system have been monitored prior to that time. No deterioration has been detected at the plant site or in surrounding wells. The quality of the wells will be closely monitored during construction to assure there is no deterioration.

The overall impact of unit construction on the site will be minimal, but a monitoring program will be established to assure that any impact is kept minimal.

6.4.1 SHALLOW GROUNDWATER MONITORING (5-15-78)

6.4.2 MONITORING WELL LOCATION

To insure that wastewater and/or FGD sludge contained in the ash settling basins, the spray evaporation pond and the emergency FGD sludge storage pond (if used) does not leach through the impermeable liners, shallow groundwater monitoring wells will be installed around these containment areas. The wells will be of either the slotted pipe or screen type casings that are designed to penetrate the zone of saturation of the unconfined shallow aquifer.

Map 6.4.1 is a plot plan of the McIntosh Plant site showing the proposed locations of the monitoring wells. The wells for the settling basins and emergency sludge pond area are to be located along the eastern and southern property boundary and approximately 350 feet in a southwesterly direction from the western most settling basin since groundwater flow will be towards Lake Parker.

Monitoring wells for the spray evaporation pond will be placed 200 feet from the edge of the pond in all four compass directions.

6.4.3 SAMPLING PARAMETERS AND FREQUENCY

Since the settling basins, spray evaporation pond and emergency sludge pond will be lined with an impermeable material, the monitoring program proposed is in two parts.

The first part will be a monthly analysis monitoring specific conductance, chlorides, sulfates and pH. Chlorides and sulfates were selected because of their high solubilities and high concentrations in the containment areas. The presence of either of

these parameters in significant quantities over the background levels in the shallow groundwater (see Table 2.5.1) or change in conductivity and pH would also be indicators of potential leaks.

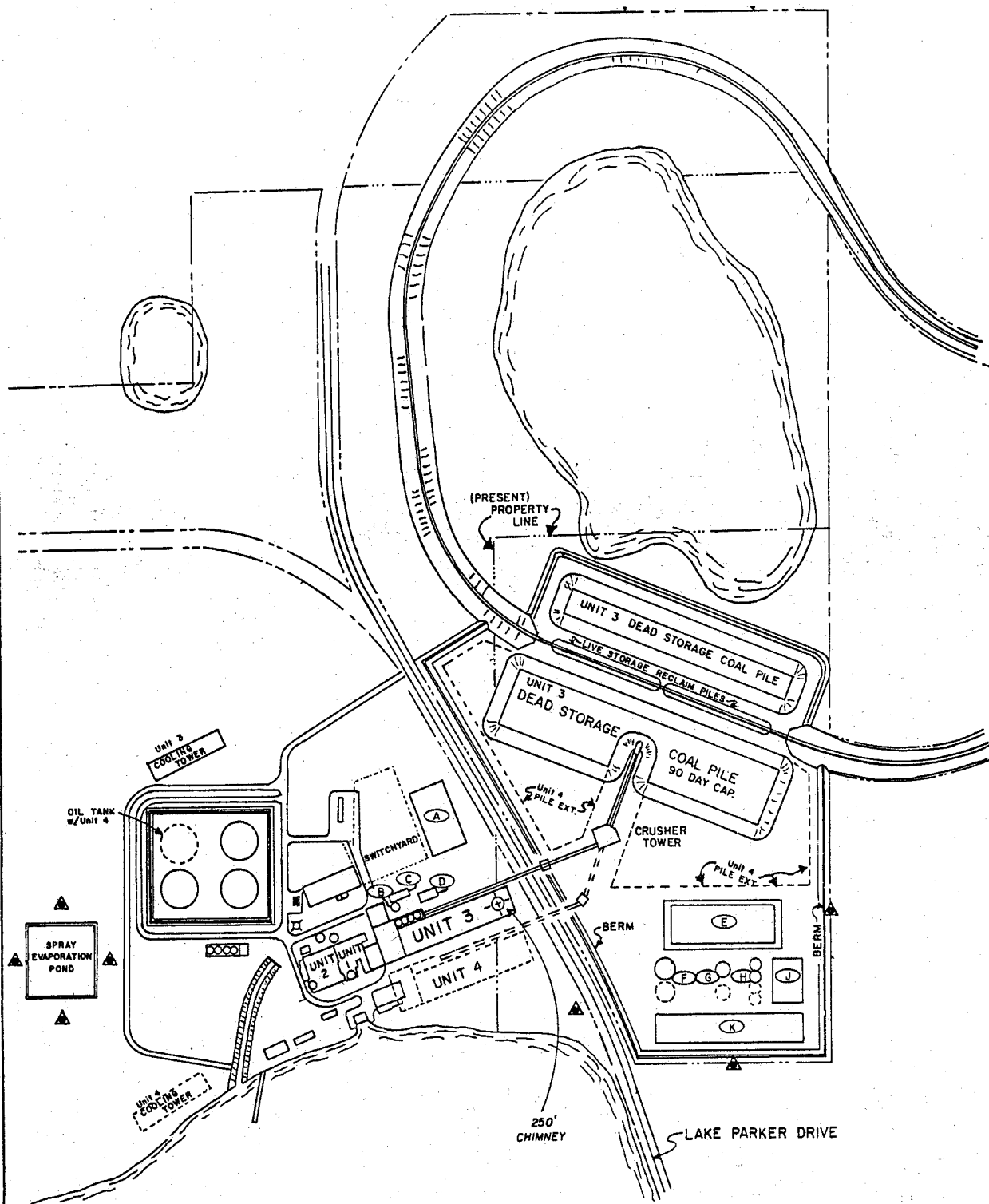
The second part of the program will be done on an annual basis or when results from the monthly monitoring schedule indicates a leaching problem. The second part of the monitoring program will be to analyze the following parameters:

Arsenic	Nitrates
Barium	Radioactivity
Cadmium	Selenium
Lead	Silver
Mercury	

These parameters are listed in Section 17-3.101 of the Department of Environmental Regulation's proposed revision to Chapter 17-3 FAC as being the criteria for groundwater with a total dissolved solids content of less than 10,000 mg/l.

6.4.4 DISCHARGE FROM DEWATERING WELLS DURING CONSTRUCTION

Discharge water from construction dewatering wells will be collected and contained in catch basins and allowed to evaporate and percolate back into the ground. In no event will discharge water be allowed to enter Lake Parker or Fish Lake.



☐ PROPOSED FOR UNIT 4

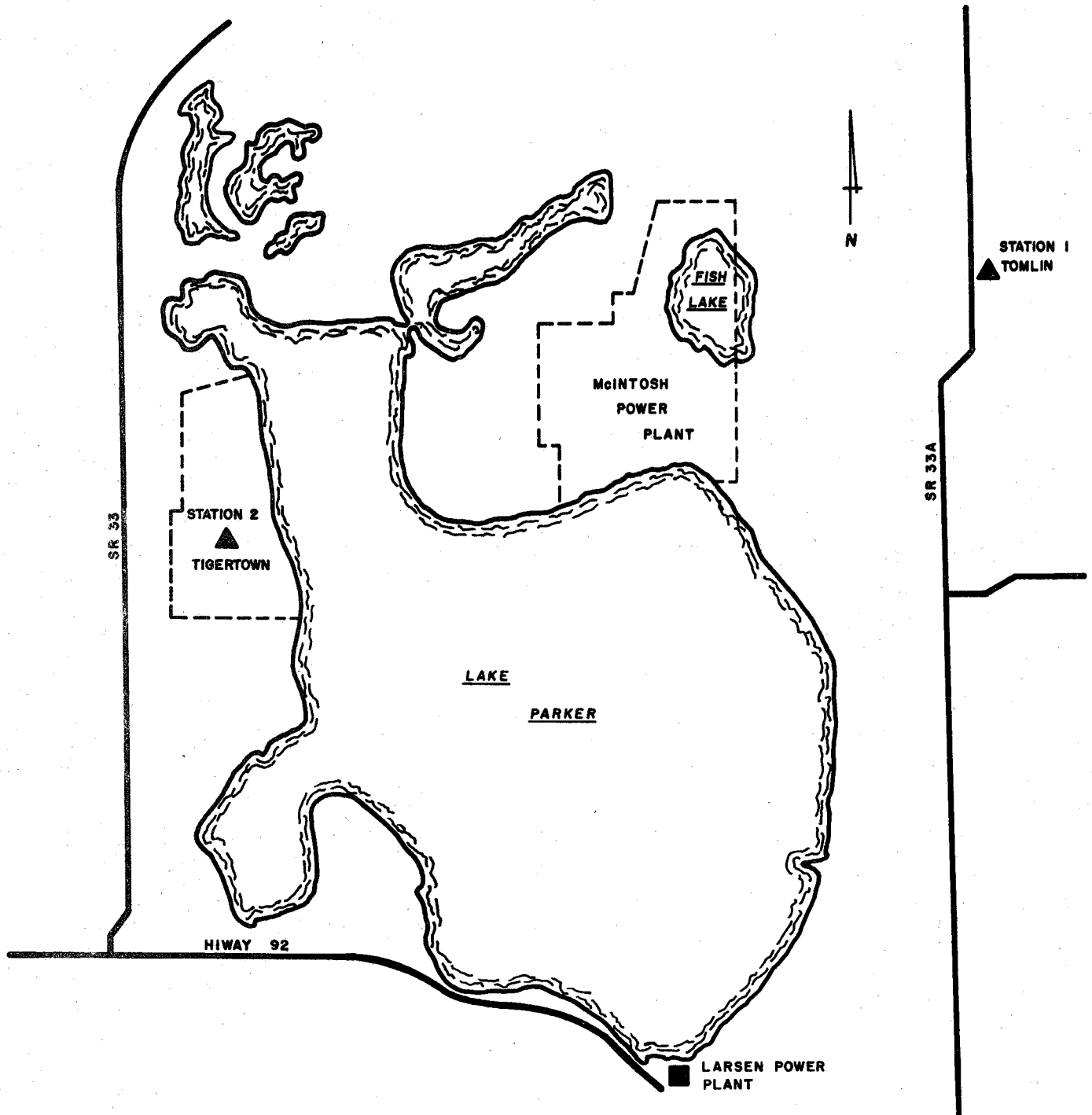
6.5 AIR

All programs and data used in evaluating the impact of emissions on the ambient air concentrations around the plant site are described in detail in Air Quality Display Model located in Appendix 5.4.

Since the 250 MW Unit#3 was certified in December, 1976, the City of Lakeland has installed and is currently operating two ambient monitoring stations measuring sulfur dioxide and suspended particulate matter. The monitoring stations are on a 6 day cycle that corresponds to the FDER monitoring schedule.

Figure 6.5.1 shows the locations of the ambient monitoring stations in relation to the McIntosh Plant site.

FIG. 6.5.1



P.6.5-2

Division POWER GENERATION			CITY OF LAKELAND, FLORIDA DEPT. OF ELECTRIC & WATER UTILITIES		Proj. No.		Scale 1-3/4"=1mile	
Engineer					Mcp Section			
Dr. by <i>M. Green</i>	Date	3-31-78	<u>LOCATION OF CITY OF LAKELAND</u> <u>AMBIENT SAMPLING STATIONS</u>			Dwg. No.		Rev. No.
App. by								

APPENDIX I
AIR QUALITY DISPLAY MODEL

AMBIENT AIR QUALITY ANALYSIS AND ATMOSPHERIC DISPERSION
MODELING IMPACT OF THE PROPOSED McINTOSH PLANT UNIT NO. 3

PREPARED FOR:
CITY OF LAKE LAND UTILITIES
LAKE LAND, FLORIDA
FEBRUARY, 1978

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
GAINESVILLE, FLORIDA

Project Manager: Steven R. Marks
Project Engineer: Robert E. Holden

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1.0 SUMMARY

The City of Lakeland is proposing to construct and operate an additional unit (Unit 3) at their existing McIntosh plant. Unit 3 will have the multiple capacity of firing coal, oil, or combinations of both of these fuels with refuse. The burning of these fuels will result mainly in the emissions of sulfur dioxide and particulate matter.

The State of Florida Department of Environmental Regulation (DER) requires that a complete air quality impact assessment of a new power plant source be prepared prior to certification. The analysis must include atmospheric dispersion modeling, utilizing the latest Environmental Protection Agency (EPA) approved models and techniques as designated by the EPA and DER. Also, the latest available ambient air quality data in the vicinity of the proposed site should be evaluated and correlated, if possible, to the modeling results.

The Federal Government requires that certain new sources of sulfur dioxide and particulate matter emissions undergo an air quality evaluation for Prevention of Significant Deterioration (PSD). Steam electric power generating plants with a capacity of 1,000 million Btu/hr or greater are one of the source categories which must be reviewed. Federal regulations related to the PSD were promulgated by the EPA in 1974, and were revised in 1977 according to the Clean Air Act Amendments of 1977.

A detailed modeling and ambient air quality analysis was conducted by Environmental Science and Engineering, Inc., of Gainesville, Florida,

for the purpose of determining compliance of the proposed facility with the applicable ambient air quality standards and PSD laws and regulations. The analysis showed that promulgated allowable PSD increments (Public Law 95-95) and EPA or Florida Ambient Air Quality Standards (AAQS) will not be violated due to operation of the proposed and existing facilities at allowable emission limitations.

This report provides a comprehensive description of the methods, data bases, results and conclusions of the air quality and PSD analysis. Because the Clean Air Act Amendments of 1977 have just recently been passed by Congress and signed into law, the full ramifications and interpretations of those laws related to PSD are not known at this time. Therefore, portions of the analysis were based upon prior experience under the older, EPA promulgated regulations. As definitive interpretations of the law become available, it may be necessary to revise portions of this report accordingly.

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2.0 INTRODUCTION

Both the State of Florida and Environmental Protection Agency (EPA) Ambient Air Quality Standards (AAQS) for sulfur dioxide (SO_2), total suspended particulate matter (TSP), and nitrogen dioxide (NO_2) are presented in Table 1. The annual mean values cannot be exceeded at any point within the specified study area. The short-term AAQS, 24- and 3-hour for SO_2 and 24-hour for TSP, can be exceeded only once per year.

Federal regulations related to the Prevention of Significant Deterioration (PSD) of air quality were first promulgated on December 5, 1974, by the EPA. The rules and regulations were published in the Federal Register (1974). The original regulations were modified frequently thereafter to provide consistency and clarifications, and have since been superseded by the Clean Air Act Amendments of 1977. The amendments were signed into law on August 7, 1977 (Public Law 95-95).

The PSD law allows maximum incremental increases in sulfur dioxide (SO_2) and total suspended particulate matter (TSP) concentrations above a specified air quality baseline level. The exact increment which cannot be exceeded is dependent upon the classification of the area of interest. Listed in Table 2 are the PSD increments for the three class designations. Presently, Polk County is a Class II area.

Table 1. Applicable Ambient Air Quality Standards ($\mu\text{g}/\text{m}^3$) for Lakeland Utilities

	Annual	24-Hour*	3-Hour*
<u>Sulfur Dioxide</u>			
EPA Primary	80 (A)	365	-----
EPA Secondary	-----	---	1,300
State of Florida	60 (A)	260	1,300
<u>Particulate Matter</u>			
EPA Primary	75 (G)	260	-----
EPA Secondary	60 (G)	150	-----
State of Florida	60 (G)	150	-----
<u>Nitrogen Dioxide</u>			
EPA Primary	100 (A)	---	-----
State of Florida	100 (A)	---	-----

* Not to be exceeded more than once per year

(A) arithmetic mean

(G) geometric mean

Table 2. Prevention of Significant Deterioration Increments ($\mu\text{g}/\text{m}^3$)

Pollutant/Averaging Time	Class		
	I	II	III
<u>Particulate Matter</u>			
Annual Geometric Mean	5	19	37
24-Hour Maximum*	10	37	75
<u>Sulfur Dioxide</u>			
Annual Arithmetic Mean	2	20	40
24-Hour Maximum*	5	91	182
3-Hour Maximum*	25	512	700

* Increment can be exceeded once per year.

SOURCE: Clean Air Act Amendments of 1977.

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The annual PSD increments cannot be exceeded in any specific area. However, the short-term (24 hours or less) increments may be exceeded once per year at any specific location within an area. This definition is consistent with the short-term AAQS, which allow the standards to be exceeded once per year.

At the present time, the exact period or date which defines baseline air quality according to the Clean Air Act Amendments of 1977 has not been determined. EPA promulgated regulations which define baseline air quality as the air quality which existed on January 1, 1975, considering the additional effects of those sources which were permitted to construct prior to January 1, 1975, but were not yet operating. In determining compliance with the allowable increments, the effects of growth or reductions in emissions from sources other than the proposed new source since January 1, 1975, must be accounted for, as well as the effect of emissions from sources permitted after January 1, 1975, but not operating as of the start-up date of the proposed new source. The EPA definition of baseline air quality was used in the PSD analysis in the absence of a differing interpretation of the amended definition in Public Law 95-95 by EPA Region IV.

This report presents the methodology, data bases, results, and conclusions of the significant deterioration analysis for the proposed power plant as required by EPA.

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3.0 METHODOLOGY

3.1 GENERAL

An atmospheric dispersion model can be defined as a mathematical description of the transport, dispersion, and transformation processes that occur in the atmosphere. In the case of sulfur dioxide, it is generally assumed that chemical conversion of this substance is small with respect to its average residence time in the atmosphere. In the case of particulate matter, it is assumed that no particles are scavenged from the atmosphere by fallout or washout. These assumptions are conservative and will tend to result in predicted concentrations being higher than actual measured concentrations.

It should also be recognized that the dispersion models also have rather severe limitations. The models cannot reasonably predict expected ground-level pollutant concentrations from a multitude of sources under calm winds, aerodynamic downwash, or fumigation conditions. It has been the experience of ESE that many of the higher pollutant concentrations are generally observed under calm wind, downwash, or fumigation conditions.

Presently, the Florida and the Federal EPA Ambient Air Quality Standards for suspended particulate matter and sulfur dioxide are for annual, 24-hour, and 3-hour (sulfur dioxide only) periods of time; therefore, the dispersion models must predict concentrations for various averaging times. Most dispersion models estimate concentrations for a 1-hour period or for seasonal or annual time periods. If an average

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concentration for an intermediate period is required, two options are available. One, the short-term model can be used to estimate concentrations hour-by-hour for the period of interest and an average of all hours can be taken with consideration given to an appropriate calibration factor. Two, statistical techniques suggested by Larsen (1971) for log-normally distributed data or empirical techniques as summarized by Strom (1976) for point sources can be utilized to convert a concentration for one averaging time to another.

Several widely recognized and suggested techniques for estimating or predicting ground-level pollutant concentrations were utilized in this study. These techniques are discussed in detail in the following sections. Three EPA-approved models were utilized--the Air Quality Display Model (AQDM), the Point Multiple Model with wind shear effects (PTMTPW), and the CRSTER Single Source Model.

The AQDM determines annual average levels of atmospheric pollution from annual emissions and meteorological data and was used to conduct the long-term impact evaluation. The short-term impact assessment was conducted using the PTMTPW and CRSTER, which calculate hourly pollutant concentrations from hourly emissions and meteorological parameters. These hourly levels can be averaged over any longer time period to facilitate comparisons of estimated air quality with air quality standards. A more thorough description of these models is included in Appendix A.

3.2 LONG-TERM MODELING

The AQDM with Briggs plume rise requires annual average emissions, stack parameters and meteorological data in order to calculate annual average concentrations. Annual average emissions and stack parameters for all sulfur dioxide and particulate matter sources in Polk and surrounding counties within 50 kilometers of Lakeland were obtained through the Florida Department of Environmental Regulation. These data included both point and area source emissions. Emissions inventories representative of the year 1974 were provided in order to estimate the baseline air quality for the PSD analysis. Emissions and stack parameters for Lakeland Utilities' Larsen and McIntosh plants were provided by Lakeland Utilities. Both annual average and maximum emissions, exit temperatures and velocities were given for 1974, and a future year when McIntosh 3 is expected to be on line (1982). For 1982, the DER supplied ESE with 1980 emissions and stack parameters for all other sources, both point and area, in Polk and surrounding counties.

Both Larsen and McIntosh plants were modelled at their maximum allowable emissions for sulfur dioxide and TSP. Each unit's emission limitation is provided in Table 3. McIntosh Unit 2 is classified as a new source since it was on-line in 1976. However, since construction on this unit began prior to January 6, 1975, it was used in establishing the baseline air quality for the PSD analysis according to the new Clean Air Act Amendments of 1977. Complete listings of all emission inventories utilized in the dispersion modeling are included in Appendix B.

Table 3. Emission Limiting Standards for Lakeland Utilities' Units
(pounds per million BTU heat input)

Unit	Sulfur Dioxide	Nitrogen Dioxide**	Particulates
Larsen 4	2.75	0.3	0.1
Larsen 5	2.75	0.3	0.1
Larsen 6	2.75	0.3	0.1
Larsen 7	2.75	0.3	0.1
McIntosh 1	2.75	0.3	0.1
McIntosh 2	0.8	0.3	0.1
McIntosh 3*	1.2	0.7	0.1

* Worst case--on 100 percent coal

** Emission standards are actually for new sources only. If there were an emission limitation for existing sources, it would not be more stringent than the 0.3 pounds per million BTU now imposed on new sources burning fuel oil.

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Five-year annual average meteorological data from Tampa, Florida, 1971-1975, in the National Climatic Center's "STAR" format was utilized in the AQDM. A wind rose for this period is presented as Figure 1.

A 1.0 km grid spacing was utilized in the AQDM to estimate the spatial distribution of ground-level concentrations and to determine maximum annual-average concentrations. AQDM predicted concentrations were not calibrated (i.e., no adjustments to model values were made) for either sulfur dioxide or TSP. An annual average background TSP level of 40 ug/m³ was assumed. Zero background was assumed for sulfur dioxide.

The long-term ambient air quality standard for TSP is expressed in terms of annual geometric mean. The long-term air dispersion models, however, calculate annual arithmetic mean concentrations. Thus a method of conversion from arithmetic mean to geometric mean concentration is necessary in order to compare estimates with air quality standards. Larsen (1971) has developed an equation which expresses the relationship for log-normally distributed data:

$$M_g = \frac{M_{aa}}{\exp (0.5 \ln^2 S_g)}$$

where: M_g = geometric mean

M_{aa} = arithmetic mean

S_g = standard geometric deviation

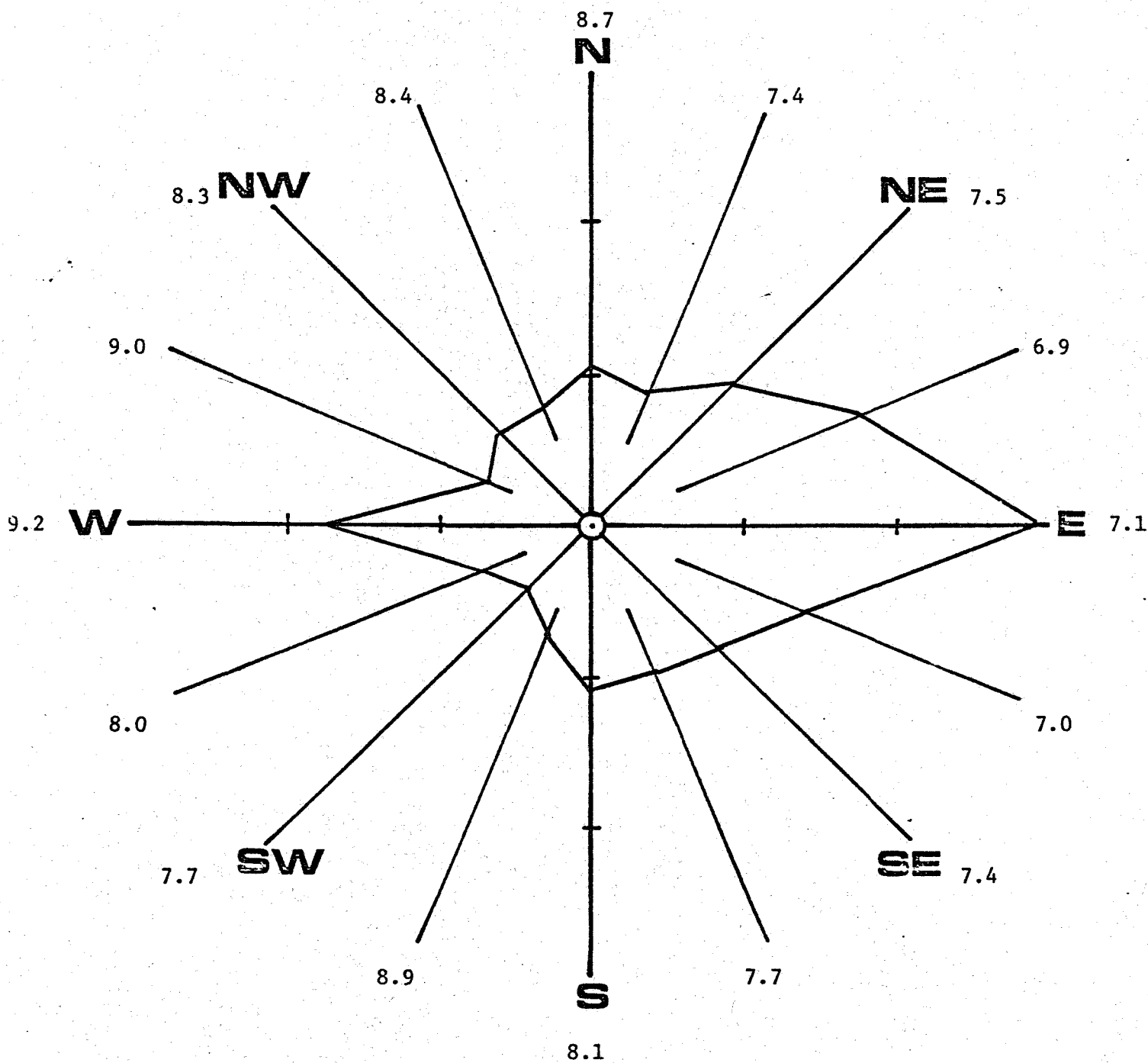


Figure 1. Five-Year Averaged Wind Rose for Tampa, Florida, 1971-1975. Scale: 1" = 5%, Calm = 4.4%. Average Speeds Given in Knots.

An analysis of 3.5 years of ambient TSP data indicates that the log-normal assumption is a good approximation for suspended particulates in Lakeland. This analysis also showed that S_g values ranged from 1.3 to 1.6 for an annual period. Inserting an S_g of 1.3 or 1.6 into the above equation results in a M_g/M_{aa} ratio of 0.97 or 0.90, respectively. The more conservative ratio of 0.97 may be used to convert arithmetic mean TSP levels to geometric mean TSP levels, based upon the modeling results. Through use of this technique, the primary TSP standard of 75 ug/m^3 annual geometric mean is equivalent to 77 ug/m^3 , annual arithmetic average. Similarly, the secondary standard of 60 ug/m^3 is equivalent to 62 ug/m^3 , annual arithmetic average concentration.

3.3 SHORT-TERM MODELING

The CRSTER short-term dispersion model (EPA, 1977b) was utilized as a tool in identifying worst-case 24-hour meteorological conditions for both sulfur dioxide emissions and particulate matter emissions. The model was applied to emission conditions as they existed in the vicinity of the proposed facility as of January 1, 1975, and as they are expected to exist in 1982 with the proposed Unit 3 in operation. All sources within 50 km of the proposed facility were considered, utilizing their annual averaged emissions and stack parameters. Area sources were not considered in the short-term modeling. However, a conservative short-term background level of 100 ug/m^3 was added to the total TSP concentration estimates to account for area source emissions (see Chapter 4.0).

Because the CRSTER model is a single source model, it is first necessary to screen the sources of concern to determine which source or sources will have the primary impact upon maximum short-term concentrations. This can often be accomplished by examining the total emissions from each source. If a particular source's emissions are of much greater magnitude than other sources in the area, it is generally safe to assume this source will be of primary concern. For less obvious cases, it may also be necessary to examine stack heights or make multiple runs of CRSTER to determine which source is most critical for the meteorology of the region.

Once the critical sources have been determined, the critical meteorological conditions are determined from execution of the CRSTER. Since five years of meteorological data were available (Tampa 71-75) it is not appropriate to line up sources to the worst days' meteorology, but rather to select only the worst day for the actual wind direction required for interaction between sources. As both PSD increments and AAQS can be exceeded once per year, only the highest, second-highest concentration in a field of 180 receptors (36 directions, 5 downwind distances) were selected. This is consistent with EPA's guidelines.

Once the CRSTER has established the worst day(s) and worst 3-hour period(s), the maximum concentrations are determined by use of the PTMTPW model. The PTMTPW inputs the same meteorology as the CRSTER but has a much greater flexibility in the number of different sources and the number and spacing of receptors. Since with 5 years of data the true wind

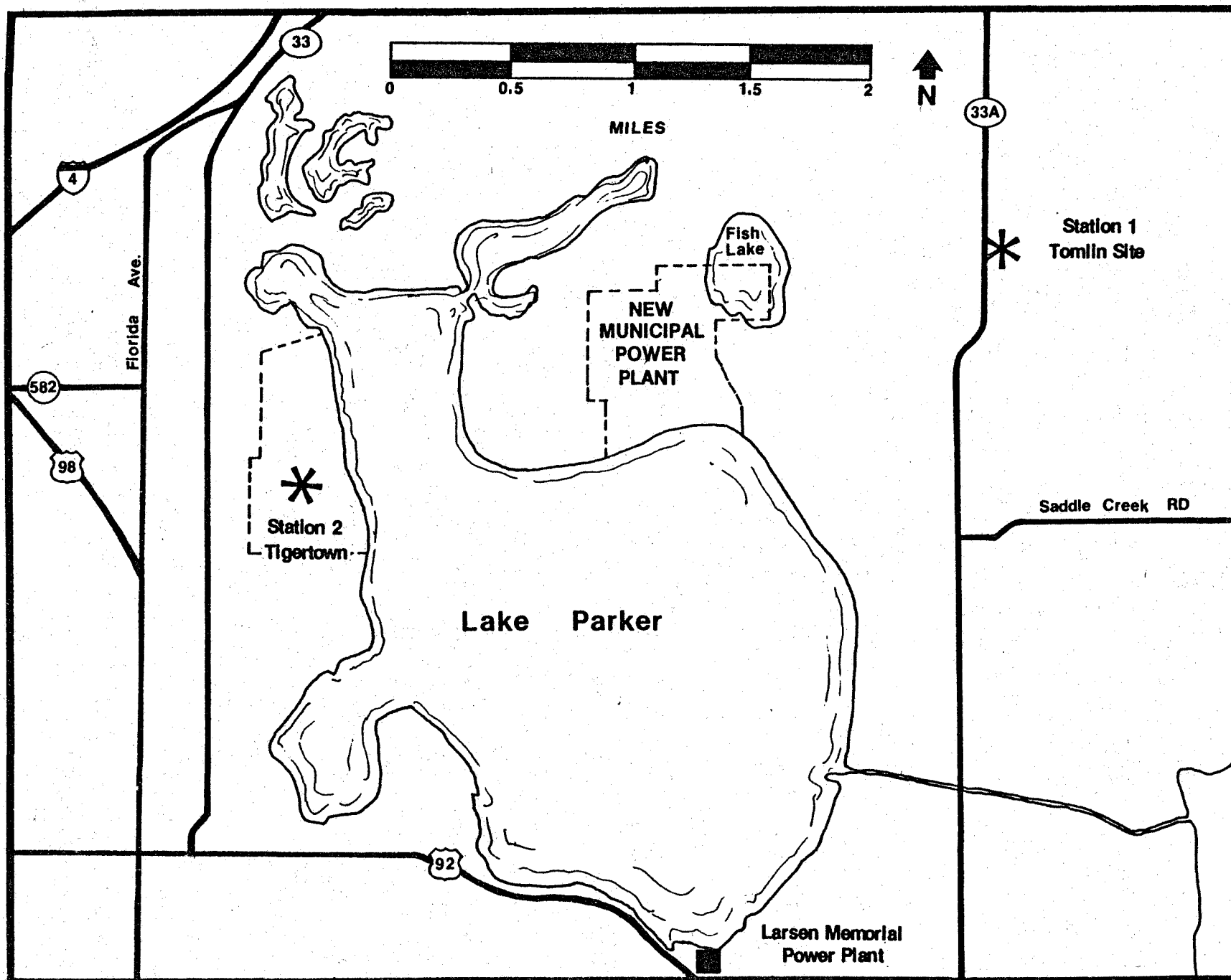
directions were used, downwind receptors had to be created using ESE's DOWNWIND program. Receptor spacing for all CRSTER runs was 0.5 kilometers, while for the PTMTPW a 0.1 kilometer spacing was utilized. Short-term concentration estimates, as provided by the models, were not adjusted (i.e., a calibration factor of 1.0 was employed) for either sulfur dioxide or TSP.

4.0 MEASURED AMBIENT AIR QUALITY

The State of Florida maintains two ambient air monitoring stations in the Lakeland area, the locations of which are shown in Figure 2. Data collected by these stations were available for this study for the time period ending in June, 1977. In addition, the City of Lakeland established two ambient air monitoring stations in July, 1977, for sulfur dioxide and total suspended particulates. The stations are shown in Figure 3.

The annual Florida Ambient Air Quality Standards (AAQS) are written in terms of the arithmetic mean for sulfur dioxide (SO_2) and nitrogen dioxide (NO_2) and in terms of the geometric mean for total suspended particulates (TSP). The State of Florida's Air Quality Data Handling System (AQDHS) and ESE's Air Data Statistical Analysis Package (ADSAP) were used to calculate these parameters. ESE's ADSAP computer routine performs two functions which are not available with the AQDHS. First, the precision associated with the sampling frequency for pollutant concentrations is calculated with the method of Hunt (1972). Second, the data are examined for log-normality through regression analysis. Where the data are sufficiently log-normal, the equations of Larsen (1971) are used to project highest and second highest concentrations expected for the annual period based on the intermittent data. The data are also examined for the actual highest and second highest concentrations. These values are then compared with the short-term AAQS.

Figure 3. Location of City of Lakeland Ambient Sampling Stations.



The City of Lakeland SO₂ and TSP data are statistically summarized in Table 4. The SO₂ mean concentrations are 7 and 6 ug/m³, while the TSP geometric means are 34 and 29, respectively for, Stations 1 and 2. Each mean is well below their respective AAQS. All ambient air quality data from the City of Lakeland is included in Appendix C.

The State of Florida data collected from 1974 through 1977 are summarized in Table 5. These data are collected with the Federal Reference Methods of sampling and analysis (40 CFR Part 50, 1976). Total suspended particulate matter is measured by the High-Volume method; sulfur dioxide is measured by the pararosaniline technique, and nitrogen dioxide is measured with the sodium arsenite method.

During 1975, a severe problem was discovered with the Federal Reference Method of sampling and analysis for sulfur dioxide (Bowman, et al., 1976). Continuing experimental work during 1976 documented the temperature-related instability of the dichlorosulfitomercurate complex, an essential compound for the colorimetric analysis of sulfur dioxide concentrations (Fuerst, 1976).

The State of Florida has not implemented temperature control procedures for sulfur dioxide measurements. Thus, the values shown in Table 4 may be, for individual values, as much as fifty percent lower than the

Table 4. Statistical Analysis, Lakeland Utilities, 24-Hour Data Summary
(Micrograms Per Cubic Meter)

SO₂
July 18, 1977-December 9, 1977

Station Number	Number Obs.	Maximum Obs.	2nd Max. Obs.	Arith. Mean
1	6	22	4	7
2	17	20	19	6

TSP
July 18, 1977-November 15, 1977

Station Number	Number Obs.	Maximum Obs.	2nd Max. Obs.	Arith. Mean	Geometric Mean
1	20	108	57	37	33.72
2	13	46	40	30	29.06

Table 5. Measured Ambient Air Quality In Lakeland, Florida, 1974 through June, 1977 (ug/m³)

Monitoring Site	Year	Sulfur Dioxide			Total Suspended Particulate Matter				Nitrogen Dioxide		
		Mean	No. of Observations	Maximum 24-Hour Observation	Mean	Geometric Mean	No. of Observations	Maximum 24-Hour Observation	Mean	No. of Samples	Maximum 24-Hour Observation
Electric and Water Utilities Operations Parking Lot	1974	38	47	190	62	61	42	100	82	20	333
	1975	12	47	99	58	54	44	189	52	40	287
	1976	6	58	32	49	47	54	98	32	58	73
	1977	8	51	80	54	50	49	97	31	42	81
Scott Lake Road	1975	12	297	203	55	49	36	155	--	--	--
	1976	5	167	50	40	38	41	78	--	--	--
	1977	9	38	121	54	48	35	166	--	--	--
Florida AAQS		60	--	260*	--	60	--	150*	100	--	--

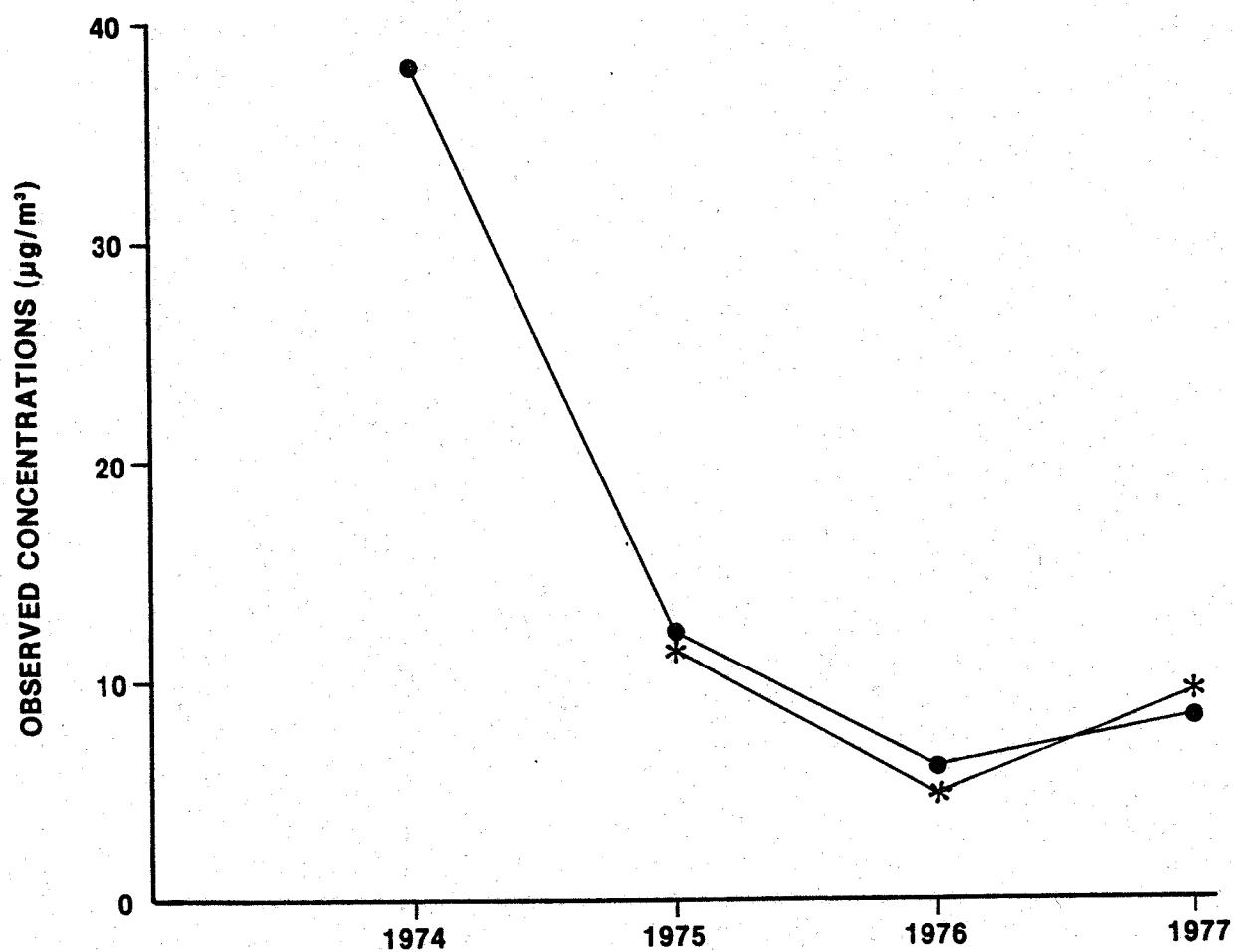
* Not to be exceeded more than once per year.

actual ambient sulfur dioxide concentrations on a given day, and the average values may, by some lesser percentage, underrate the actual concentrations. As a result, the sulfur dioxide data must be interpreted with caution. No violations of the Florida AAQS have been observed in the study period. The concentration trends in sulfur dioxide are graphically illustrated in Figure 4. The measurements from year to year in all probability suffer equivalent negative bias due to temperature instability. The trend shown towards clearer air is thus relatively free from this bias. This upswing in the first half of 1977 requires further investigation to determine the exact cause.

The analysis for log-normality yielded relatively poor correlations, thus short-term statistical projections were not utilized for sulfur dioxide.

The trends in total suspended particulate matter are shown in Figure 5. From a possible borderline violation of the annual standard in 1974, the concentrations declined through 1976. The 1974 geometric mean is only considered a "possible violation" because of the known lack of precision in estimating an annual value based on forty-two daily observations during the year. The slightly higher concentrations in 1977 were due to unusually dry weather during the first half of that year, as shown in Table 6. In any event, the higher concentrations in 1977 are not indicative of a violation of the AAQS, which are based on an annual period.

**ANNUAL ARITHMETIC AVERAGE SULFUR DIOXIDE CONCENTRATION
TRENDS (IN $\mu\text{g}/\text{m}^3$), LAKELAND, FLORIDA.**

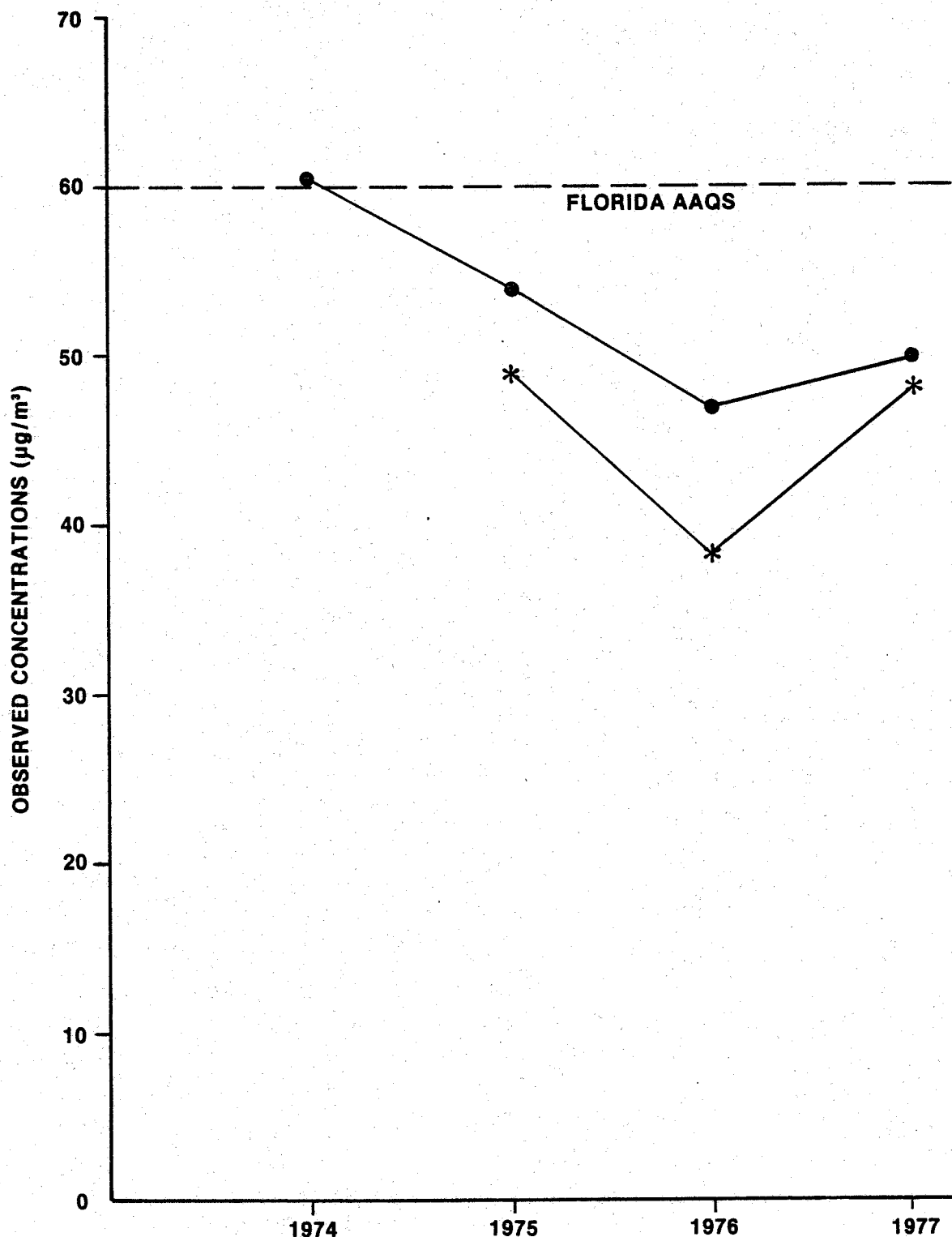


● MONITORING STATION AT THE DEPARTMENT OF ELECTRIC
AND WATER UTILITIES OPERATIONS PARKING LOT.

* SCOTT LAKE ROAD MONITORING STATION.

FIGURE 4

**ANNUAL GEOMETRIC MEAN TOTAL SUSPENDED PARTICULATE
MATTER CONCENTRATION TRENDS (IN $\mu\text{g}/\text{m}^3$), LAKE LAND, FLORIDA.**



● MONITORING STATION AT THE DEPARTMENT OF ELECTRIC
AND WATER UTILITIES OPERATIONS PARKING LOT.

* SCOTT LAKE ROAD MONITORING STATION.

Table 6. Inches of Rainfall in Lakeland

	1977	Normal (1941-1970)
Jan.	2.18	2.32
Feb.	3.45	2.52
March	0.83	4.02
April	0.22	2.57
May	2.70	3.44
June	5.03	6.70

Source: National Weather Service.

These data were examined for log-normality by regressing the number of standard deviations that a given sample is from the mean (z value) against the logarithm of the concentration. The variances for the two stations were above 0.90 for both stations for the years involved. All projected second highest twenty-four hour concentrations in the annual periods were below the 150 ug/m³ 24-hour AAQS, with the exception of the 1975 projections for the Scott Lake Road site. At this station, a possible second highest concentration of 163 ug/m³ was projected. In 1976 however, this projection declined to 106 ug/m³. For the baseline year 1974, the projected record highest concentration was 117 ug/m³ at the Public Works site.

TSP is the only criteria pollutant that is introduced into the atmosphere in major quantities from natural sources (pollen, wind blown dust, forest fires, etc.). In addition, human activities on dirt roads, construction sites, newly plowed fields, and so on, may generate TSP emissions that may not be explicitly inventoriable. The question arises as to the level of these "background" concentrations. Various methodologies are available for such an analysis of air quality data. The method utilized is based on the frequency distribution observed during 1974 at the Electric and Water Utilities Operation Parking Lot in Lakeland. At least 10 percent of the time, concentrations of 40 ug/m³ were observed. This value was thus used for the annual background. The short-term background is inherently more difficult to estimate. The

main problem is that of estimating the level that background concentrations may reasonably attain during the time period in which meteorological conditions are limiting flue gas dispersion so as to cause maximum ground level concentrations. These difficulties may be surmounted by making conservative assumptions. The highest observed 1974 concentration of 100 ug/m^3 occurred 1.4 percent of the time. This value was assumed to represent a worst-case background concentration for 24-hour periods.

The trends in nitrogen dioxide concentrations are shown in Figure 6. As indicated, these concentrations have steadily declined during the study period. All concentrations were well below the annual average AAQS of 100 ug/m^3 . There are presently no short-term AAQSs for nitrogen dioxide. However, the Clean Air Act amendments of 1977 require (unless the administration of the EPA concludes that such standards are unnecessary) the adoption of primary National AAQS for nitrogen dioxide for a period not to exceed three hours. The available data are for twenty-four hour time periods and thus were not examined for maximum three-hour concentrations.

**ANNUAL ARITHMETIC AVERAGE NITROGEN DIOXIDE
CONCENTRATION TRENDS (IN $\mu\text{g}/\text{m}^3$). MONITORING STATION AT
THE DEPARTMENT OF ELECTRIC AND WATER UTILITIES
OPERATIONS PARKING LOT , LAKELAND.**

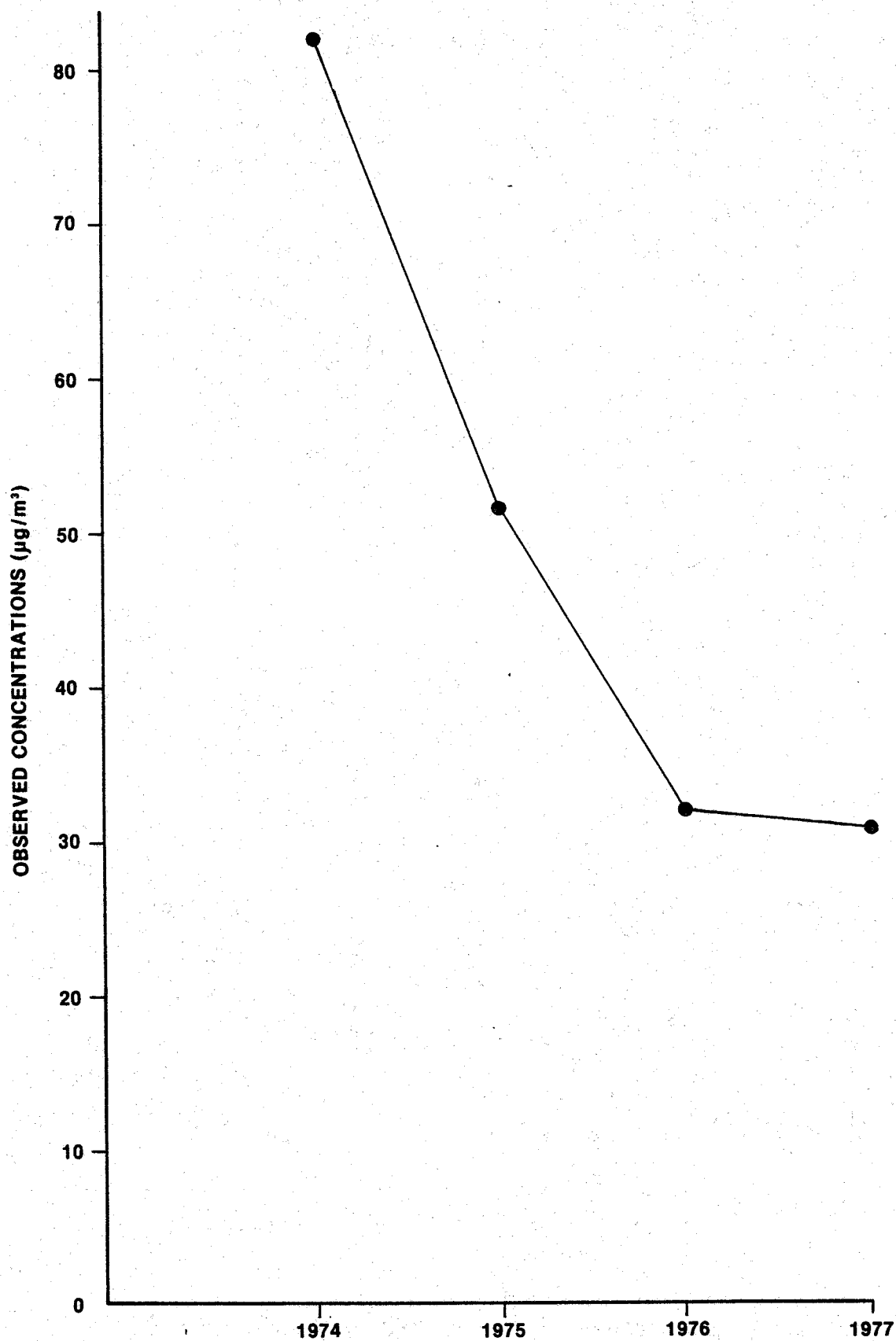


FIGURE 6

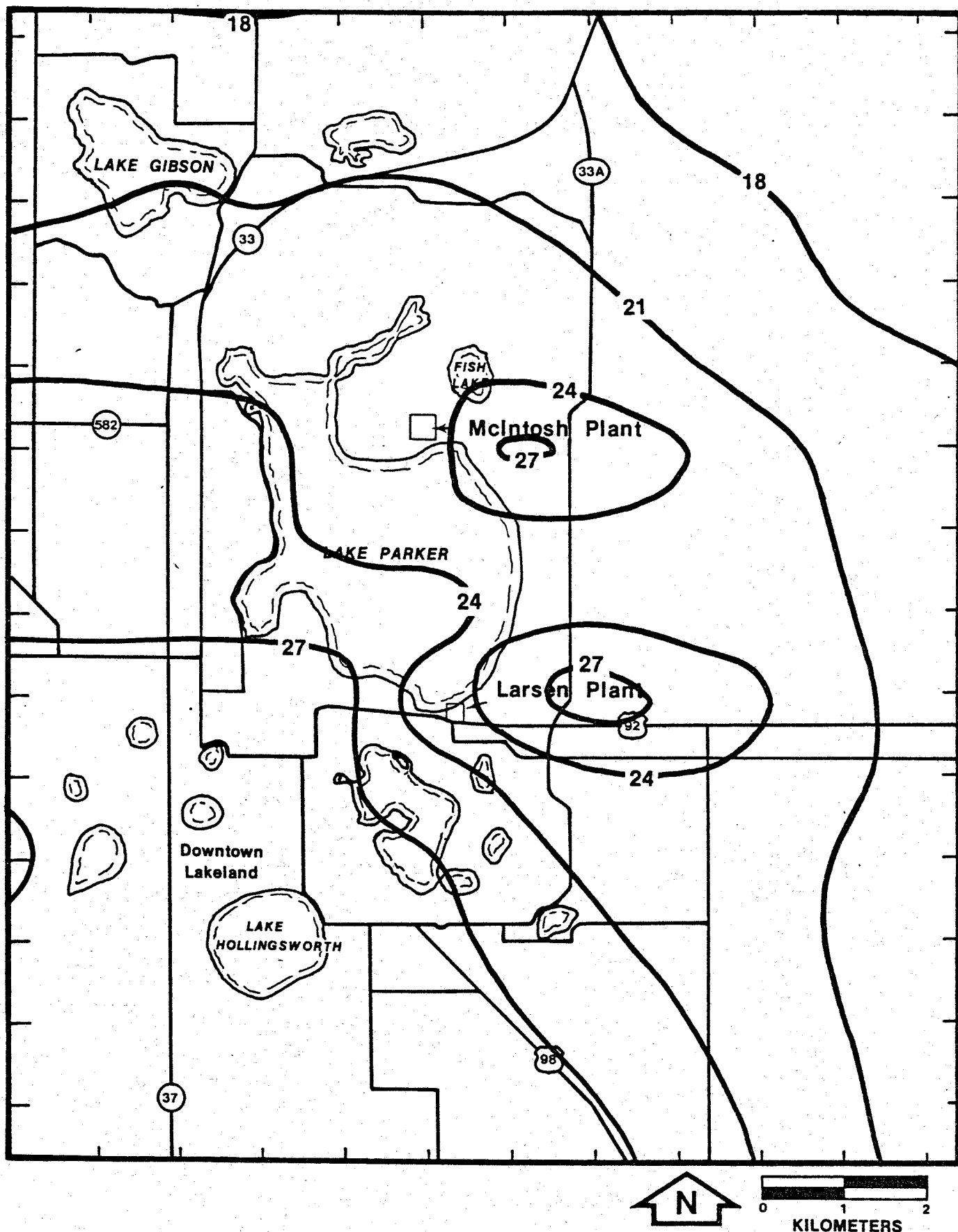
5.0 MODELING RESULTS

5.1 PSD ANALYSIS

Presented in Figure 7 are the estimated annual average sulfur dioxide concentrations due to all sources for the baseline year 1974. In Figure 8 are isopleths of annual average sulfur dioxide concentrations predicted for 1982 with the proposed unit in operation. Comparison of Figures 7 and 8 show that annual average sulfur dioxide concentrations in 1982 will be moderately below those in 1974.

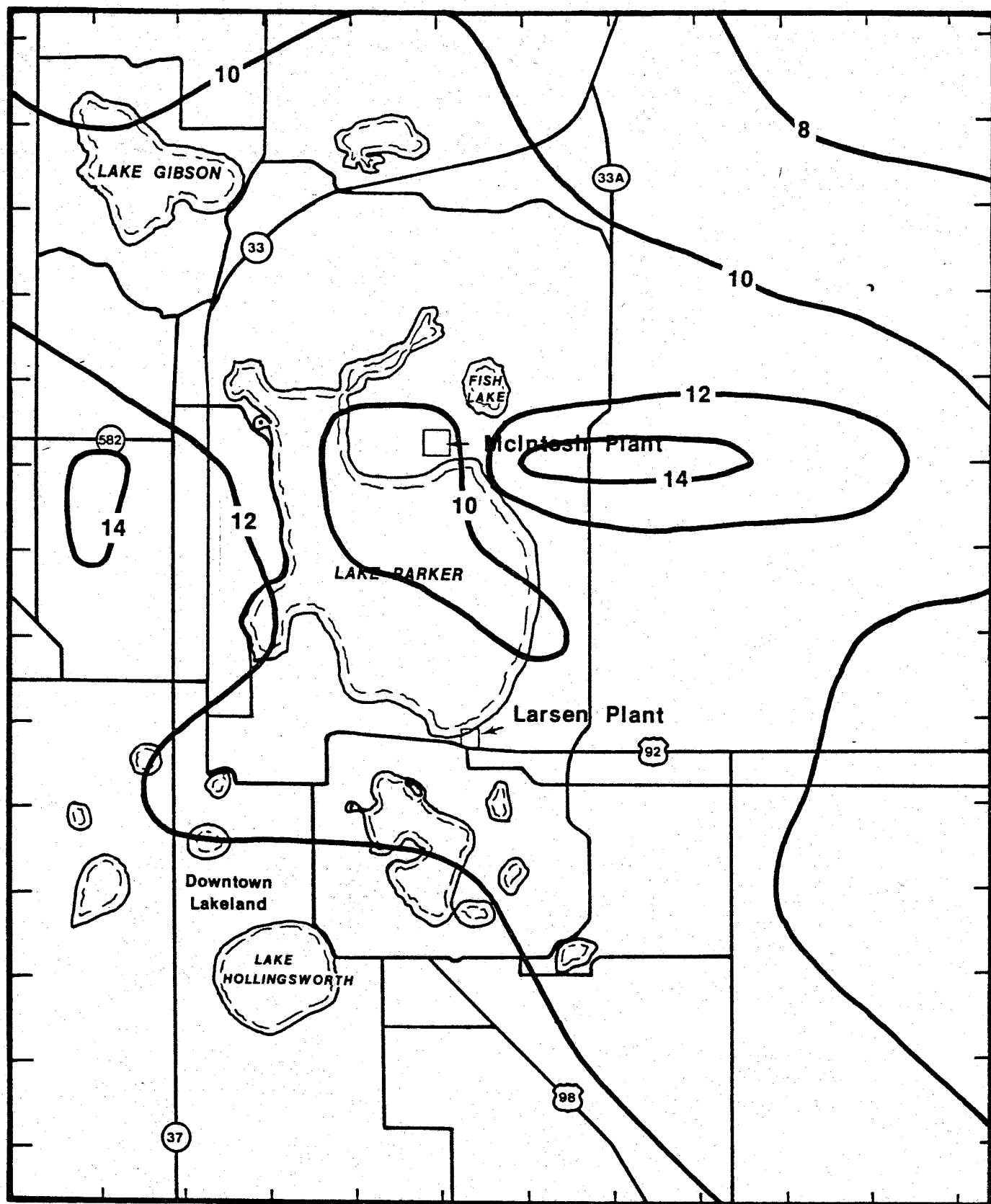
Annual average TSP isopleths for 1974 are portrayed in Figure 9, while the 1982 TSP concentration isopleths with the proposed unit are shown in Figure 10. A conservative annual background concentration of 40 ug/m^3 has been added to all TSP isopleths (see Chapter 4.0). Comparison of these two figures show no change in annual average TSP concentration in 1982 as compared with baseline concentrations.

Table 7 summarizes both the annual and short-term PSD analysis. The incremental contribution of Lakeland Utilities to the 1974 and 1982 maximum concentrations is presented along with the maximum increases over the baseline expected in 1982 for sulfur dioxide and TSP. The results show that all increments but the 3-hour sulfur dioxide are negative or near zero, while the 3-hour sulfur dioxide maximum increase over baseline of 112 ug/m^3 is only 22 percent of the increase permitted.

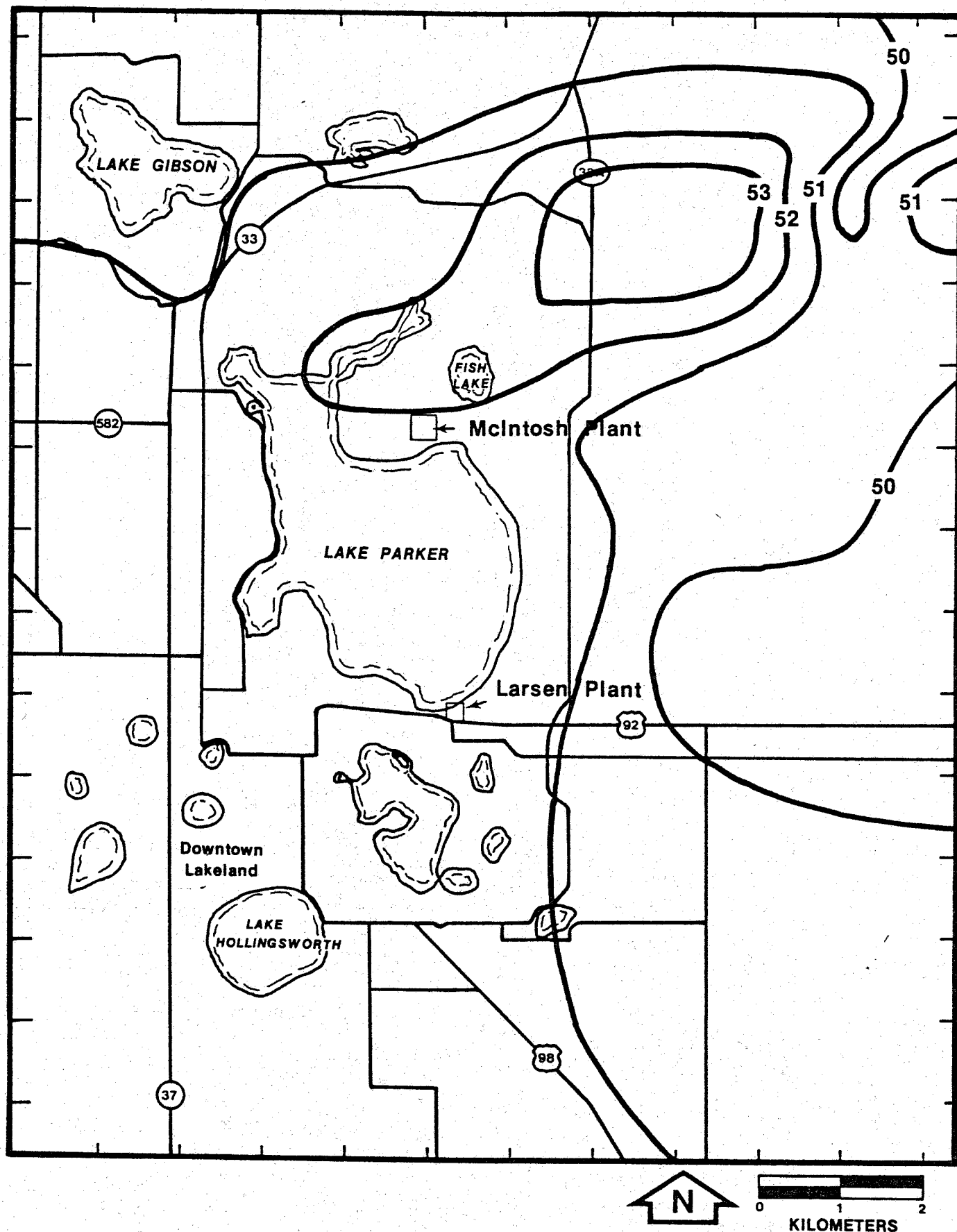


ESTIMATED ANNUAL AVERAGE SO₂ CONCENTRATIONS ($\mu\text{g}/\text{m}^3$),
1974 BASELINE, ALL SOURCES WITH LAKE LAND UTILITIES AT
MAXIMUM ALLOWABLE EMISSIONS.

FIGURE 7

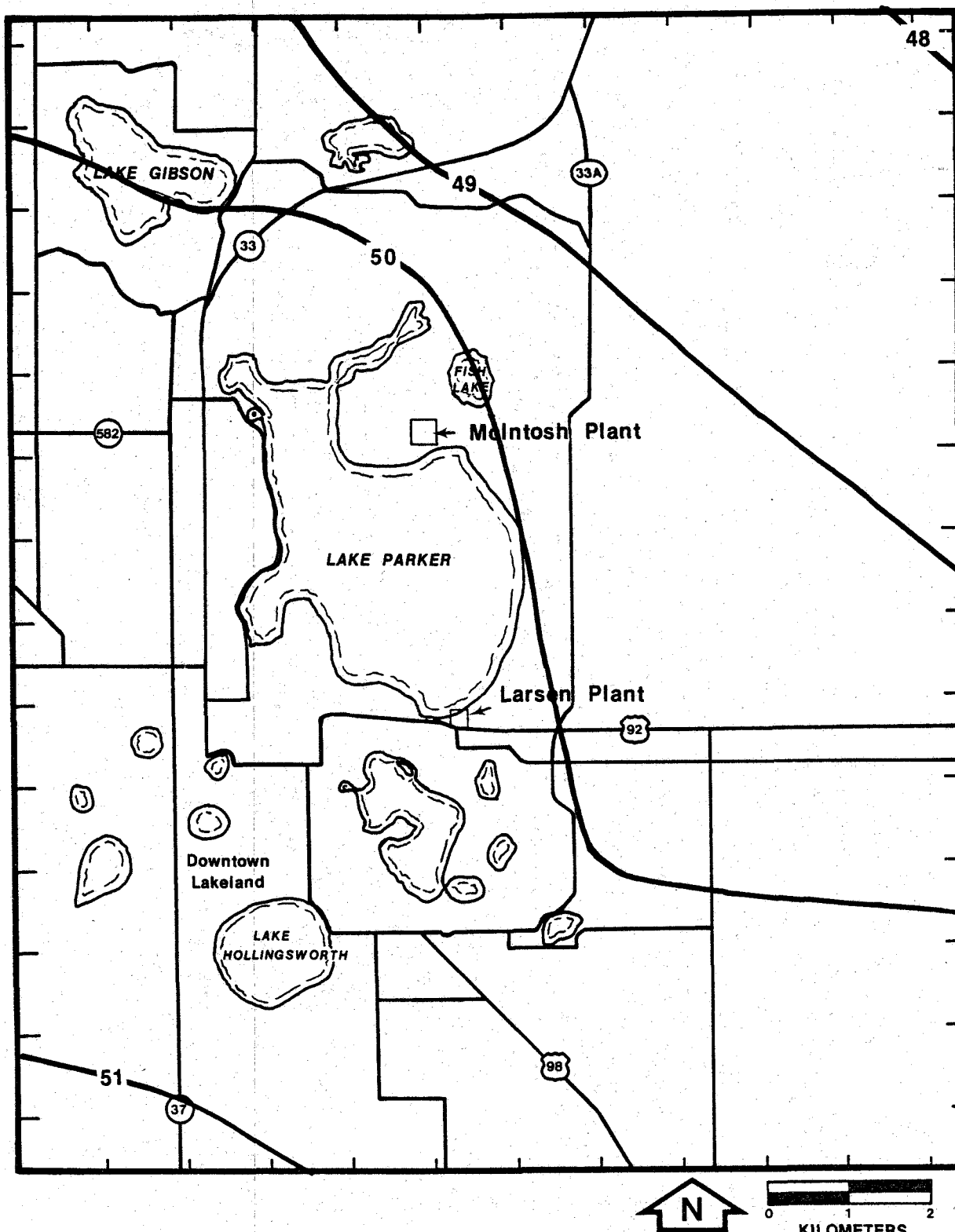


ESTIMATED ANNUAL AVERAGE SO₂ CONCENTRATIONS (ug/m³),
ALL SOURCES WITH MCINTOSH UNIT 3 ON 1.2 LBS COAL, 1982.



ESTIMATED ANNUAL AVERAGE TSP CONCENTRATIONS ($\mu\text{g}/\text{m}^3$),
1974 BASELINE, ALL SOURCES WITH LAKELAND UTILITIES AT
MAXIMUM ALLOWABLE EMISSIONS.

FIGURE 9



ESTIMATED ANNUAL AVERAGE TSP CONCENTRATIONS ($\mu\text{g}/\text{m}^3$),
ALL SOURCES WITH MCINTOSH UNIT 3 ON 0.1 LBS., 1982.

Table 7. PSD Modeling Results ($\mu\text{g}/\text{m}^3$), Lakeland Utilities

Case Run	Averaging Time				
	Sulfur Dioxide			TSP	
	Annual	24-Hour	3-Hour	Annual	24-Hour
Baseline, 1974, all sources, LU at maximum emissions	29	135	329	53*	109*
LU contribution to baseline maximum, LU at maximum allowable emissions	3	116	324	<<1	5
1982, all sources, LU at maximum emissions	14	128	391	51*	107*
LU's contribution to 1982 maximum, LU at maximum allowable emissions	7	123	389	<<1	7
Maximum increase over baseline at site	-8	-4	+112	<<1	<1
EPA allowable Class II increments	20	91	512	19	37
Incremental impact of McIntosh 3 at maximum allowable emissions	4	16	166	<<1	2

* includes background: annual--40 $\mu\text{g}/\text{m}^3$, 24-hour--100 $\mu\text{g}/\text{m}^3$ (see Chapter 4.0)

5.2 PREDICTED AIR QUALITY

The 1982 sulfur dioxide and TSP air quality maximums as related to both EPA and State of Florida AAQS are summarized in Table 8. The critical sulfur dioxide standard is the 24-hour standard of 260 ug/m^3 , which is more than twice the maximum predicted concentration of 128 ug/m^3 . Even with very conservative background concentrations added in, both annual and 24-hour TSP AAQS will not be exceeded from the operation of the proposed facility. Specifically, there is less than 1 ug/m^3 average TSP contribution from all of Lakeland Utilities and a 24-hour TSP total plant maximum of only 7 ug/m^3 . Isopleth maps for the sulfur dioxide and TSP annual average incremental impacts of Lakeland Utilities with the proposed unit are presented in Figures 11 and 12, respectively.

Maximum nitrogen dioxide concentrations were not determined from dispersion modeling as resulting concentrations at the Lakeland Utilities site are very small. Roughly, the maximum nitrogen dioxide concentration from Lakeland Utilities will be three times the maximum TSP concentration from Lakeland Utilities (see Table 3), which is less than 1 ug/m^3 . The resulting annual averaged nitrogen dioxide concentration is negligible.

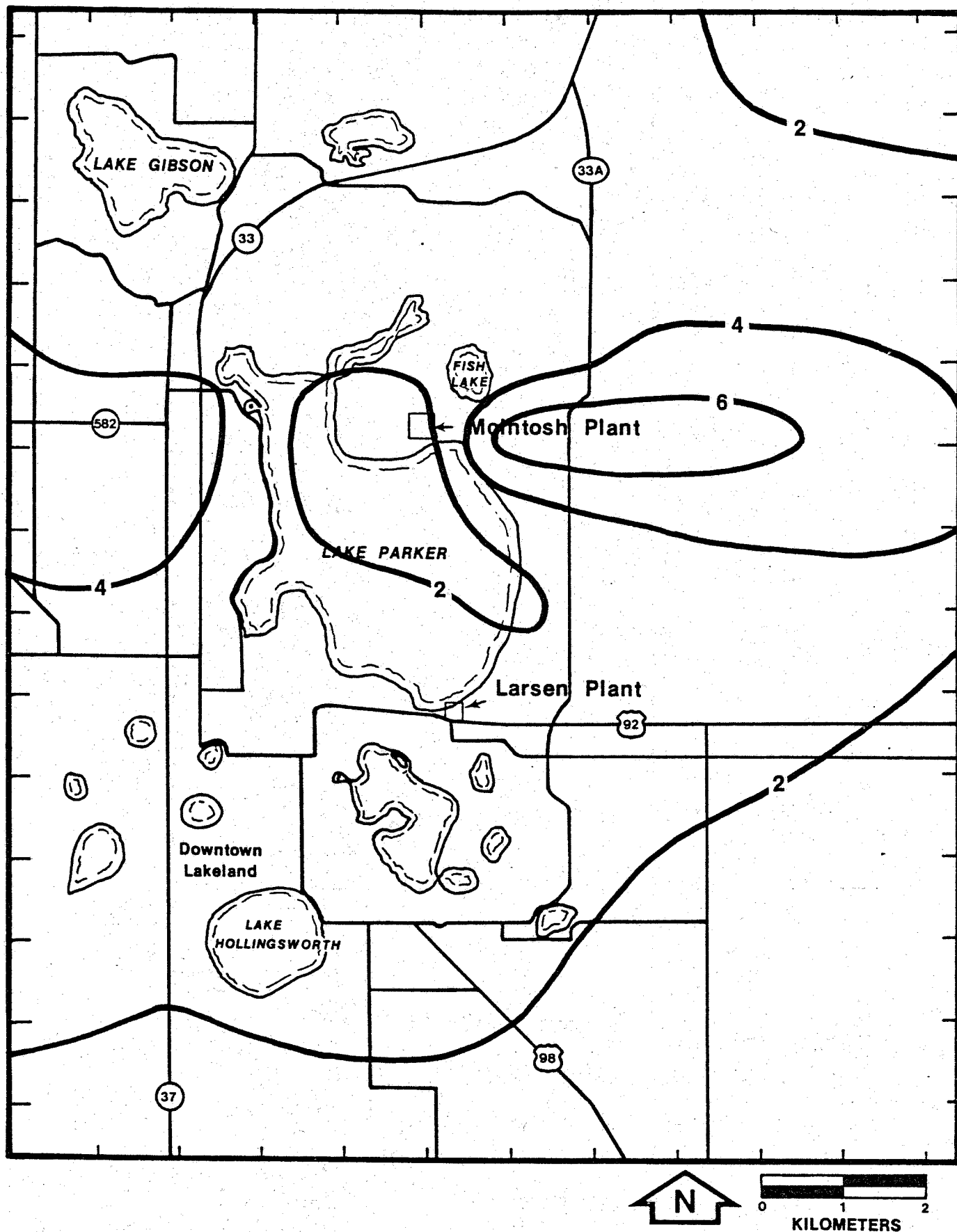
Table 8. Predicted Sulfur Dioxide and TSP Maximum Concentrations (ug/m³) at the Lakeland Utilities Site, 1982.

Case Run	Averaging Time				
	Sulfur Dioxide			TSP	
	Annual	24-Hour	3-Hour	Annual	24-Hour
All sources with proposed unit	14	128	391	51*	107*
LU's contribution to maximum with proposed unit	7	123	389	<<1	7
EPA Primary AAQS	80	365	---	75**	260
EPA Secondary AAQS	---	---	1,300	60**	150
State of Florida AAQS	60	260	1,300	60**	150

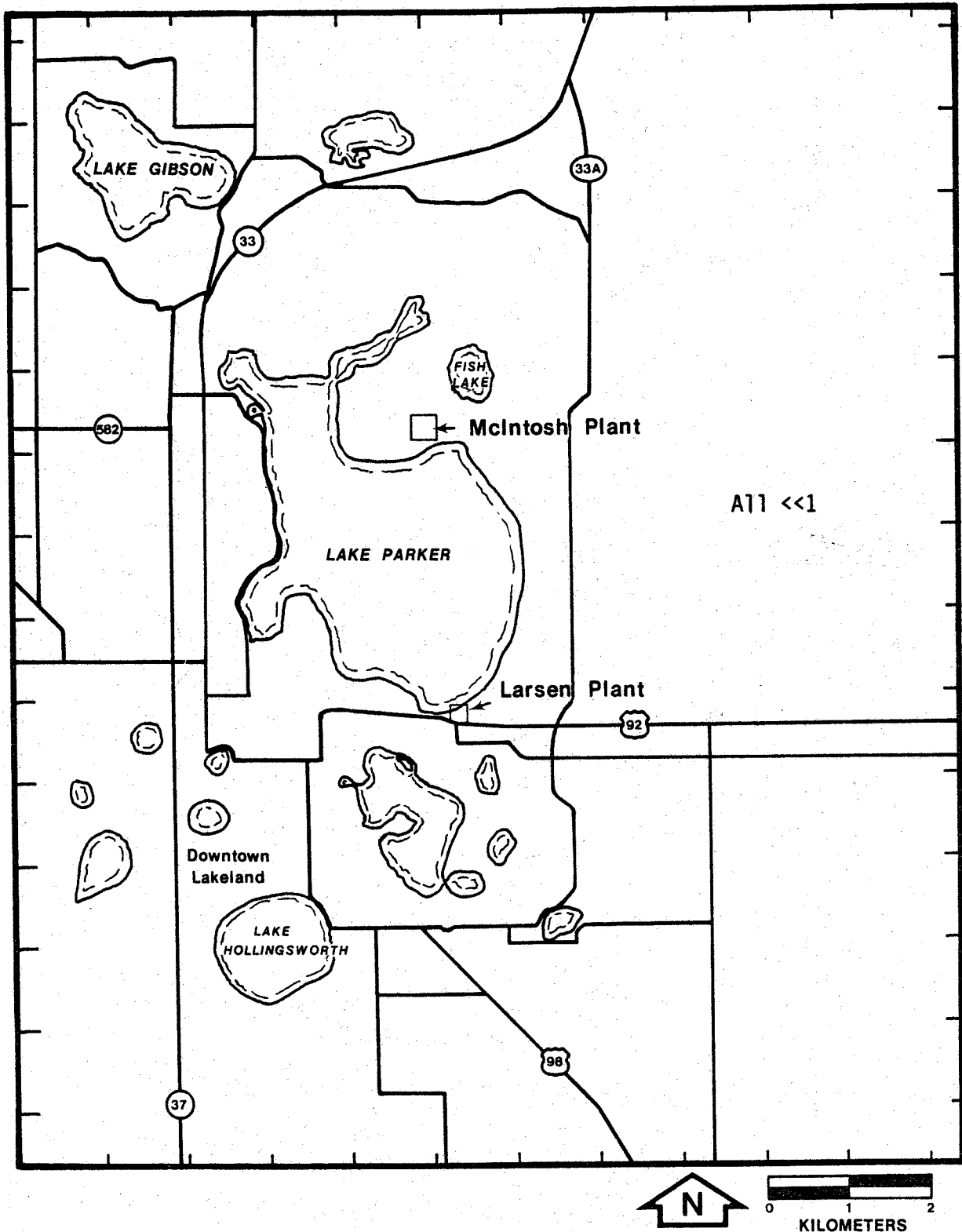
All short-term AAQS can be exceeded only once per year.

* includes background (40--annual, 100--24-hour)

** geometric mean



ESTIMATED ANNUAL AVERAGE SULFUR DIOXIDE CONCENTRATIONS ($\mu\text{g}/\text{m}^3$), INCREMENTAL IMPACT OF LAKE LAND UTILITIES WITH MCINTOSH UNIT 3 ON 1.2 LBS COAL, 1982.



ESTIMATED ANNUAL AVERAGE TSP CONCENTRATIONS ($\mu\text{g}/\text{m}^3$),
INCREMENTAL IMPACT OF LAKE LAND UTILITIES WITH
McINTOSH UNIT 3 ON 0.1 LBS., 1982.

FIGURE 12

6.0 CONCLUSIONS

A review of Tables 7 and 8 in Chapter 5.0 show that present allowable Prevention of Significant Deterioration increments and EPA and State of Florida Ambient Air Quality Standards will not be exceeded due to operation of the proposed or existing facilities at Lakeland Utilities at maximum emission limitations.

Current available ambient air quality data for sulfur dioxide, TSP, and nitrogen dioxide are presented in Chapter 4.0. The observed levels of sulfur dioxide and nitrogen dioxide for 1974-76 are well below the respective AAQS. In 1974, a marginal violation of the annual TSP AAQS was observed at one ambient station in the Lakeland area. From 1974 to 1976 the trend in ambient TSP concentration was downward, but extremely dry surface conditions in the first half of 1977 slightly increased these levels over an annual period. Modeling of all point and area sources within 50 kilometers of Lakeland Utilities did not substantiate these values. Ambient air quality data from the City of Lakeland's two monitoring stations show concentration levels well below the respective ambient air quality standards for sulfur dioxide and particulate matter.

In summary, the impact of McIntosh 3 on future ambient air quality levels is very small.

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APPENDIX A

DESCRIPTIONS OF THE ATMOSPHERIC DISPERSION MODELS

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DESCRIPTIONS OF ATMOSPHERIC DISPERSION MODELS

THE AIR QUALITY DISPLAY MODEL

The Air Quality Display Model (AQDM) was developed by the U.S. Environmental Protection Agency and is an approved technique for computing annual or seasonal arithmetic average concentrations of gaseous and suspended particulate pollutants. The AQDM is based on the diffusion model developed by Martin and Tikvart (1968). It uses the Pasquill-Gifford plume dispersion equation, which is summarized by Turner (1969) and the plume rise equation developed by Briggs (1972) to simulate plume behavior.

Annual average emissions data and stack parameters from multiple point sources are used as inputs to the AQDM in conjunction with annual or seasonal meteorological stability wind rose data to determine ground-level concentrations at designated receptor points and points comprising a receptor grid network. The model can be calibrated by comparing ambient air quality data for a given annual time period with computed concentrations obtained from the AQDM using emissions and meteorological data for the same period. Once calibrated, the AQDM may be used to predict ambient air quality for any annual time period by adjusting the input data to correspond to the time period of interest.

According to the Pasquill-Gifford diffusion equation, the concentration, C , at a position (x, y, z) for the substances emitted at $(0, 0, H)$ is given by:

$$C(x,y,z;H) = \frac{Q}{2\pi\sigma_y\sigma_z u} \exp [-1/2(y\sigma_y)^2] A$$

for:

$$A = \exp [-1/2(z-H/\sigma_z)^2] + \exp ([-1/2(z+H/\sigma_z)^2])$$

where:

$C(x, y, z; H)$ = pollutant concentration (grams/meter³) at point x, y, z
for an effective stack height, H
 Q = emission rate (grams/sec)

σ_y , σ_z = standard deviation of the plume concentration distribution in the cross plume and vertical directions (meters). (σ_y and σ_z are given as functions of downwind distance and atmospheric stability).

In the AQDM, the effective stack height, H, is computed from the Briggs plume rise equation according to the relation:

$$H = h + 1.6F^{1/3}u^{-1} (3.5z)^{2/3} \text{ for } r > 3.5z$$

and

$$H = h + 1.6F^{1/3}u^{-1} r^{2/3} \text{ for } r \leq 3.5z$$

$$z = 34F^{2/5} \text{ if } F > 55$$

$$z = 14F^{5/8} \text{ if } F \leq 55$$

H = effective stack height (meters)

h = actual stack height (meters)

$F = gV_s R_s^2 [T_s - T_a]/T_s$ (meters⁴/seconds³)

g = acceleration due to gravity (meters/sec²)

V_s = exit velocity of stack gases (meters/sec)

R_s = inside radius of stack (meters)

T_s = exit temperature of stack gases (°K)

T_a = ambient air temperature

U = wind speed at stack height

r = distance from source to receptor (meters)

The PTMTPW Short-Term Model

The PTMTPW is an EPA model which is a modified version of the PTMTP model. The major difference in the PTMTPW is that this model accounts for the vertical wind shear effect (increase in wind speed with height) which is known to exist in the atmospheric boundary layer. Hourly wind speeds are input into the model along with the height at which the measurements were made. The wind shear correction at stack height for each source is then accomplished by use of the following equation:

$$U_Z = U_L \left(\frac{Z}{Z_0} \right)^P$$

where U_L is the wind speed at height Z_0 , Z is the stack height or emission release point, and P depends upon atmospheric stability class (De-Marrais, 1959).

The effect of the wind shear modification is to increase ground-level concentrations as compared to those calculated by the PTMTP model. All other calculation techniques used by the PTMTPW to estimate ground-level pollutant concentrations are the same as those used in the PTMTP. It is important to note that since the wind shear modification tends to increase ground-level concentrations over those calculated by the PTMTP, the PTMTPW should overcalculate actual concentrations even more severely than the PTMTP.

In addition to a wind shear law, the model uses an hourly average emission inventory and stack data from multiple point sources in conjunction with hourly meteorological data to calculate hourly pollutant concentrations at designated receptor points. These hourly concentrations can be averaged over longer periods of time, such as 3 hours or 24 hours, in order to aid in the comparison of calculated concentrations with concentrations observed over a period of time greater than one hour. The PTMTPW uses the Pasquill-Gifford plume dispersion equation in conjunction with the plume rise equation developed by Briggs to simulate plume behavior. Using the Briggs equation, effective stack height, H , is determined according to the following relation:

$$H = h + 1.6F^{1/3}u^{-1} (3.5z)^{2/3} \text{ for } r > 3.5z$$

and

$$H = h + 1.6F^{1/3}u^{-1} r^{2/3} \text{ for } r \leq 3.5z$$

$$z = 34F^{2/5} \text{ if } F > 55$$

$$z = 14F^{5/8} \text{ if } F \leq 55$$

H = effective stack height (meters)

h = actual stack height (meters)
 $F = gV_s R_s^2 [(T_s - T_a)/T_s]$ (meters⁴/seconds³)
 g = acceleration due to gravity (meters/sec²)
 V_s = exit velocity of stack gases (meters/sec)
 R_s = inside radius of stack (meters)
 T_s = exit temperature of stack gases (°K)
 T_a = ambient air temperature
 U = wind speed at stack height
 r = distance from source to receptor (meters)

The CRSTER Model

CRSTER is a steady state Gaussian plume model applicable in uneven or flat terrain. The purposes of the model are to: (1) determine the maximum concentrations from a single facility for various averaging times using one or more years of meteorological data, (2) determine the meteorological conditions which cause these maximum concentrations and, (3) store concentration information useful in calculating frequency distributions for various averaging times.

A concentration for each hour of the year is calculated from emissions data, stack parameters, and hourly meteorological conditions. Twenty-four hour averages are calculated from midnight-to-midnight of each day. This model employs the Briggs (1972) final plume rise equation.

General output for the model includes the highest and second highest 1, 3, and 24-hour concentrations at each receptor for the year, plus the annual arithmetical average at each receptor. Receptors are specified for five downwind distances. For each downwind distance, receptors are located along the 36 standard wind directions (10° increments), resulting in a total of 180 receptors. Hourly concentrations for each receptor can be output onto magnetic tape for further processing of frequency distributions.

ESE's CRSTER model has the option of inputting a varying number of years of meteorological data. All meteorological data are preprocessed, initially with a CRSTER Preprocessor program. In addition, an averaging time other than the standard 24, three- or one-hour averaging time can be determined.

Using the Briggs' equation, effective stack height, H, is determined according to the following equation:

$$H = h + 1.6F^{1/3}u^{-1} (3.5z)^{2/3} \text{ for } r > 3.5z$$

and

$$H = h + 1.6F^{1/3}u^{-1} r^{2/3} \text{ for } r \leq 3.5z$$

$$z = 34F^{2/5} \text{ if } F > 55$$

$$z = 14F^{5/8} \text{ if } F \leq 55$$

H = effective stack height (meters)

h = actual stack height (meters)

$F = gV_S R_S^2 [T_S - T_a]/T_S$ (meters⁴/seconds³)

g = acceleration due to gravity (meters/sec²)

V_S = exit velocity of stack gases (meters/sec)

R_S = inside radius of stack (meters)

T_S = exit temperature of stack gases (°K)

T_a = ambient air temperature

U = wind speed at stack height

r = distance from source to receptor (meters)

APPENDIX B

EMISSION INVENTORIES

INCREMENTAL OF LU, 1982, SO2, MAX ALLOW.

SOURCE DATA

SOURCE NUMBER	SOURCE LOCATION (KILOMETERS)		SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY)		STACK DATA				
	HORIZONTAL	VERTICAL		SO2	PART	HT (M)	DIAM (M)	VEL (M/SEC)	TEMP (DEG.K)	
1	408.5	3105.8	0.0	37.490	3.014	76.2	4.9	19.7	354.	MCINTOSH3, 1982
2	408.5	3105.8	0.0	2.020	0.0	47.7	3.1	11.7	389.	MCINTOSH2, 1982
3	408.5	3105.8	0.0	13.240	0.048	47.7	2.7	15.1	405.	MCINTOSH1, 1982
4	409.3	3102.8	0.0	0.007	0.0	50.3	3.1	3.4	422.	LARSEN 4, 1982
5	409.3	3102.8	0.0	0.046	0.0	50.3	3.1	4.3	422.	LARSEN 5, 1982
6	409.3	3102.8	0.0	0.013	0.001	50.3	3.1	4.4	422.	LARSEN 6, 1982
7	409.3	3102.8	0.0	0.650	0.024	50.3	3.1	7.3	400.	LARSEN 7, 1982

} coal

SOURCE DATA

SOURCE NUMBER	SOURCE LOCATION (KILOMETERS)		SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY)		STACK DATA				
	HORIZONTAL	VERTICAL		SO2	PAH1	HT (M)	DIAM (M)	VEL (M/SEC)	TEMP (DEG. K)	
1	452.4	3085.5	0.0	0.088	0.005	19.8	0.6	12.3	478.	ALCOMA PKG-00101
2	451.8	3085.5	0.0	0.121	0.008	10.7	0.5	9.9	436.	ALCOMA PKG-00102
3	451.8	3085.5	0.0	0.030	0.003	10.7	0.5	11.1	436.	ALCOMA PKG-00103
4	441.0	3087.3	0.0	0.170	0.101	18.3	1.5	7.4	389.	CITRUS WLD-00201
5	441.0	3087.3	0.0	0.0	0.025	24.4	1.1	20.0	589.	CITRUS WLD-00202
6	441.0	3087.3	0.0	0.0	0.016	24.4	0.9	26.4	589.	CITRUS WLD-00203
7	441.0	3087.3	0.0	0.0	0.016	24.4	1.7	3.4	589.	CITRUS WLD-002-5
8	441.0	3087.3	0.0	0.527	0.047	24.4	1.7	3.4	589.	CITRUS WLD-00206
9	403.8	3070.5	0.0	0.912	0.444	21.3	3.4	13.7	394.	BREWSTER PH-00501
10	403.8	3070.5	0.0	0.912	0.444	21.3	3.4	13.7	400.	BREWSTER PH-00502
11	403.8	3070.5	0.0	0.0	0.022	24.4	0.5	17.9	334.	BREWSTER PH-005-5
12	402.1	3106.2	0.0	0.047	0.005	10.7	1.2	8.3	367.	RFOD CPANS-00601
13	404.3	3106.0	0.0	0.036	0.115	22.9	0.9	21.9	617.	OWENS-ILL.-00701
14	404.3	3106.0	0.0	0.030	0.074	22.9	0.9	15.3	542.	OWENS-ILL.-00702
15	420.5	3103.6	0.0	0.0	0.014	25.9	0.7	5.6	298.	EGER CONCR-00801
16	405.5	3079.1	0.0	0.082	0.296	15.2	0.8	35.9	408.	C+M PRCD. -01001
17	413.0	3094.0	0.0	0.0	0.197	24.4	3.0	2.2	358.	DS PRCSER-01101
18	413.0	3094.0	0.0	0.0	0.197	24.4	3.0	2.2	358.	DS PRCSER-01102
19	411.2	3074.5	0.0	0.918	0.359	18.9	3.0	8.9	341.	SWIFT CHEM-01201
20	411.2	3074.5	0.0	0.918	1.712	15.2	6.7	1.1	339.	SWIFT CHEM-01202
21	411.2	3074.5	0.0	9.118	0.608	15.2	6.7	0.8	355.	SWIFT CHEM-01203
22	411.2	3074.5	0.0	0.0	0.030	22.3	0.4	11.2	317.	SWIFT CHEM-012-6
23	411.2	3074.5	0.0	0.0	0.014	13.7	1.8	14.7	298.	SWIFT CHEM-01208
24	411.5	3118.2	0.0	0.016	0.244	6.1	0.4	21.5	369.	STD.SAND+S-01401
25	441.5	3118.2	0.0	0.112	0.053	29.0	0.5	17.6	425.	STD.SAND+S-01403
26	399.0	3101.8	0.0	0.0	0.044	15.2	1.4	9.2	347.	KRAFT FOOD-01501
27	399.0	3101.8	0.0	0.0	0.044	15.2	1.4	9.2	347.	KRAFT FOOD-01502
28	420.7	3069.9	0.0	0.0	0.049	9.8	1.4	2.5	345.	SUN COAST -01601
29	348.0	3070.3	0.0	0.079	0.005	4.6	0.3	9.4	478.	KEEN FRUIT-01801
30	347.8	3068.3	0.0	0.386	0.211	12.2	1.4	13.0	404.	BEN HILL G-01901
31	428.0	3097.4	0.0	0.0	0.052	15.2	1.0	15.4	309.	SWIFT AGRI-02001
32	428.0	3097.4	0.0	0.0	0.033	16.8	0.4	57.4	294.	SWIFT AGRI-02002
33	423.4	3102.8	0.0	0.0	0.019	15.2	1.7	7.9	298.	OWENS ILL.-02201
34	421.3	3103.6	0.0	0.0	0.101	28.4	1.1	16.8	333.	COCA-CCLA -02301
35	421.3	3103.6	0.0	0.0	0.008	17.4	1.8	5.6	547.	COCA-CCLA -02302
36	411.3	3114.7	0.0	0.003	0.014	6.1	1.2	8.5	305.	MID-FLA.AT-02401
37	416.8	3069.5	0.0	0.0	0.052	27.4	0.9	12.1	376.	ALCOA -02506
38	403.0	3086.9	0.0	0.055	0.447	18.9	1.8	22.5	339.	IMC-NOPLAIN32701
39	403.0	3086.9	0.0	0.0	0.312	16.8	2.8	9.6	344.	IMC-NOPLAIN32702
40	403.0	3086.9	0.0	0.0	0.005	13.7	1.7	15.5	333.	IMC-NOPLAIN32703
41	403.0	3086.9	0.0	0.0	0.126	38.1	1.0	14.5	302.	IMC-NOPLAIN327-5
42	403.0	3086.9	0.0	0.0	0.093	11.6	1.5	8.5	350.	IMC-NOPLAIN32712
43	403.0	3086.9	0.0	0.0	0.192	12.2	0.5	6.4	309.	IMC-NOPLAIN32714
44	414.0	3108.7	0.0	0.729	1.852	17.1	2.3	5.5	375.	BORDEN CHM-02301
45	328.3	3075.5	0.0	0.0	0.162	18.3	0.7	9.2	315.	IMC-KINGSF-034-3
46	398.3	3075.5	0.0	0.0	0.153	21.3	2.1	16.4	342.	IMC-KINGSF-03404
47	398.3	3075.5	0.0	0.0	0.030	32.3	0.8	14.5	310.	IMC-KINGSF-03405
48	417.8	3085.6	0.0	0.030	0.003	11.6	0.8	1.2	422.	BARTON LND-03501
49	418.2	3086.0	0.0	0.011	0.003	7.6	0.6	12.6	506.	BARTON HSP-03601
50	421.3	3104.0	0.0	0.0	0.041	28.4	1.1	13.8	333.	ADAMS PKNG-03701
51	405.2	3092.8	0.0	0.096	0.030	9.1	1.7	11.0	348.	BLUE SEAL -03801
52	405.0	3108.8	0.0	0.082	0.003	38.1	1.8	0.9	367.	CARPENTERS-03901
53	427.9	3097.6	0.0	0.014	0.0	14.6	0.5	1.0	422.	WS RCE+SDN-04001

54	403.0	3125.0	0.0	0.055	0.159	7.6	2.7	6.2	336	ORLANDO PV-04201
55	415.5	3063.5	0.0	2.000	1.214	19.2	2.9	8.7	333	GARDR.MINE-04401
56	415.5	3063.5	0.0	0.0	0.049	32.3	0.4	26.1	322	GARDR.MINE-04402
57	418.7	3083.6	0.0	0.192	0.025	15.2	0.9	7.9	333	ORANGE C/-04501
58	409.5	3085.8	0.0	12.066	0.104	45.7	1.4	13.5	352	W.R. GRACE 04603
59	409.5	3085.8	0.0	11.400	0.096	45.7	1.4	12.1	345	W.R. GRACE 04604
60	409.5	3085.8	0.0	17.670	0.156	61.0	2.1	11.2	349	W.R. GRACE 04605
61	409.5	3085.8	0.0	0.342	0.038	24.4	2.0	16.3	322	W.R. GRACE 04608
62	409.5	3085.8	0.0	0.137	0.055	30.2	2.3	16.0	329	W.R. GRACE 04610
63	409.5	3085.8	0.0	0.0	0.022	16.2	0.7	14.8	338	W.R. GRACE 04611
64	409.5	3085.8	0.0	0.0	0.342	22.6	0.5	32.5	311	W.R. GRACE 04614
65	409.5	3085.8	0.0	0.0	0.310	36.6	0.6	13.7	325	W.R. GRACE 04616
66	409.5	3085.8	0.0	0.0	0.068	15.5	1.5	26.9	339	W.R. GRACE 04620
67	409.5	3085.8	0.0	0.340	0.315	13.1	1.5	34.7	333	W.R. GRACE 04622
68	409.5	3085.8	0.0	0.0	0.123	15.2	0.4	9.4	311	W.R. GRACE 04626
69	398.5	3085.2	0.0	0.129	0.005	6.1	0.6	1.1	422	MOBIL CHEM0471-2
70	398.5	3085.2	0.0	0.910	0.241	25.9	2.4	13.6	342	MOBIL CHEM047-03
71	398.5	3085.2	0.0	0.910	0.241	25.9	2.4	13.6	339	MOBIL CHEM047-04
72	398.5	3085.2	0.0	0.910	0.400	30.5	1.5	5.6	355	MOBIL CHEM047-05
73	398.5	3085.2	0.0	2.359	0.581	30.5	2.1	8.6	350	MOBIL CHEM047-06
74	398.5	3085.2	0.0	0.0	0.485	30.5	0.5	9.2	326	MOBIL CHEM047-07
75	406.7	3085.2	0.0	0.071	0.005	16.1	0.9	17.3	422	ROYSTER CO 48 01
76	406.7	3085.2	0.0	5.326	0.077	61.0	2.1	11.5	362	ROYSTER CO 48 02
77	406.7	3085.2	0.0	0.0	0.148	14.9	0.6	9.7	371	ROYSTER CO 48 03
78	406.7	3085.2	0.0	0.0	0.014	30.5	0.3	24.0	325	ROYSTER CO 48 05
79	406.7	3085.2	0.0	0.0	0.222	22.6	1.1	6.3	315	ROYSTER CO 48 08
80	406.7	3085.2	0.0	0.104	0.252	31.1	2.7	3.6	320	ROYSTER CO 48 10
81	413.2	3086.3	0.0	0.041	0.005	16.8	1.2	13.1	520	USS AGRI-C 50 01
82	413.2	3086.3	0.0	0.255	0.082	15.9	2.7	6.0	294	USS AGRI-C 50 02
83	413.2	3086.3	0.0	8.222	0.090	22.9	2.3	7.4	355	USS AGRI-C 50 03
84	413.2	3086.3	0.0	0.0	0.058	13.7	0.7	10.8	293	USS AGRI-C 50 07
85	416.0	3069.0	0.0	24.904	0.104	20.7	1.5	18.0	367	USS AGRI-C 51 01
86	416.0	3069.0	0.0	19.370	0.104	20.7	1.5	18.0	373	USS AGRI-C 51 02
87	416.0	3069.0	0.0	0.0	0.118	37.2	0.8	32.9	304	USS AGRI-C 51 04
88	416.0	3069.0	0.0	0.0	0.058	18.3	0.3	15.5	333	USS AGRI-C 51 12
89	416.0	3069.0	0.0	0.0	0.044	16.2	0.5	21.6	358	USS AGRI-C 51 06
90	416.0	3069.0	0.0	0.156	0.0	28.4	1.5	11.9	330	USS AGRI-C 51 15
91	416.0	3069.0	0.0	0.0	0.315	26.8	4.6	2.1	300	USS AGRI-C 51 16
92	416.0	3069.0	0.0	0.0	0.279	19.5	0.5	10.4	307	USS AGRI-C 51 17
93	416.0	3069.0	0.0	0.0	0.025	19.5	0.5	11.8	300	USS AGRI-C 51 18
94	409.0	3083.0	0.0	8.277	0.019	30.5	1.4	11.8	355	CF CHEMICAL 52 01
95	409.0	3083.0	0.0	10.973	0.022	30.5	1.7	10.4	355	CF CHEMICAL 52 02
96	409.0	3083.0	0.0	9.989	0.082	30.5	2.7	4.3	355	CF CHEMICAL 52 03
97	409.0	3083.0	0.0	11.112	0.025	30.5	2.1	7.8	355	CF CHEMICAL 52 04
98	409.0	3083.0	0.0	14.488	0.025	63.4	2.1	10.7	355	CF CHEMICAL 52 05
99	409.0	3083.0	0.0	14.197	0.022	63.4	2.1	10.4	355	CF CHEMICAL 52 06
100	409.0	3083.0	0.0	0.011	0.005	12.8	1.0	21.8	422	CF CHEMICAL 52 32
101	409.7	3079.5	0.0	10.707	0.110	30.5	2.1	16.1	346	FARMLND IN 53 01
102	409.7	3079.5	0.0	11.573	0.107	30.5	2.1	18.4	347	FARMLND IN 53 00
103	409.7	3079.5	0.0	11.937	0.134	30.5	2.3	14.1	349	FARMLND IN 53 03
104	409.7	3079.5	0.0	14.238	0.132	30.5	2.3	16.1	355	FARMLND IN 53 04
105	409.7	3079.5	0.0	0.0	0.101	56.4	1.5	13.5	348	FARMLND IN 53 09
106	409.7	3079.5	0.0	0.0	0.241	39.3	2.3	9.5	315	FARMLND IN 53 10
107	409.7	3079.5	0.0	0.0	0.112	33.5	0.8	10.2	304	FARMLND IN 53 11
108	409.7	3079.5	0.0	0.0	0.088	37.8	2.3	10.3	304	FARMLND IN 53 12
109	409.7	3079.5	0.0	0.0	0.137	39.6	1.2	58.5	299	FARMLND IN 53 14
110	409.7	3079.5	0.0	0.0	0.795	27.4	0.2	11.9	297	FARMLND IN 53 15
111	409.7	3079.5	0.0	0.145	0.055	15.2	1.5	7.9	450	FARMLND IN 53 22
112	404.0	3079.0	0.0	0.049	0.003	5.5	0.3	6.8	650	AGRICO PCE 54 01
113	404.0	3079.0	0.0	0.696	0.447	24.4	1.5	13.6	335	AGRICO PCE 54 02
114	404.0	3079.0	0.0	1.392	0.178	24.4	1.5	14.8	333	AGRICO PCE 54 03

115	404.0	3079.0	0.0	1.392	0.178	24.4	1.5	14.8	333.	AGRICO PCE 54 04
116	404.0	3079.0	0.0	1.688	0.268	27.4	1.9	12.6	339.	AGRICO PCE 54 05
117	404.0	3079.0	0.0	0.0	0.118	15.2	0.7	11.3	294.	AGRICO PCE 54 06
118	404.0	3079.0	0.0	0.0	0.315	30.5	1.0	15.2	300.	AGRICO PCE 54 07
119	404.0	3079.0	0.0	0.0	1.110	33.5	1.8	15.4	299.	AGRICO PCE 54 08
120	404.0	3079.0	0.0	0.0	0.022	28.0	0.7	4.0	300.	AGRICO PCE 54 09
121	404.0	3079.0	0.0	0.0	0.496	42.7	1.6	16.8	295.	AGRICO PCE 54 10
122	404.0	3079.0	0.0	0.0	2.132	24.4	2.1	19.2	293.	AGRICO PCE 54 11
123	404.0	3079.0	0.0	0.0	0.205	29.0	1.0	20.4	300.	AGRICO PCE 54 12
124	404.0	3079.0	0.0	0.0	0.050	24.4	0.6	23.8	348.	AGRICO PCE 54 14
125	404.0	3079.0	0.0	0.0	0.011	15.2	0.3	9.1	328.	AGRICO PCE 54 15
126	404.0	3079.0	0.0	0.0	0.019	18.3	0.2	16.2	311.	AGRICO PCE 54 16
127	407.5	3071.4	0.0	0.501	0.033	18.9	1.2	17.4	422.	AGRICO-S.P 55 01
128	407.5	3071.4	0.0	7.364	0.055	36.6	1.8	15.6	355.	AGRICO-S.P 55 02
129	407.5	3071.4	0.0	15.027	0.096	36.6	1.8	17.7	355.	AGRICO-S.P 55 03
130	407.5	3071.4	0.0	0.0	0.227	30.5	0.2	16.2	311.	AGRICO-S.P 55 18
131	407.5	3071.4	0.0	0.0	0.263	36.6	0.6	22.5	344.	AGRICO-S.P 55 17
132	407.5	3071.4	0.0	0.019	0.003	5.5	0.3	6.8	656.	AGRICO-S.P 55 19
133	402.8	3087.2	0.0	0.759	0.123	21.3	1.4	30.2	321.	IMC-PRAIRE 55 01
134	402.8	3087.2	0.0	0.0	0.060	21.3	1.5	5.4	294.	IMC-PRAIRE 55 02
135	402.8	3087.2	0.0	0.0	0.022	22.9	0.9	8.4	311.	IMC-PRAIRE 55 03
136	398.4	3084.2	0.0	0.792	0.044	31.5	2.0	6.4	315.	CONSERV CM 57 01
137	398.4	3084.2	0.0	0.792	0.044	30.5	2.0	6.4	315.	CONSERV CM 57 02
138	398.4	3084.2	0.0	0.0	0.014	24.4	0.6	4.9	311.	CONSERV CM 57 04
139	398.4	3084.2	0.0	0.0	0.038	12.2	1.2	4.9	302.	CONSERV CM 57 05
140	398.4	3084.2	0.0	0.0	0.192	16.8	0.9	7.9	328.	CONSERV CM 57 -9
141	398.4	3084.2	0.0	0.252	0.268	20.4	1.2	12.6	339.	CONSERV CM 57 10
142	398.4	3084.2	0.0	0.044	0.005	18.3	0.4	38.3	422.	CONSERV CM 57 11
143	405.6	3079.4	0.0	0.0	1.671	15.2	0.8	41.4	305.	ELECTRO-PM 60 01
144	388.3	3115.7	0.0	0.359	0.077	9.1	1.2	11.2	604.	5-01 CENT. PHOS.
145	388.3	3115.7	0.0	7.682	0.003	23.8	1.5	16.3	309.	5-02
146	388.3	3115.7	0.0	7.682	0.003	23.8	1.5	16.3	309.	5-03
147	388.1	3115.8	0.0	0.0	0.008	21.3	0.9	12.2	320.	5-04
148	388.0	3115.6	0.0	0.0	0.016	41.8	1.8	13.0	307.	5-05
149	388.0	3115.6	0.0	0.0	0.005	27.1	0.5	28.7	327.	5-06
150	363.2	3082.4	0.0	2.997	0.047	24.4	1.4	6.0	363.	8-01 GARDINIER
151	363.2	3082.4	0.0	5.345	0.063	22.6	1.6	7.4	360.	8-02
152	363.2	3082.4	0.0	7.129	0.101	21.9	1.8	9.1	360.	8-03
153	363.2	3082.4	0.0	16.718	0.192	28.0	2.9	6.2	357.	8-04
154	363.2	3082.4	0.0	17.704	0.241	29.3	3.3	7.1	352.	8-05
155	363.2	3082.4	0.0	4.984	0.189	45.7	2.7	11.1	355.	8-06
156	362.9	3082.5	0.0	0.625	0.170	26.8	0.4	7.7	340.	8-07
157	362.9	3082.5	0.0	0.0	0.003	26.8	0.3	10.2	340.	8-08
158	362.9	3082.5	0.0	0.0	0.011	28.3	0.3	14.9	306.	8-09
159	362.9	3082.5	0.0	0.0	0.063	29.0	0.6	17.0	306.	8-10
160	362.9	3082.5	0.0	0.0	0.047	26.5	0.5	17.9	321.	8-11
161	362.9	3082.5	0.0	0.0	0.033	21.3	0.5	18.0	332.	8-12
162	362.9	3082.5	0.0	0.0	0.016	21.6	0.5	17.7	330.	8-13
163	362.9	3082.5	0.0	0.0	0.090	33.2	1.2	7.7	336.	8-14
164	362.9	3082.5	0.0	0.0	0.074	18.0	1.1	16.5	303.	8-15
165	362.9	3082.5	0.0	0.0	0.071	15.5	0.9	22.2	307.	8-17
166	362.9	3082.5	0.0	0.0	0.005	1.5	0.3	7.0	325.	8-18
167	362.9	3082.5	0.0	0.0	0.112	27.4	1.2	12.0	333.	8-19
168	362.9	3082.5	0.0	0.0	0.178	27.4	1.1	19.6	331.	8-20
169	362.9	3082.5	0.0	0.0	0.564	16.5	1.3	16.2	335.	8-21
170	362.9	3082.5	0.0	0.0	0.121	27.4	1.1	15.8	335.	8-22
171	362.9	3082.5	0.0	0.0	0.063	27.4	1.1	20.1	336.	8-23
172	362.9	3082.5	0.0	0.0	0.447	16.5	1.3	16.6	325.	8-24
173	362.9	3082.5	0.0	0.0	0.005	25.9	0.3	12.6	309.	8-25
174	362.9	3082.5	0.0	0.0	0.003	29.3	0.3	16.2	319.	8-26
175	362.9	3082.5	0.0	0.0	0.011	32.9	0.4	7.1	323.	8-27

176	362.9	3082.5	0.0	0.0	0.003	25.0	0.4	4.0	318.	8-28
177	362.9	3082.5	0.0	0.0	0.005	35.1	0.4	7.2	321.	8-29
178	362.9	3082.5	0.0	0.0	0.008	30.5	0.4	5.2	320.	8-30
179	362.9	3082.5	0.0	0.0	0.063	28.3	1.2	5.3	321.	8-31
180	362.9	3082.5	0.0	0.373	0.112	23.8	1.8	3.3	346.	8-32
181	362.9	3082.5	0.0	0.356	0.129	23.8	1.8	3.3	345.	8-33
182	362.9	3082.5	0.0	0.0	0.123	20.1	0.6	16.6	319.	8-34
183	362.9	3082.5	0.0	0.0	0.063	19.8	1.2	12.0	257.	8-35
184	362.9	3082.5	0.0	0.233	0.134	20.7	1.1	10.0	317.	8-36
185	362.9	3082.5	0.0	0.0	0.066	19.8	1.2	14.2	302.	8-37
186	362.9	3082.5	0.0	0.241	0.088	20.7	1.1	14.8	310.	8-38
187	362.9	3082.5	0.0	0.0	0.005	22.3	0.8	13.6	313.	8-39
188	362.9	3082.5	0.0	0.0	0.033	22.6	1.2	7.8	296.	8-40
189	362.9	3082.5	0.0	0.003	0.030	8.5	0.8	2.5	308.	8-41
190	362.9	3082.5	0.0	0.356	0.266	18.3	2.5	6.9	589.	8-42
191	362.9	3082.5	0.0	0.003	0.008	6.1	1.4	12.1	476.	8-43
192	389.8	3098.9	0.0	0.104	0.008	9.1	0.6	16.6	533.	30-01 SOUTH FROZ
193	358.0	3091.0	0.0	1.345	0.041	45.7	3.7	1.6	400.	38-01 HK PT
194	358.0	3091.0	0.0	1.104	0.033	45.7	3.7	1.6	400.	38-02 * HK PT
195	358.0	3091.0	0.0	3.079	0.093	45.7	4.0	3.4	397.	38-03 HK PT
196	358.0	3091.0	0.0	2.945	0.088	45.7	4.0	3.4	397.	38-04 T HK PT
197	358.0	3091.0	0.0	7.301	0.219	52.7	3.7	4.9	414.	38-05 HK PT
198	358.0	3091.0	0.0	4.822	0.145	52.7	3.9	5.9	416.	38-06 E HK PT
199	361.6	3075.0	0.0	156.893	29.805	149.4	7.3	9.5	404.	39-01 BB
200	361.6	3075.0	0.0	163.688	1.096	149.4	7.3	9.5	404.	39-02 C BB
201	360.0	3087.5	0.0	31.860	1.589	61.0	4.3	8.3	427.	40-01 GAN
202	360.0	3087.5	0.0	43.337	2.216	76.2	3.0	17.1	427.	40-02 D GAN
203	360.0	3087.5	0.0	43.121	2.438	76.2	3.2	14.8	403.	40-03 GAN
204	360.0	3087.5	0.0	45.164	3.699	71.6	2.9	29.3	414.	40-04 * GAN
205	306.0	3087.5	0.0	76.890	6.597	70.1	4.5	14.3	415.	40-05 * GAN
206	360.0	3087.5	0.0	86.575	12.901	93.3	5.4	16.0	417.	40-06 * GAN
207	393.8	3096.3	0.0	0.025	0.101	30.5	1.2	10.1	339.	75-01 BORDEN
208	393.8	3096.3	0.0	0.005	0.003	24.4	1.5	13.2	312.	75-02
209	393.8	3096.3	0.0	0.660	0.425	46.3	1.6	22.9	311.	75-03
210	393.8	3096.3	0.0	1.142	0.225	46.3	1.6	25.6	304.	75-04
211	393.8	3096.3	0.0	0.753	0.403	61.0	1.6	32.8	306.	75-05
212	393.8	3096.3	0.0	0.162	0.011	18.3	0.7	4.3	533.	75-19
213	389.5	3067.9	0.0	0.422	0.405	38.1	2.4	15.2	346.	101-01 BREWSTER
214	389.5	3067.9	0.0	0.422	0.405	38.1	2.4	15.2	346.	101-02
215	389.5	3067.9	0.0	0.0	0.027	22.9	0.9	10.8	339.	101-03
216	389.5	3067.9	0.0	0.0	0.044	22.9	1.2	10.1	305.	101-04
217	392.2	3100.0	0.0	0.005	0.027	4.0	0.4	1.1	477.	124-01 PCPMC

SOURCE DATA

SOURCE NUMBER	SOURCE LOCATION (KILOMETERS)		SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY)		STACK DATA				
	HORIZONTAL	VERTICAL		SO2	PART	HT (M)	DIAM (M)	VEL (M/SEC)	TEMP (DEG. K)	
1	395.0	3135.0	100.00	0.043	0.016	6.1	0.0	0.0	0.	AREASRCGRD 01 75
2	405.0	3135.0	100.00	0.008	0.008	6.1	0.0	0.0	0.	AREASRCGRD 02 75
3	415.0	3135.0	100.00	0.022	0.014	6.1	0.0	0.0	0.	AREASRCGRD 03 75
4	425.0	3135.0	100.00	0.019	0.074	6.1	0.0	0.0	0.	AREASRCGRD 04 75
5	435.0	3135.0	100.00	0.030	0.271	6.1	0.0	0.0	0.	AREASRCGRD 05 75
6	395.0	3135.0	100.00	0.022	0.162	6.1	0.0	0.0	0.	AREASRCGRD 06 75
7	405.0	3125.0	100.00	0.008	0.036	6.1	0.0	0.0	0.	AREASRCGRD 07 75
8	415.0	3125.0	100.00	0.027	0.085	6.1	0.0	0.0	0.	AREASRCGRD 08 75
9	425.0	3125.0	100.00	0.008	0.093	6.1	0.0	0.0	0.	AREASRCGRD 09 75
10	435.0	3125.0	100.00	0.118	0.890	6.1	0.0	0.0	0.	AREASRCGRD 10 75
11	445.0	3125.0	100.00	0.019	0.060	6.1	0.0	0.0	0.	AREASRCGRD 11 75
12	395.0	3115.0	100.00	0.022	0.241	6.1	0.0	0.0	0.	AREASRCGRD 12 75
13	405.0	3115.0	100.00	0.058	0.655	6.1	0.0	0.0	0.	AREASRCGRD 13 75
14	415.0	3115.0	100.00	0.101	0.778	6.1	0.0	0.0	0.	AREASRCGRD 14 75
15	425.0	3115.0	100.00	0.079	0.904	6.1	0.0	0.0	0.	AREASRCGRD 15 75
16	435.0	3115.0	100.00	0.071	0.614	6.1	0.0	0.0	0.	AREASRCGRD 16 75
17	445.0	3115.0	100.00	0.019	0.250	6.1	0.0	0.0	0.	AREASRCGRD 17 75
18	395.0	3105.0	100.00	0.099	0.773	6.1	0.0	0.0	0.	AREASRCGRD 18 75
19	405.0	3105.0	100.00	0.356	1.616	6.1	0.0	0.0	0.	AREASRCGRD 19 75
20	415.0	3105.0	100.00	0.074	0.559	6.1	0.0	0.0	0.	AREASRCGRD 20 75
21	425.0	3105.0	100.00	0.208	0.770	6.1	0.0	0.0	0.	AREASRCGRD 21 75
22	435.0	3105.0	100.00	0.142	0.666	6.1	0.0	0.0	0.	AREASRCGRD 22 75
23	445.0	3105.0	100.00	0.011	0.222	6.1	0.0	0.0	0.	AREASRCGRD 23 75
24	455.0	3105.0	100.00	0.005	0.293	6.1	0.0	0.0	0.	AREASRCGRD 24 75
25	395.0	3095.0	100.00	0.132	0.345	6.1	0.0	0.0	0.	AREASRCGRD 25 75
26	405.0	3095.0	100.00	0.132	0.600	6.1	0.0	0.0	0.	AREASRCGRD 26 75
27	415.0	3095.0	100.00	0.079	0.430	6.1	0.0	0.0	0.	AREASRCGRD 27 75
28	425.0	3095.0	100.00	0.132	0.534	6.1	0.0	0.0	0.	AREASRCGRD 28 75
29	435.0	3095.0	100.00	0.101	0.644	6.1	0.0	0.0	0.	AREASRCGRD 29 75
30	445.0	3095.0	100.00	0.027	0.416	6.1	0.0	0.0	0.	AREASRCGRD 30 75
31	455.0	3095.0	100.00	0.110	0.474	6.1	0.0	0.0	0.	AREASRCGRD 31 75
32	465.0	3095.0	100.00	0.005	0.293	6.1	0.0	0.0	0.	AREASRCGRD 32 75
33	395.0	3085.0	100.00	0.123	0.351	6.1	0.0	0.0	0.	AREASRCGRD 33 75
34	405.0	3085.0	100.00	0.110	0.474	6.1	0.0	0.0	0.	AREASRCGRD 34 75
35	415.0	3085.0	100.00	0.178	0.187	6.1	0.0	0.0	0.	AREASRCGRD 35 75
36	425.0	3085.0	100.00	0.066	0.237	6.1	0.0	0.0	0.	AREASRCGRD 36 75
37	435.0	3085.0	100.00	0.071	0.400	6.1	0.0	0.0	0.	AREASRCGRD 37 75
38	445.0	3085.0	100.00	0.151	1.411	6.1	0.0	0.0	0.	AREASRCGRD 38 75
39	455.0	3085.0	100.00	0.033	3.718	6.1	0.0	0.0	0.	AREASRCGRD 39 75
40	465.0	3085.0	100.00	0.008	1.181	6.1	0.0	0.0	0.	AREASRCGRD 40 75
41	395.0	3075.0	100.00	0.014	1.186	6.1	0.0	0.0	0.	AREASRCGRD 41 75
42	405.0	3075.0	100.00	0.044	0.107	6.1	0.0	0.0	0.	AREASRCGRD 42 75
43	415.0	3075.0	100.00	0.066	0.148	6.1	0.0	0.0	0.	AREASRCGRD 43 75
44	425.0	3075.0	100.00	0.030	0.543	6.1	0.0	0.0	0.	AREASRCGRD 44 75
45	435.0	3075.0	100.00	0.014	0.219	6.1	0.0	0.0	0.	AREASRCGRD 45 75
46	445.0	3075.0	100.00	0.071	1.471	6.1	0.0	0.0	0.	AREASRCGRD 46 75
47	455.0	3075.0	100.00	0.005	1.910	6.1	0.0	0.0	0.	AREASRCGRD 47 75
48	465.0	3075.0	100.00	0.019	0.107	6.1	0.0	0.0	0.	AREASRCGRD 48 75
49	475.0	3075.0	100.00	0.011	1.208	6.1	0.0	0.0	0.	AREASRCGRD 49 75
50	395.0	3065.0	100.00	0.008	0.282	6.1	0.0	0.0	0.	AREASRCGRD 50 75
51	405.0	3065.0	100.00	0.019	0.153	6.1	0.0	0.0	0.	AREASRCGRD 51 75
52	415.0	3065.0	100.00	0.027	0.115	6.1	0.0	0.0	0.	AREASRCGRD 52 75
53	425.0	3065.0	100.00	0.055	0.219	6.1	0.0	0.0	0.	AREASRCGRD 53 75

54	435.0	3065.0	100.00	0.014	0.159	6.1	0.0	0.0	0.0	AREA SRCGRD 58 75
55	445.0	3065.0	100.00	0.088	1.649	6.1	0.0	0.0	0.0	AREA SRCGRD 59 75
56	455.0	3065.0	100.00	0.005	1.329	6.1	0.0	0.0	0.0	AREA SRCGRD 60 75
57	465.0	3065.0	100.00	0.003	0.008	6.1	0.0	0.0	0.0	AREA SRCGRD 61 75
58	475.0	3065.0	100.00	0.003	0.425	6.1	0.0	0.0	0.0	AREA SRCGRD 62 75
59	485.0	3065.0	100.00	0.003	0.852	6.1	0.0	0.0	0.0	AREA SRCGRD 64A75
60	395.0	3055.0	100.00	0.003	0.011	6.1	0.0	0.0	0.0	AREA SRCGRD 64B75
61	405.0	3055.0	100.00	0.003	0.008	6.1	0.0	0.0	0.0	AREA SRCGRD 64C75
62	415.0	3055.0	100.00	0.005	0.030	6.1	0.0	0.0	0.0	AREA SRCGRD 64D75
63	425.0	3055.0	100.00	0.005	0.008	6.1	0.0	0.0	0.0	AREA SRCGRD 64A75
64	435.0	3055.0	100.00	0.005	0.008	6.1	0.0	0.0	0.0	AREA SRCGRD 64B75
65	445.0	3055.0	100.00	0.014	0.504	6.1	0.0	0.0	0.0	AREA SRCGRD 64C75
66	455.0	3055.0	100.00	0.005	1.622	6.1	0.0	0.0	0.0	AREA SRCGRD 64D75
67	465.0	3055.0	100.00	0.005	0.014	6.1	0.0	0.0	0.0	AREA SRCGRD 64E75
68	475.0	3055.0	100.00	0.003	0.008	6.1	0.0	0.0	0.0	AREA SRCGRD 64F75
69	485.0	3055.0	100.00	0.003	0.008	6.1	0.0	0.0	0.0	AREA SRCGRD 64G75

INCREMENTAL OF **21, 111**, SO2, MAX ALLOW.

plotted 12/5/77 J7.

SOURCE DATA

SOURCE NUMBER	SOURCE LOCATION (KILOMETERS)		SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY)		STACK DATA				
	HORIZONTAL	VERTICAL		SO2	PAB1	HT (M)	DIAM (M)	VEL (M/SEC)	TEMP (DEG.K)	
1	408.5	3105.8	0.0	5.080	0.634	47.7	3.1	11.7	389.	MCINTOSH2, 1974
2	408.5	3105.8	0.0	21.150	0.782	47.7	2.7	15.1	405.	MCINTOSH1, 1974
3	409.3	3102.8	0.0	0.980	0.036	50.3	3.1	3.4	422.	LARSEN 4, 1974
4	409.3	3102.8	0.0	2.650	0.097	50.3	3.1	4.3	427.	LARSEN 5, 1974
5	409.3	3102.8	0.0	3.810	0.137	50.3	3.1	4.4	433.	LARSEN 6, 1974
6	409.3	3102.8	0.0	8.810	0.319	50.3	3.1	7.3	400.	LARSEN 7, 1974

ALL AREA SOURCES , POLK CO., 1982

SOURCE DATA

SOURCE NUMBER	SOURCE LOCATION (KILOMETERS)		SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY)		STACK DATA				
	HORIZONTAL	VERTICAL		SO2	PART	HT (M)	DIAM (M)	VEL (M/SEC)	TEMP (DEG. K)	
1	395.0	3135.0	100.00	0.003	0.019	6.1	0.0	0.0	0.	AREASRCGRD 01 80
2	405.0	3135.0	100.00	0.003	0.014	6.1	0.0	0.0	0.	AREASRCGRD 02 80
3	415.0	3135.0	100.00	0.027	0.096	6.1	0.0	0.0	0.	AREASRCGRD 03 80
4	425.0	3135.0	100.00	0.019	0.077	6.1	0.0	0.0	0.	AREASRCGRD 04 80
5	435.0	3135.0	100.00	0.036	0.307	6.1	0.0	0.0	0.	AREASRCGRD 05 80
6	395.0	3125.0	100.00	0.030	0.195	6.1	0.0	0.0	0.	AREASRCGRD 06 80
7	405.0	3125.0	100.00	0.011	0.047	6.1	0.0	0.0	0.	AREASRCGRD 07 80
8	415.0	3125.0	100.00	0.033	0.110	6.1	0.0	0.0	0.	AREASRCGRD 08 80
9	425.0	3125.0	100.00	0.008	0.096	6.1	0.0	0.0	0.	AREASRCGRD 09 80
10	435.0	3125.0	100.00	0.153	1.134	6.1	0.0	0.0	0.	AREASRCGRD 10 80
11	445.0	3125.0	100.00	0.025	0.375	6.1	0.0	0.0	0.	AREASRCGRD 11 80
12	395.0	3115.0	100.00	0.025	0.326	6.1	0.0	0.0	0.	AREASRCGRD 12 80
13	405.0	3115.0	100.00	0.077	0.767	6.1	0.0	0.0	0.	AREASRCGRD 13 80
14	415.0	3115.0	100.00	0.132	0.967	6.1	0.0	0.0	0.	AREASRCGRD 14 80
15	425.0	3115.0	100.00	0.107	1.082	6.1	0.0	0.0	0.	AREASRCGRD 15 80
16	435.0	3115.0	100.00	0.093	0.740	6.1	0.0	0.0	0.	AREASRCGRD 16 80
17	445.0	3115.0	100.00	0.022	0.293	6.1	0.0	0.0	0.	AREASRCGRD 17 80
18	395.0	3105.0	100.00	0.132	0.981	6.1	0.0	0.0	0.	AREASRCGRD 19 80
19	405.0	3105.0	100.00	0.466	2.151	6.1	0.0	0.0	0.	AREASRCGRD 20 80
20	415.0	3105.0	100.00	0.096	0.674	6.1	0.0	0.0	0.	AREASRCGRD 21 80
21	425.0	3105.0	100.00	0.268	0.975	6.1	0.0	0.0	0.	AREASRCGRD 22 80
22	435.0	3105.0	100.00	0.153	0.814	6.1	0.0	0.0	0.	AREASRCGRD 23 80
23	445.0	3105.0	100.00	0.014	0.238	6.1	0.0	0.0	0.	AREASRCGRD 24 80
24	455.0	3105.0	100.00	0.008	0.253	6.1	0.0	0.0	0.	AREASRCGRD 25 80
25	395.0	3095.0	100.00	0.123	0.419	6.1	0.0	0.0	0.	AREASRCGRD 27 80
26	405.0	3095.0	100.00	0.170	0.792	6.1	0.0	0.0	0.	AREASRCGRD 28 80
27	415.0	3095.0	100.00	0.104	0.581	6.1	0.0	0.0	0.	AREASRCGRD 29 80
28	425.0	3095.0	100.00	0.170	0.723	6.1	0.0	0.0	0.	AREASRCGRD 30 80
29	435.0	3095.0	100.00	0.132	0.816	6.1	0.0	0.0	0.	AREASRCGRD 31 80
30	445.0	3095.0	100.00	0.033	0.441	6.1	0.0	0.0	0.	AREASRCGRD 32 80
31	455.0	3095.0	100.00	0.008	0.819	6.1	0.0	0.0	0.	AREASRCGRD 33 80
32	465.0	3095.0	100.00	0.008	0.263	6.1	0.0	0.0	0.	AREASRCGRD 34 80
33	395.0	3085.0	100.00	0.159	0.425	6.1	0.0	0.0	0.	AREASRCGRD 35 80
34	405.0	3085.0	100.00	0.142	0.641	6.1	0.0	0.0	0.	AREASRCGRD 36 80
35	415.0	3085.0	100.00	0.233	1.123	6.1	0.0	0.0	0.	AREASRCGRD 37 80
36	425.0	3085.0	100.00	0.082	0.833	6.1	0.0	0.0	0.	AREASRCGRD 38 80
37	435.0	3085.0	100.00	0.093	0.504	6.1	0.0	0.0	0.	AREASRCGRD 39 80
38	445.0	3085.0	100.00	0.195	1.507	6.1	0.0	0.0	0.	AREASRCGRD 40 80
39	455.0	3085.0	100.00	0.044	3.342	6.1	0.0	0.0	0.	AREASRCGRD 41 80
40	465.0	3085.0	100.00	0.016	1.050	6.1	0.0	0.0	0.	AREASRCGRD 42 80
41	395.0	3075.0	100.00	0.014	0.737	6.1	0.0	0.0	0.	AREASRCGRD 44 80
42	405.0	3075.0	100.00	0.060	0.153	6.1	0.0	0.0	0.	AREASRCGRD 45 80
43	415.0	3075.0	100.00	0.055	0.192	6.1	0.0	0.0	0.	AREASRCGRD 46 80
44	425.0	3075.0	100.00	0.036	0.573	6.1	0.0	0.0	0.	AREASRCGRD 47 80
45	435.0	3075.0	100.00	0.016	0.225	6.1	0.0	0.0	0.	AREASRCGRD 48 80
46	445.0	3075.0	100.00	0.090	1.471	6.1	0.0	0.0	0.	AREASRCGRD 49 80
47	455.0	3075.0	100.00	0.008	1.685	6.1	0.0	0.0	0.	AREASRCGRD 50 80
48	465.0	3075.0	100.00	0.025	0.148	6.1	0.0	0.0	0.	AREASRCGRD 51 80
49	475.0	3075.0	100.00	0.016	1.099	6.1	0.0	0.0	0.	AREASRCGRD 52 80
50	485.0	3075.0	100.00	0.0	0.008	6.1	0.0	0.0	0.	AREASRCGRD 53 80
51	395.0	3065.0	100.00	0.011	0.205	6.1	0.0	0.0	0.	AREASRCGRD 54 80
52	405.0	3065.0	100.00	0.025	0.192	6.1	0.0	0.0	0.	AREASRCGRD 55 80
53	415.0	3065.0	100.00	0.036	0.145	6.1	0.0	0.0	0.	AREASRCGRD 56 80

54	425.0	3065.0	100.00	0.071	0.285	6.1	0.0	0.0	0.0	AREASRCGRD 57 80
55	435.0	3065.0	100.00	0.016	0.178	6.1	0.0	0.0	0.0	AREASRCGRD 58 80
56	445.0	3065.0	100.00	0.112	1.488	6.1	0.0	0.0	0.0	AREASRCGRD 59 80
57	455.0	3065.0	100.00	0.008	1.211	6.1	0.0	0.0	0.0	AREASRCGRD 60 80
58	465.0	3065.0	100.00	0.003	0.014	6.1	0.0	0.0	0.0	AREASRCGRD 61 80
59	475.0	3065.0	100.00	0.003	0.378	6.1	0.0	0.0	0.0	AREASRCGRD 62 80
60	485.0	3065.0	100.00	0.003	0.748	6.1	0.0	0.0	0.0	AREASRCGRD 63 80
61	395.0	3055.0	100.00	0.003	0.016	6.1	0.0	0.0	0.0	AREASRCGRD 64 80
62	405.0	3055.0	100.00	0.003	0.008	6.1	0.0	0.0	0.0	AREASRCGRD 65 80
63	415.0	3055.0	100.00	0.005	0.041	6.1	0.0	0.0	0.0	AREASRCGRD 66 80
64	425.0	3055.0	100.00	0.003	0.014	6.1	0.0	0.0	0.0	AREASRCGRD 67 80
65	435.0	3055.0	100.00	0.003	0.014	6.1	0.0	0.0	0.0	AREASRCGRD 68 80
66	445.0	3055.0	100.00	0.016	0.479	6.1	0.0	0.0	0.0	AREASRCGRD 69 80
67	455.0	3055.0	100.00	0.008	1.321	6.1	0.0	0.0	0.0	AREASRCGRD 70 80
68	465.0	3055.0	100.00	0.008	0.016	6.1	0.0	0.0	0.0	AREASRCGRD 71 80
69	475.0	3055.0	100.00	0.003	0.014	6.1	0.0	0.0	0.0	AREASRCGRD 72 80
70	485.0	3055.0	100.00	0.003	0.014	6.1	0.0	0.0	0.0	AREASRCGRD 73 80

ALL SOURCES EXCEPT LU, 1972

SOURCE DATA

SOURCE NUMBER	SOURCE LOCATION (KILOMETERS)		SOURCE AREA SQUARE KILOMETERS	ANNUAL SOURCE EMISSION RATE (TONS/DAY)		STACK DATA				
	HORIZONTAL	VERTICAL		SO ₂	PART	HT (M)	DIAM (M)	VEL (M/SEC)	TEMP (DEG. K)	
1	452.4	3085.5	0.0	0.101	0.005	19.8	0.6	12.3	478.	ALCOMA PKS 01 01
2	451.8	3085.5	0.0	0.140	0.011	10.7	0.5	9.9	436.	ALCOMA PKS 01 02
3	451.8	3085.5	0.0	0.036	0.003	10.7	0.5	11.1	436.	ALCOMA PKS 01 03
4	441.0	3087.3	0.0	0.197	0.119	18.3	1.5	7.4	389.	CITRUS WLD 02 01
5	441.0	3087.3	0.0	0.0	0.027	24.4	1.1	20.0	589.	CITRUS WLD 02 02
6	441.0	3087.3	0.0	0.0	0.022	24.4	0.9	26.4	589.	CITRUS WLD 02 03
7	441.0	3087.3	0.0	0.0	0.022	24.4	1.7	3.4	589.	CITRUS WLD 02 -5
8	441.0	3087.3	0.0	0.737	0.055	24.4	1.7	3.4	589.	CITRUS WLD 02 -6
9	402.1	3106.2	0.0	0.055	0.008	10.7	1.2	8.3	367.	REDD CRANG 36 01
10	404.3	3106.0	0.0	0.044	0.145	22.9	0.9	21.9	617.	OWENS-ILL. 07 01
11	404.3	3106.0	0.0	0.038	0.093	22.9	0.9	15.3	542.	OWENS-ILL. 07 02
12	420.5	3103.6	0.0	0.0	0.019	25.9	0.7	5.6	298.	EGER CONC 08 01
13	405.5	3079.1	0.0	0.104	0.378	15.2	0.8	35.9	408.	C+7 PRCD 010 01
14	413.0	3094.0	0.0	0.0	0.156	24.4	3.0	2.2	358.	DS PROSSER 11 01
15	413.0	3094.0	0.0	0.0	0.156	24.4	3.0	2.2	358.	DS PROSSER 11 02
16	411.2	3074.5	0.0	0.918	0.359	18.9	3.0	8.9	341.	SWIFT CHEM 12 01
17	411.2	3074.5	0.0	0.918	0.411	15.2	6.7	1.1	339.	SWIFT CHEM 12 02
18	411.2	3074.5	0.0	2.644	0.608	15.2	6.7	0.8	355.	SWIFT CHEM 12 03
19	411.2	3074.5	0.0	0.0	0.030	22.3	0.4	11.2	317.	SWIFT CHEM 12 -6
20	411.2	3074.5	0.0	0.0	0.014	13.7	1.8	14.7	298.	SWIFT CHEM 12 08
21	441.5	3118.2	0.0	0.022	0.049	6.1	0.4	21.5	369.	STC.SANDS+812 01
22	441.5	3118.2	0.0	0.022	0.049	6.1	0.4	21.5	369.	STC.SANDS+812 02
23	441.5	3118.2	0.0	0.142	0.074	29.0	0.5	17.6	425.	STC.SANDS+812 03
24	399.0	3101.8	0.0	0.0	0.052	15.2	1.4	9.2	347.	DRAFT FOOD 15 01
25	399.0	3101.8	0.0	0.0	0.052	15.2	1.4	9.2	347.	DRAFT FOOD 15 02
26	420.7	3069.9	0.0	0.0	0.050	9.8	1.4	2.5	345.	SUN COAST 016 01
27	348.0	3070.3	0.0	0.093	0.008	4.6	0.3	9.4	478.	KEEN FRUIT 18 01
28	347.8	3068.3	0.0	0.455	0.205	12.2	1.4	13.0	404.	BEN MILL G 19 01
29	428.0	3097.4	0.0	0.0	0.005	15.2	1.0	15.4	309.	SWIFT AGRI 20 01
30	428.0	3097.4	0.0	0.0	0.004	16.8	0.4	57.4	294.	SWIFT AGRI 20 02
31	423.4	3102.8	0.0	0.0	0.025	15.2	1.7	7.9	298.	OWENS-ILL. 22 01
32	421.3	3103.6	0.0	0.0	0.118	28.4	1.1	16.8	333.	COCA-CCLA 023 01
33	421.3	3103.6	0.0	0.0	0.011	17.4	1.8	5.6	547.	COCA-CCLA 023 02
34	411.3	3114.7	0.0	0.003	0.137	6.1	1.2	8.5	305.	MID-FLA.AT 24 01
35	416.8	3069.5	0.0	0.0	0.068	27.4	0.9	12.1	336.	ALCOA 026 06
36	403.0	3086.9	0.0	0.055	0.447	18.9	1.8	22.5	339.	IMC-NOPLAIN27 01
37	403.0	3086.9	0.0	0.0	0.312	16.8	2.8	9.6	344.	IMC-NOPLAIN27 02
38	403.0	3086.9	0.0	0.0	0.005	13.7	1.7	15.5	333.	IMC-NOPLAIN27 03
39	403.0	3086.9	0.0	0.0	0.126	38.1	1.0	14.5	302.	IMC-NOPLAIN27 -5
40	403.0	3086.9	0.0	0.0	0.093	11.6	1.5	8.5	350.	IMC-NOPLAIN27 12
41	403.0	3086.9	0.0	0.0	0.192	12.2	0.5	6.4	309.	IMC-NOPLAIN27 14
42	398.3	3075.5	0.0	0.0	0.162	18.3	0.7	9.2	315.	IMC KINGSF 34 -3
43	398.3	3075.5	0.0	0.0	0.153	21.3	2.1	16.4	342.	IMC KINGSF 34 04
44	398.3	3075.5	0.0	0.0	0.030	32.3	0.8	14.5	310.	IMC KINGSF 34 05
45	417.8	3085.6	0.0	0.038	0.003	11.6	0.8	1.7	422.	BARTOW LND 35 01
46	418.2	3086.0	0.0	0.011	0.003	7.6	0.6	12.6	506.	BARTOW MSP 36 01
47	421.3	3104.0	0.0	0.0	0.049	23.4	1.1	13.8	333.	ADAMS-PKNG 37 01
48	405.2	3092.8	0.0	0.104	0.033	9.1	1.1	11.0	343.	BLUE SEAL 038 01
49	405.0	3108.8	0.0	0.082	0.003	38.1	1.8	0.9	367.	CARPENTERS 39 01
50	427.9	3097.6	0.0	0.416	0.0	14.6	0.5	1.0	422.	WG ROE+SON 40 01
51	403.0	3125.0	0.0	0.058	0.123	7.6	2.7	6.2	336.	ORLANDO PV 42 01
52	415.5	3063.5	0.0	2.000	0.348	19.2	2.9	8.7	333.	GARDR.MINE 44 01
53	415.5	3063.5	0.0	0.0	0.049	32.3	0.4	26.1	322.	GARDR.MINE 44 02

54	418.7	3083.6	0.0	0.227	0.027	15.2	0.9	7.9	333.	ORANGE C/	45 01
55	409.5	3085.8	0.0	4.647	0.268	45.7	1.4	13.5	352.	W.R. GRACE	46 03
56	409.5	3085.8	0.0	4.389	0.247	45.7	1.4	12.1	345.	W.R. GRACE	46 04
57	409.5	3085.8	0.0	6.805	0.400	51.0	2.1	11.2	349.	W.R. GRACE	46 05
58	409.5	3085.8	0.0	0.342	0.038	24.4	2.0	16.3	322.	W.R. GRACE	46 08
59	409.5	3085.8	0.0	0.164	0.032	30.2	2.3	16.0	329.	W.R. GRACE	46 10
60	409.5	3085.8	0.0	0.0	0.022	16.2	0.7	14.8	338.	W.R. GRACE	46 11
61	409.5	3085.8	0.0	0.0	0.468	22.6	0.5	32.5	311.	W.R. GRACE	46 14
62	409.5	3085.8	0.0	0.0	0.466	36.6	0.6	13.7	325.	W.R. GRACE	46 16
63	409.5	3085.8	0.0	0.0	0.104	15.5	1.5	26.9	339.	W.R. GRACE	46 20
64	409.5	3085.8	0.0	0.510	0.471	13.1	1.5	34.7	333.	W.R. GRACE	46 22
65	409.5	3085.8	0.0	0.0	0.123	15.2	0.4	9.4	311.	W.R. GRACE	46 26
66	398.5	3085.2	0.0	0.129	0.005	6.1	0.4	1.1	422.	MOBIL CHEM	47 22
67	398.5	3085.2	0.0	0.910	0.241	25.9	2.4	13.6	342.	MOBIL CHEM	47 03
68	398.5	3085.2	0.0	0.910	0.241	25.9	2.4	13.6	339.	MOBIL CHEM	47 04
69	398.5	3085.2	0.0	0.910	0.400	30.5	1.5	5.6	355.	MOBIL CHEM	47 05
70	398.5	3085.2	0.0	2.359	0.384	30.5	2.1	8.6	350.	MOBIL CHEM	47 06
71	398.5	3085.2	0.0	0.0	0.216	30.5	0.5	9.2	326.	MOBIL CHEM	47 07
72	406.7	3085.2	0.0	0.021	0.005	6.1	0.9	17.3	422.	ROYSTER CO	48 01
73	406.7	3085.2	0.0	2.655	0.014	61.0	2.1	11.5	362.	ROYSTER CO	48 02
74	406.7	3085.2	0.0	0.0	0.148	14.9	0.6	9.7	331.	ROYSTER CO	48 03
75	406.7	3085.2	0.0	0.0	0.014	30.5	0.3	24.0	325.	ROYSTER CO	48 05
76	406.7	3085.2	0.0	0.0	0.222	22.6	1.1	6.3	315.	ROYSTER CO	48 08
77	406.7	3085.2	0.0	0.104	0.252	31.1	2.7	3.6	320.	ROYSTER CO	48 10
78	413.2	3086.3	0.0	0.041	0.005	16.5	1.2	13.1	520.	USS AGRI C	50 01
79	413.2	3086.3	0.0	0.255	0.082	15.9	2.7	6.8	294.	USS AGRI C	50 02
80	413.2	3086.3	0.0	3.041	0.090	22.9	2.3	7.4	355.	USS AGRI C	50 03
81	413.2	3086.3	0.0	0.0	0.058	13.7	0.7	10.8	293.	USS AGRI C	50 06
82	416.0	3069.0	0.0	3.984	0.104	20.7	1.5	18.0	367.	USS AGRI C	51 01
83	416.0	3069.0	0.0	3.099	0.104	20.7	1.5	18.0	373.	USS AGRI C	51 02
84	416.0	3069.0	0.0	0.540	0.230	25.6	1.5	25.4	342.	USS AGRI C	51 03
85	416.0	3069.0	0.0	0.0	0.118	37.2	0.8	32.9	304.	USS AGRI C	51 04
86	416.0	3069.0	0.0	0.0	0.058	18.3	0.3	15.5	333.	USS AGRI C	51 12
87	416.0	3069.0	0.0	0.0	0.044	16.2	0.5	21.6	358.	USS AGRI C	51 06
88	416.0	3069.0	0.0	0.312	0.0	28.4	1.5	11.9	330.	USS AGRI C	51 15
89	416.0	3069.0	0.0	0.0	0.558	26.8	4.6	2.1	300.	USS AGRI C	51 16
90	416.0	3069.0	0.0	0.0	0.263	19.5	0.5	10.4	307.	USS AGRI C	51 17
91	416.0	3069.0	0.0	0.0	0.049	19.5	0.5	11.8	300.	USS AGRI C	51 18
92	409.0	3083.0	0.0	3.258	0.082	30.5	2.7	4.3	355.	CF CHEMICAL	52 03
93	409.0	3083.0	0.0	5.027	0.025	30.5	2.1	7.8	355.	CF CHEMICAL	52 04
94	409.0	3083.0	0.0	4.967	0.025	63.4	2.1	10.7	355.	CF CHEMICAL	52 05
95	409.0	3083.0	0.0	4.638	0.022	63.4	2.1	10.4	355.	CF CHEMICAL	52 06
96	409.0	3083.0	0.0	2.293	0.022	63.4	2.1	10.4	355.	CF CHEMICAL	52 LT
97	409.0	3083.0	0.0	0.011	0.005	12.8	1.0	21.8	422.	CF CHEMICAL	52 32
98	409.7	3079.5	0.0	3.104	0.110	30.5	2.1	16.1	346.	FARMLND IN	53 01
99	409.7	3079.5	0.0	3.356	0.107	30.5	2.1	18.4	347.	FARMLND IN	53 02
100	409.7	3079.5	0.0	3.463	0.134	30.5	2.3	14.1	349.	FARMLND IN	53 03
101	409.7	3079.5	0.0	4.129	0.132	30.5	2.3	16.1	355.	FARMLND IN	53 04
102	409.7	3079.5	0.0	0.0	0.101	56.4	1.5	13.5	348.	FARMLND IN	53 09
103	409.7	3079.5	0.0	0.0	0.153	39.3	2.3	9.5	315.	FARMLND IN	53 10
104	409.7	3079.5	0.0	0.0	0.112	33.5	0.8	10.2	304.	FARMLND IN	53 11
105	409.7	3079.5	0.0	0.0	0.088	37.8	2.3	14.3	306.	FARMLND IN	53 12
106	409.7	3079.5	0.0	0.0	0.137	39.6	1.2	58.5	299.	FARMLND IN	53 14
107	409.7	3079.5	0.0	0.0	0.795	27.4	0.2	11.8	297.	FARMLND IN	53 15
108	409.7	3079.5	0.0	0.145	0.055	15.2	1.5	7.9	450.	FARMLND IN	53 22
109	404.0	3079.0	0.0	0.049	0.003	5.5	0.3	6.8	650.	AGRIC-PCE	54 01
110	404.0	3079.0	0.0	1.392	0.178	24.4	1.5	14.8	333.	AGRIC-PCE	54 03
111	404.0	3079.0	0.0	1.392	0.178	24.4	1.5	14.9	333.	AGRIC-PCE	54 04
112	404.0	3079.0	0.0	1.688	0.258	27.4	1.9	12.6	339.	AGRIC-PCE	54 05
113	404.0	3079.0	0.0	0.0	0.022	15.2	0.7	11.3	294.	AGRIC-PCE	54 06
114	404.0	3079.0	0.0	0.0	0.055	30.5	1.0	15.2	300.	AGRIC-PCE	54 07

115	404.0	3079.0	0.0	0.0	0.195	33.5	1.8	15.4	299.	AGRIC-PCE 54 08
116	404.0	3079.0	0.0	0.0	0.003	29.0	0.7	4.0	300.	AGRIC-PCE 54 09
117	404.0	3079.0	0.0	0.0	0.088	42.7	1.6	16.8	295.	AGRIC-PCE 54 10
118	404.0	3079.0	0.0	0.0	0.375	24.4	2.1	19.2	293.	AGRIC-PCE 54 11
119	404.0	3079.0	0.0	0.0	0.181	29.0	1.0	20.4	300.	AGRIC-PCE 54 12
120	404.0	3079.0	0.0	0.0	0.060	24.4	0.6	23.8	348.	AGRIC-PCE 54 14
121	404.0	3079.0	0.0	0.0	0.011	15.2	0.3	9.1	328.	AGRIC-PCE 54 15
122	404.0	3079.0	0.0	0.0	0.016	18.3	0.2	16.2	311.	AGRIC-PCE 54 16
123	407.5	3071.4	0.0	0.501	0.033	18.9	1.2	17.4	422.	AGRIC-S.P.55 01
124	407.5	3071.4	0.0	0.0	0.227	30.5	0.2	16.2	311.	AGRIC-S.P.55 18
125	407.5	3071.4	0.0	0.0	0.263	36.6	0.6	22.5	344.	AGRIC-S.P.55 17
126	407.5	3071.4	0.0	0.025	0.003	5.5	0.3	6.8	656.	AGRIC-S.P.55 19
127	402.8	3087.2	0.0	0.973	0.159	21.3	1.4	30.2	321.	IMC-PRAIRE 56 01
128	402.8	3087.2	0.0	0.0	0.079	21.3	1.5	5.4	294.	IMC-PRAIRE 56 02
129	402.8	3087.2	0.0	0.0	0.027	22.9	0.9	8.4	311.	IMC PRAIRE 55 03
130	308.4	3087.2	0.0	0.792	0.044	30.5	2.0	6.4	315.	CONSERV CM 57 01
131	398.4	3084.2	0.0	0.792	0.044	30.5	2.0	6.4	315.	CONSERV CM 57 02
132	398.4	3084.2	0.0	0.0	0.038	12.2	1.2	4.9	302.	CONSERV CM 57 05
133	398.4	3084.2	0.0	0.0	0.192	16.8	0.9	7.9	328.	CONSERV CM 57 09
134	398.4	3084.2	0.0	0.252	0.268	20.4	1.2	12.6	339.	CONSERV CM 57 10
135	398.4	3084.2	0.0	0.044	0.005	18.3	0.4	38.3	422.	CONSERV CM 57 11
136	405.6	3079.4	0.0	0.0	0.444	15.2	0.8	41.4	305.	ELECTRO PH 60 01
137	360.0	3087.5	0.0	3.300	0.0	93.3	3.1	17.4	409.	GANNON-1
138	360.0	3087.5	0.0	6.200	0.0	93.3	3.1	18.9	411.	GANNON-2
139	360.0	3087.5	0.0	11.900	0.0	93.3	3.2	19.8	392.	GANNON-3
140	360.0	3087.5	0.0	16.700	0.0	93.3	2.9	13.7	401.	GANNON-4
141	360.0	3087.5	0.0	28.500	0.0	93.3	4.4	17.7	410.	GANNON-5
142	360.0	3087.5	0.0	41.400	0.0	93.3	5.4	18.9	409.	GANNON-6
143	361.6	3075.0	0.0	321.600	0.0	149.4	7.3	19.5	412.	BIG BEND 1&2
144	361.6	3075.0	0.0	160.800	0.0	149.4	7.3	9.8	412.	BIG BEND 3
145	358.0	3091.0	0.0	12.240	0.0	85.3	3.4	15.2	409.	HOOKS PT 1,2,3,5
146	358.0	3091.0	0.0	5.760	0.0	85.3	3.9	5.5	409.	HOOKS POINT 4
147	363.1	3082.5	0.0	7.490	0.0	45.7	2.3	9.4	355.	GARDINIER 7
148	363.1	3082.5	0.0	7.990	0.0	45.7	2.4	9.7	355.	H2SO4 AT 8
149	363.1	3082.5	0.0	5.200	0.0	45.7	2.7	10.2	355.	150 FT 9
150	388.3	3115.7	0.0	0.088	0.058	7.3	1.5	4.1	567.	5-01 CENTRAL
151	388.3	3115.7	0.0	3.364	0.003	23.8	1.5	19.1	309.	5-02 PHOSPHATES
152	388.3	3115.7	0.0	3.364	0.003	23.8	1.5	19.1	309.	5-03

ALL POINT SOURCES, EXCEPT LU, 1982

METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

MIXING DEPTH = 1394, METERS
 AMBIENT TEMPERATURE = 292, DEGREES, KELVIN
 AMBIENT PRESSURE = 1017, MILLIBARS

STABILITY CLASS 1

WINDSPEED CLASS

WIND DIRECTION	1	2	3	4	5	6
N	0.0000	0.0002	0.0	0.0	0.0	0.0
NNE	0.0000	0.0002	0.0	0.0	0.0	0.0
NE	0.0000	0.0002	0.0	0.0	0.0	0.0
ENE	0.0000	0.0001	0.0	0.0	0.0	0.0
E	0.0001	0.0003	0.0	0.0	0.0	0.0
ESE	0.0001	0.0002	0.0	0.0	0.0	0.0
SE	0.0000	0.0002	0.0	0.0	0.0	0.0
SSE	0.0001	0.0002	0.0	0.0	0.0	0.0
S	0.0001	0.0002	0.0	0.0	0.0	0.0
SSW	0.0000	0.0002	0.0	0.0	0.0	0.0
SW	0.0001	0.0004	0.0	0.0	0.0	0.0
WSW	0.0001	0.0003	0.0	0.0	0.0	0.0
W	0.0001	0.0003	0.0	0.0	0.0	0.0
WNW	0.0001	0.0002	0.0	0.0	0.0	0.0
NW	0.0000	0.0000	0.0	0.0	0.0	0.0
NNW	0.0000	0.0001	0.0	0.0	0.0	0.0

ALL POINT SOURCES, EXCEPT LU, 1982

METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS 2

WINDSPEED CLASS

WIND DIRECTION	1	2	3	4	5	6
N	0.0005	0.0013	0.0009	0.0	0.0	0.0
NNE	0.0004	0.0013	0.0008	0.0	0.0	0.0
NE	0.0004	0.0012	0.0009	0.0	0.0	0.0
ENE	0.0005	0.0013	0.0014	0.0	0.0	0.0
E	0.0008	0.0029	0.0027	0.0	0.0	0.0
ESE	0.0007	0.0019	0.0011	0.0	0.0	0.0
SE	0.0005	0.0012	0.0018	0.0	0.0	0.0
SSE	0.0003	0.0018	0.0018	0.0	0.0	0.0
S	0.0005	0.0016	0.0019	0.0	0.0	0.0
SSW	0.0003	0.0013	0.0018	0.0	0.0	0.0
SW	0.0003	0.0017	0.0026	0.0	0.0	0.0
WSW	0.0002	0.0018	0.0039	0.0	0.0	0.0
W	0.0005	0.0030	0.0061	0.0	0.0	0.0
WNW	0.0002	0.0008	0.0008	0.0	0.0	0.0
NW	0.0002	0.0005	0.0003	0.0	0.0	0.0
NNW	0.0003	0.0006	0.0005	0.0	0.0	0.0

ALL POINT SOURCES, EXCEPT LU, 1982

METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS 3

WINDSPEED CLASS

WIND DIRECTION	1	2	3	4	5	6
N	0.0002	0.0010	0.0034	0.0005	0.0	0.0
NNE	0.0001	0.0011	0.0041	0.0005	0.0	0.0
NE	0.0001	0.0016	0.0054	0.0008	0.0	0.0
ENE	0.0004	0.0029	0.0085	0.0011	0.0	0.0
E	0.0006	0.0057	0.0117	0.0017	0.0000	0.0
ESE	0.0002	0.0029	0.0065	0.0010	0.0000	0.0
SE	0.0003	0.0022	0.0072	0.0013	0.0	0.0
SSE	0.0003	0.0022	0.0069	0.0009	0.0	0.0
S	0.0002	0.0020	0.0053	0.0013	0.0	0.0000
SSW	0.0002	0.0010	0.0058	0.0018	0.0000	0.0
SW	0.0001	0.0015	0.0052	0.0010	0.0	0.0
WSW	0.0001	0.0017	0.0076	0.0013	0.0000	0.0
W	0.0002	0.0021	0.0159	0.0064	0.0003	0.0
WNW	0.0001	0.0007	0.0029	0.0012	0.0000	0.0000
NW	0.0000	0.0005	0.0018	0.0006	0.0000	0.0
NNW	0.0001	0.0008	0.0019	0.0006	0.0001	0.0000

ALL POINT SOURCES, EXCEPT LU, 1982

METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS 4

WINDSPEED CLASS

WIND DIRECTION	1	2	3	4	5	6
N	0,0005	0,0026	0,0103	0,0081	0,0005	0,0
NNE	0,0004	0,0032	0,0079	0,0068	0,0002	0,0000
NE	0,0005	0,0032	0,0105	0,0105	0,0004	0,0000
ENE	0,0006	0,0045	0,0138	0,0098	0,0003	0,0
E	0,0010	0,0077	0,0235	0,0168	0,0005	0,0000
ESE	0,0005	0,0035	0,0134	0,0073	0,0002	0,0
SE	0,0004	0,0031	0,0101	0,0075	0,0001	0,0000
SSE	0,0003	0,0029	0,0102	0,0076	0,0003	0,0000
S	0,0007	0,0036	0,0118	0,0102	0,0007	0,0001
SSW	0,0003	0,0019	0,0076	0,0084	0,0007	0,0000
SW	0,0002	0,0015	0,0045	0,0034	0,0001	0,0000
WSW	0,0003	0,0018	0,0065	0,0047	0,0002	0,0
W	0,0002	0,0026	0,0164	0,0211	0,0006	0,0001
WNW	0,0004	0,0011	0,0060	0,0091	0,0011	0,0004
NW	0,0003	0,0017	0,0061	0,0095	0,0011	0,0003
NNW	0,0002	0,0015	0,0066	0,0094	0,0013	0,0001

ALL POINT SOURCES, EXCEPT LU, 1982

METEOROLOGICAL INPUT DATA FOR THE ANNUAL SEASON

STABILITY CLASS 5

WINDSPEED CLASS

WIND DIRECTION	1	2	3	4	5	6
N	0.0043	0.0127	0.0067	0.0	0.0	0.0
NNE	0.0047	0.0119	0.0050	0.0	0.0	0.0
NE	0.0063	0.0181	0.0078	0.0	0.0	0.0
ENE	0.0112	0.0337	0.0094	0.0	0.0	0.0
E	0.0158	0.0487	0.0135	0.0	0.0	0.0
ESE	0.0094	0.0225	0.0068	0.0	0.0	0.0
SE	0.0055	0.0129	0.0052	0.0	0.0	0.0
SSE	0.0039	0.0125	0.0034	0.0	0.0	0.0
S	0.0037	0.0107	0.0029	0.0	0.0	0.0
SSW	0.0015	0.0045	0.0018	0.0	0.0	0.0
SW	0.0015	0.0060	0.0013	0.0	0.0	0.0
WSW	0.0018	0.0052	0.0020	0.0	0.0	0.0
W	0.0028	0.0068	0.0049	0.0	0.0	0.0
WNW	0.0026	0.0069	0.0035	0.0	0.0	0.0
NW	0.0041	0.0132	0.0049	0.0	0.0	0.0
NNW	0.0038	0.0102	0.0042	0.0	0.0	0.0

ALL POINT SOURCES, EXCEPT LU, 1982

INPUT REGRESSION PARAMETERS ARE:

<u>POLLUTANT</u>	<u>Y-INTERCEPT</u>	<u>SLOPE</u>
SO2	0.0	1.0000
PARTICULATES	0.0	1.0000

ALL POINT SOURCES, EXCEPT LU, ~~XXXX~~ POLK AND HILLSBOROUGH COUNTIES

RECEPTOR CONCENTRATION DATA				
RECEPTOR NUMBER	RECEPTOR LOCATION		EXPECTED ARITHMETIC MEAN	
	(KILOMETERS)		(MICROGRAMS/CU. METER)	
	HORIZ	VERT	SO2	PARTICULATES
1	404.0	3098.0	10.	3.
2	404.0	3099.0	10.	2.
3	404.0	3100.0	9.	2.
4	404.0	3101.0	9.	2.
5	404.0	3102.0	9.	2.
6	404.0	3103.0	8.	2.
7	404.0	3104.0	8.	2.
8	404.0	3105.0	8.	2.
9	404.0	3106.0	7.	2.
10	404.0	3107.0	7.	2.
11	404.0	3108.0	7.	2.
12	404.0	3109.0	7.	2.
13	404.0	3110.0	7.	2.
14	404.0	3111.0	6.	2.
15	405.0	3098.0	11.	2.
16	405.0	3099.0	10.	2.
17	405.0	3100.0	9.	2.
18	405.0	3101.0	9.	2.
19	405.0	3102.0	9.	2.
20	405.0	3103.0	8.	2.
21	405.0	3104.0	8.	2.
22	405.0	3105.0	8.	2.
23	405.0	3106.0	8.	2.
24	405.0	3107.0	7.	2.
25	405.0	3108.0	7.	2.
26	405.0	3109.0	6.	2.
27	405.0	3110.0	6.	2.
28	405.0	3111.0	6.	2.
29	406.0	3098.0	11.	3.
30	406.0	3099.0	10.	2.
31	406.0	3100.0	9.	2.
32	406.0	3101.0	9.	2.
33	406.0	3102.0	8.	2.
34	406.0	3103.0	8.	2.
35	406.0	3104.0	8.	2.
36	406.0	3105.0	7.	2.
37	406.0	3106.0	7.	2.
38	406.0	3107.0	7.	2.
39	406.0	3108.0	7.	2.
40	406.0	3109.0	7.	2.

ALL POINT SOURCES, EXCEPT LU, 1982

RECEPIER CONCENTRATION DATA				
RECEPTOR NUMBER	RECEPTOR LOCATION		EXPECTED ARITHMETIC MEAN	
	(KILOMETERS)		(MICROGRAMS/CU. METER)	
	HOBIZ	VERT	SO2	PARTICULATES
41	406.0	3110.0	6.	2.
42	406.0	3111.0	6.	2.
43	407.0	3098.0	11.	2.
44	407.0	3099.0	10.	2.
45	407.0	3100.0	9.	2.
46	407.0	3101.0	9.	2.
47	407.0	3102.0	8.	2.
48	407.0	3103.0	8.	2.
49	407.0	3104.0	8.	2.
50	407.0	3105.0	7.	2.
51	407.0	3106.0	7.	2.
52	407.0	3107.0	7.	2.
53	407.0	3108.0	6.	2.
54	407.0	3109.0	6.	2.
55	407.0	3110.0	6.	2.
56	407.0	3111.0	6.	2.
57	408.0	3098.0	10.	2.
58	408.0	3099.0	10.	2.
59	408.0	3100.0	9.	2.
60	408.0	3101.0	9.	2.
61	408.0	3102.0	8.	2.
62	408.0	3103.0	8.	2.
63	408.0	3104.0	8.	2.
64	408.0	3105.0	7.	2.
65	408.0	3106.0	7.	2.
66	408.0	3107.0	7.	2.
67	408.0	3108.0	6.	2.
68	408.0	3109.0	6.	2.
69	408.0	3110.0	6.	1.
70	408.0	3111.0	6.	1.
71	409.0	3098.0	10.	2.
72	409.0	3099.0	10.	2.
73	409.0	3100.0	9.	2.
74	409.0	3101.0	9.	2.
75	409.0	3102.0	8.	2.
76	409.0	3103.0	8.	2.
77	409.0	3104.0	7.	2.
78	409.0	3105.0	7.	2.
79	409.0	3106.0	7.	2.
80	409.0	3107.0	7.	2.

ALL POINT SOURCES, EXCEPT LU, 1982

RECEPTOR CONCENTRATION DATA				
RECEPTOR NUMBER	RECEPTOR LOCATION		EXPECTED ARITHMETIC MEAN	
	(KILOMETERS)		(MICROGRAMS/CU. METER)	
	HORIZ	VERT	SO2	PARTICULATES
81	409.0	3108.0	6.	2.
82	409.0	3109.0	6.	1.
83	409.0	3110.0	6.	1.
84	409.0	3111.0	6.	1.
85	410.0	3098.0	10.	2.
86	410.0	3099.0	9.	2.
87	410.0	3100.0	9.	2.
88	410.0	3101.0	8.	2.
89	410.0	3102.0	8.	2.
90	410.0	3103.0	8.	2.
91	410.0	3104.0	7.	2.
92	410.0	3105.0	7.	2.
93	410.0	3106.0	7.	2.
94	410.0	3107.0	6.	2.
95	410.0	3108.0	6.	2.
96	410.0	3109.0	6.	1.
97	410.0	3110.0	6.	1.
98	410.0	3111.0	6.	1.
99	411.0	3098.0	10.	2.
100	411.0	3099.0	9.	2.
101	411.0	3100.0	9.	2.
102	411.0	3101.0	8.	2.
103	411.0	3102.0	8.	2.
104	411.0	3103.0	7.	2.
105	411.0	3104.0	7.	2.
106	411.0	3105.0	7.	2.
107	411.0	3106.0	6.	2.
108	411.0	3107.0	6.	2.
109	411.0	3108.0	6.	1.
110	411.0	3109.0	6.	1.
111	411.0	3110.0	6.	1.
112	411.0	3111.0	6.	1.
113	412.0	3098.0	9.	2.
114	412.0	3099.0	9.	2.
115	412.0	3100.0	8.	2.
116	412.0	3101.0	8.	2.
117	412.0	3102.0	7.	2.
118	412.0	3103.0	7.	2.
119	412.0	3104.0	7.	2.
120	412.0	3105.0	6.	2.

ALL POINT SOURCES, EXCEPT LU, 1982

RECEPTOR CONCENTRATION DATA				
RECEPTOR NUMBER	RECEPTOR LOCATION		EXPECTED ARITHMETIC MEAN	
	(KILOMETERS)		(MICROGRAMS/CU. METER)	
	MOBIZ	VEBT	802	PARTICULATES
121	412.0	3106.0	6.	2.
122	412.0	3107.0	6.	1.
123	412.0	3108.0	6.	1.
124	412.0	3109.0	6.	1.
125	412.0	3110.0	6.	1.
126	412.0	3111.0	5.	1.
127	413.0	3098.0	9.	2.
128	413.0	3099.0	8.	2.
129	413.0	3100.0	8.	2.
130	413.0	3101.0	7.	2.
131	413.0	3102.0	7.	2.
132	413.0	3103.0	7.	2.
133	413.0	3104.0	7.	2.
134	413.0	3105.0	6.	2.
135	413.0	3106.0	6.	1.
136	413.0	3107.0	6.	1.
137	413.0	3108.0	6.	1.
138	413.0	3109.0	6.	1.
139	413.0	3110.0	5.	1.
140	413.0	3111.0	5.	1.
141	414.0	3098.0	8.	2.
142	414.0	3099.0	8.	2.
143	414.0	3100.0	7.	2.
144	414.0	3101.0	7.	2.
145	414.0	3102.0	7.	2.
146	414.0	3103.0	6.	2.
147	414.0	3104.0	6.	2.
148	414.0	3105.0	6.	1.
149	414.0	3106.0	6.	1.
150	414.0	3107.0	6.	1.
151	414.0	3108.0	6.	1.
152	414.0	3109.0	5.	1.
153	414.0	3110.0	5.	1.
154	414.0	3111.0	5.	1.
155	415.0	3098.0	8.	2.
156	415.0	3099.0	7.	2.
157	415.0	3100.0	7.	2.
158	415.0	3101.0	7.	2.
159	415.0	3102.0	6.	2.
160	415.0	3103.0	6.	2.

ALL POINT SOURCES, EXCEPT LU, 1982

RECEPTOR CONCENTRATION DATA				
RECEPTOR NUMBER	RECEPTOR LOCATION		EXPECTED ARITHMETIC MEAN	
	(KILOMETERS)		(MICROGRAMS/CU. METER)	
	MOB17	VEBT	802	PARTICULATES
161	415.0	3104.0	6.	2.
162	415.0	3105.0	6.	1.
163	415.0	3106.0	6.	1.
164	415.0	3107.0	5.	1.
165	415.0	3108.0	5.	1.
166	415.0	3109.0	5.	1.
167	415.0	3110.0	5.	1.
168	415.0	3111.0	5.	1.

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO₂

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 57	RECEPTOR 57
1	0.09 % 0.0097	0.09 % 0.0098	0.09 % 0.0096	0.09 % 0.0095	0.09 % 0.0098
2	0.25 % 0.0269	0.26 % 0.0272	0.25 % 0.0267	0.25 % 0.0268	0.26 % 0.0274
3	0.07 % 0.0069	0.07 % 0.0070	0.07 % 0.0069	0.06 % 0.0068	0.07 % 0.0070
4	0.22 % 0.0230	0.22 % 0.0232	0.22 % 0.0229	0.22 % 0.0227	0.22 % 0.0232
5	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
6	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
7	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
8	0.81 % 0.0860	0.82 % 0.0864	0.81 % 0.0855	0.81 % 0.0849	0.83 % 0.0867
9	0.11 % 0.0121	0.12 % 0.0124	0.12 % 0.0129	0.15 % 0.0153	0.12 % 0.0121
10	0.05 % 0.0053	0.04 % 0.0044	0.06 % 0.0059	0.06 % 0.0060	0.04 % 0.0039
11	0.10 % 0.0106	0.09 % 0.0091	0.11 % 0.0116	0.11 % 0.0118	0.08 % 0.0083
12	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
13	0.10 % 0.0108	0.10 % 0.0102	0.10 % 0.0109	0.11 % 0.0113	0.09 % 0.0095
14	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
15	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
16	0.27 % 0.0287	0.28 % 0.0293	0.27 % 0.0279	0.26 % 0.0269	0.29 % 0.0297
17	0.74 % 0.0790	0.75 % 0.0793	0.74 % 0.0781	0.73 % 0.0767	0.76 % 0.0790
18	2.15 % 0.2279	2.17 % 0.2288	2.14 % 0.2253	2.12 % 0.2212	2.19 % 0.2280
19	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
20	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
21	0.04 % 0.0044	0.04 % 0.0044	0.04 % 0.0043	0.04 % 0.0043	0.04 % 0.0044

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO2

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 57	RECEPTOR 57
22	0.04 % 0.0004	0.04 % 0.0004	0.04 % 0.0003	0.04 % 0.0003	0.04 % 0.0004
23	0.14 % 0.0148	0.14 % 0.0150	0.14 % 0.0147	0.14 % 0.0145	0.15 % 0.0151
24	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
25	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
26	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
27	0.02 % 0.0023	0.02 % 0.0023	0.02 % 0.0024	0.02 % 0.0024	0.02 % 0.0023
28	0.06 % 0.0066	0.06 % 0.0065	0.06 % 0.0067	0.06 % 0.0068	0.06 % 0.0064
29	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
30	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
31	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
32	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
33	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
34	0.01 % 0.0007	0.01 % 0.0007	0.01 % 0.0007	0.01 % 0.0006	0.01 % 0.0007
35	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
36	0.04 % 0.0038	0.03 % 0.0032	0.04 % 0.0042	0.04 % 0.0046	0.03 % 0.0029
37	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
38	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
39	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
40	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
41	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
42	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO₂

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 1	RECEPTOR 57
43	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
44	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
45	0.09 %	0.10 %	0.09 %	0.09 %	0.10 %
46	0.01 %	0.01 %	0.01 %	0.01 %	0.02 %
47	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
48	0.45 %	0.31 %	0.53 %	0.53 %	0.26 %
49	0.29 %	0.28 %	0.31 %	0.31 %	0.26 %
50	2.37 %	2.50 %	2.29 %	2.20 %	2.66 %
51	0.04 %	0.04 %	0.04 %	0.04 %	0.04 %
52	0.36 %	0.37 %	0.35 %	0.35 %	0.38 %
53	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
54	0.49 %	0.51 %	0.48 %	0.47 %	0.53 %
55	7.67 %	7.92 %	7.36 %	7.16 %	8.01 %
56	7.50 %	7.54 %	7.00 %	6.81 %	7.64 %
57	4.33 %	4.60 %	4.02 %	3.87 %	4.79 %
58	0.57 %	0.59 %	0.54 %	0.53 %	0.59 %
59	0.11 %	0.11 %	0.10 %	0.10 %	0.12 %
60	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
61	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
62	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
63	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %

WRG

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO2

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 1	RECEPTOR 57
64	0.35 % 0.0368	0.37 % 0.0390	0.32 % 0.0337	0.31 % 0.0322	0.39 % 0.0402
65	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
66	0.15 % 0.0155	0.14 % 0.0148	0.15 % 0.0159	0.16 % 0.0163	0.14 % 0.0141
67	0.31 % 0.0330	0.28 % 0.0299	0.34 % 0.0360	0.37 % 0.0392	0.26 % 0.0267
68	0.31 % 0.0332	0.28 % 0.0301	0.34 % 0.0362	0.38 % 0.0394	0.26 % 0.0269
69	0.67 % 0.0708	0.64 % 0.0676	0.70 % 0.0731	0.72 % 0.0754	0.61 % 0.0639
70	1.67 % 0.1771	1.61 % 0.1696	1.74 % 0.1823	1.79 % 0.1875	1.54 % 0.1608
71	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
72	0.12 % 0.0122	0.11 % 0.0119	0.12 % 0.0125	0.12 % 0.0125	0.11 % 0.0110
73	1.29 % 0.1370	1.29 % 0.1363	1.29 % 0.1351	1.24 % 0.1298	1.26 % 0.1310
74	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
75	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
76	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
77	0.17 % 0.0180	0.17 % 0.0175	0.18 % 0.0184	0.18 % 0.0183	0.15 % 0.0161
78	0.07 % 0.0069	0.07 % 0.0070	0.06 % 0.0067	0.06 % 0.0064	0.07 % 0.0069
79	0.74 % 0.0790	0.74 % 0.0783	0.74 % 0.0781	0.73 % 0.0761	0.72 % 0.0753
80	4.83 % 0.5131	4.93 % 0.5200	4.73 % 0.4974	4.55 % 0.4758	4.94 % 0.5138
81	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
82	0.84 % 0.0887	0.87 % 0.0919	0.81 % 0.0850	0.83 % 0.0868	0.91 % 0.0948
83	0.65 % 0.0687	0.68 % 0.0712	0.63 % 0.0659	0.64 % 0.0672	0.71 % 0.0734
84	0.11 % 0.0120	0.12 % 0.0124	0.11 % 0.0115	0.11 % 0.0117	0.12 % 0.0128

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL 902

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 1	RECEPTOR 57
85	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
86	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
87	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
88	0.19 %	0.20 %	0.19 %	0.20 %	0.20 %
89	0.0204	0.0208	0.0199	0.0205	0.0212
90	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
91	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
92	4.39 %	4.41 %	4.36 %	4.24 %	4.38 %
93	0.4662	0.4656	0.4583	0.4429	0.4554
94	6.75 %	6.78 %	6.71 %	6.51 %	6.72 %
95	0.7165	0.7153	0.7047	0.6812	0.6994
96	1.92 %	2.00 %	1.84 %	1.71 %	2.06 %
97	0.2002	0.2114	0.1933	0.1793	0.2145
98	1.80 %	1.88 %	1.73 %	1.61 %	1.93 %
99	0.1916	0.1984	0.1814	0.1682	0.2013
100	0.89 %	0.93 %	0.85 %	0.80 %	0.96 %
101	0.0947	0.0981	0.0897	0.0831	0.0995
102	0.01 %	0.01 %	0.01 %	0.01 %	0.01 %
103	0.0016	0.0016	0.0016	0.0015	0.0015
104	1.24 %	1.28 %	1.22 %	1.17 %	1.30 %
105	0.1320	0.1346	0.1277	0.1221	0.1356
106	1.32 %	1.35 %	1.29 %	1.24 %	1.38 %
107	0.1401	0.1429	0.1357	0.1298	0.1438
108	1.37 %	1.41 %	1.34 %	1.29 %	1.44 %
109	0.1456	0.1485	0.1410	0.1348	0.1494
110	1.20 %	1.24 %	1.16 %	1.10 %	1.28 %
111	0.1274	0.1313	0.1221	0.1153	0.1335
112	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
113	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
114	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
115	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
116	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
117	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
118	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
119	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
120	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %

cf

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL 902

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 1	RECEPTOR 57
106	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
107	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
108	0.15 X	0.16 X	0.15 X	0.15 X	0.16 X
	0.0164	0.0164	0.0162	0.0159	0.0162
109	0.08 X	0.07 X	0.08 X	0.09 X	0.06 X
	0.0080	0.0078	0.0086	0.0094	0.0067
110	1.25 X	1.17 X	1.35 X	1.47 X	1.09 X
	0.1331	0.1236	0.1415	0.1535	0.1132
111	1.25 X	1.17 X	1.35 X	1.47 X	1.09 X
	0.1331	0.1236	0.1418	0.1538	0.1132
112	1.49 X	1.39 X	1.60 X	1.75 X	1.29 X
	0.1584	0.1471	0.1683	0.1826	0.1347
113	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
114	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
115	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
116	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
117	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
118	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
119	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
120	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
121	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
122	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
123	0.34 X	0.33 X	0.35 X	0.36 X	0.34 X
	0.0362	0.0352	0.0369	0.0373	0.0352
124	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
125	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
	0.0	0.0	0.0	0.0	0.0
126	0.03 X	0.03 X	0.03 X	0.03 X	0.03 X
	0.0032	0.0031	0.0033	0.0033	0.0031

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO2

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 1	RECEPTOR 57
127	1.20 X 0.1279	0.93 X 0.0982	1.47 X 0.1503	1.69 X 0.1768	0.91 X 0.0940
128	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0
129	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0
130	0.11 X 0.0114	0.11 X 0.0113	0.11 X 0.0115	0.11 X 0.0117	0.11 X 0.0112
131	0.54 X 0.0574	0.52 X 0.0553	0.56 X 0.0587	0.59 X 0.0616	0.51 X 0.0528
132	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0
133	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0
134	0.17 X 0.0183	0.17 X 0.0176	0.18 X 0.0187	0.19 X 0.0196	0.16 X 0.0168
135	0.03 X 0.0032	0.03 X 0.0031	0.03 X 0.0033	0.03 X 0.0035	0.03 X 0.0030
136	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0	0.0 X 0.0
137	0.25 X 0.0268	0.25 X 0.0265	0.26 X 0.0271	0.26 X 0.0278	0.25 X 0.0262
138	0.47 X 0.0496	0.47 X 0.0491	0.48 X 0.0502	0.49 X 0.0507	0.47 X 0.0485
139	0.89 X 0.0947	0.89 X 0.0936	0.91 X 0.0958	0.93 X 0.0968	0.89 X 0.0926
140	1.35 X 0.1428	1.34 X 0.1410	1.38 X 0.1446	1.40 X 0.1464	1.34 X 0.1392
141	1.77 X 0.1879	1.77 X 0.1863	1.80 X 0.1894	1.83 X 0.1909	1.77 X 0.1846
142	2.22 X 0.2352	2.22 X 0.2337	2.25 X 0.2366	2.28 X 0.2379	2.23 X 0.2320
143	6.50 X 0.6897	6.48 X 0.6832	6.63 X 0.6961	6.72 X 0.7020	6.50 X 0.6766
144	4.16 X 0.4413	4.14 X 0.4367	4.24 X 0.4458	4.31 X 0.4502	4.15 X 0.4321
145	1.07 X 0.1100	1.06 X 0.1120	1.10 X 0.1160	1.13 X 0.1181	1.06 X 0.1101
146	0.55 X 0.0588	0.55 X 0.0577	0.57 X 0.0599	0.58 X 0.0611	0.54 X 0.0566
147	0.71 X 0.0751	0.72 X 0.0756	0.71 X 0.0744	0.70 X 0.0730	0.73 X 0.0760

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO₂

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 1	RECEPTOR 57
148	0.75 % 0.0796	0.76 % 0.0802	0.75 % 0.0788	0.74 % 0.0777	0.77 % 0.0806
149	0.34 % 0.0362	0.35 % 0.0364	0.34 % 0.0359	0.34 % 0.0354	0.35 % 0.0366
150	0.07 % 0.0075	0.07 % 0.0069	0.07 % 0.0073	0.07 % 0.0076	0.06 % 0.0066
151	2.70 % 0.2863	2.50 % 0.2633	2.68 % 0.2815	2.78 % 0.2904	2.42 % 0.2514
152	2.70 % 0.2863	2.50 % 0.2633	2.68 % 0.2815	2.78 % 0.2904	2.42 % 0.2514
153	0.11 % 0.0116	0.10 % 0.0109	0.11 % 0.0117	0.12 % 0.0121	0.10 % 0.0104
154	0.17 % 0.0182	0.16 % 0.0168	0.17 % 0.0182	0.18 % 0.0193	0.16 % 0.0165
155	0.17 % 0.0182	0.16 % 0.0168	0.17 % 0.0182	0.18 % 0.0193	0.16 % 0.0165
156	0.02 % 0.0021	0.02 % 0.0020	0.02 % 0.0021	0.02 % 0.0022	0.02 % 0.0019
157	0.02 % 0.0023	0.02 % 0.0021	0.02 % 0.0022	0.02 % 0.0023	0.02 % 0.0020
158	0.25 % 0.0267	0.25 % 0.0262	0.26 % 0.0273	0.27 % 0.0279	0.25 % 0.0256
159	0.08 % 0.0089	0.08 % 0.0087	0.09 % 0.0091	0.09 % 0.0093	0.08 % 0.0086
160	0.12 % 0.0132	0.12 % 0.0122	0.14 % 0.0142	0.15 % 0.0155	0.11 % 0.0114
161	0.31 % 0.0324	0.28 % 0.0298	0.34 % 0.0355	0.37 % 0.0391	0.26 % 0.0275
162	0.10 % 0.0106	0.09 % 0.0097	0.11 % 0.0116	0.12 % 0.0128	0.09 % 0.0090
163	0.48 % 0.0514	0.45 % 0.0473	0.53 % 0.0562	0.59 % 0.0618	0.42 % 0.0438
164	0.55 % 0.0587	0.51 % 0.0541	0.61 % 0.0641	0.67 % 0.0704	0.48 % 0.0500
165	1.46 % 0.1555	1.36 % 0.1432	1.62 % 0.1700	1.79 % 0.1867	1.27 % 0.1323
166	0.19 % 0.0205	0.18 % 0.0189	0.21 % 0.0223	0.23 % 0.0245	0.17 % 0.0176
167	0.04 % 0.0040	0.04 % 0.0038	0.04 % 0.0041	0.04 % 0.0042	0.04 % 0.0037
168	0.04 % 0.0040	0.04 % 0.0038	0.04 % 0.0041	0.04 % 0.0042	0.04 % 0.0037

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL SO₂

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 29	RECEPTOR 43	RECEPTOR 15	RECEPTOR 1	RECEPTOR 57
169	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
	0.0	0.0	0.0	0.0	0.0
BACK-	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
GROUND	0.	0.	0.	0.	0.
TOTAL	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
	10.6182	10.5486	10.5090	10.4577	10.4103

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 1	RECEPTOR 15	RECEPTOR 29	RECEPTOR 43	RECEPTOR 2
1	0.02 X 0.0005	0.02 X 0.0005	0.02 X 0.0005	0.02 X 0.0005	0.02 X 0.0004
2	0.08 X 0.0021	0.08 X 0.0021	0.08 X 0.0021	0.09 X 0.0021	0.08 X 0.0020
3	0.02 X 0.0006	0.02 X 0.0006	0.02 X 0.0006	0.02 X 0.0006	0.02 X 0.0005
4	0.52 X 0.0137	0.54 X 0.0138	0.54 X 0.0139	0.56 X 0.0140	0.51 X 0.0127
5	0.03 X 0.0008	0.03 X 0.0008	0.03 X 0.0008	0.03 X 0.0008	0.03 X 0.0008
6	0.03 X 0.0007	0.03 X 0.0007	0.03 X 0.0007	0.03 X 0.0007	0.03 X 0.0006
7	0.10 X 0.0025	0.10 X 0.0026	0.10 X 0.0026	0.10 X 0.0026	0.09 X 0.0023
8	0.24 X 0.0063	0.25 X 0.0064	0.25 X 0.0064	0.26 X 0.0065	0.24 X 0.0059
9	0.08 X 0.0022	0.07 X 0.0019	0.07 X 0.0018	0.07 X 0.0018	0.10 X 0.0025
10	0.76 X 0.0199	0.75 X 0.0193	0.68 X 0.0175	0.59 X 0.0146	0.94 X 0.0235
11	1.10 X 0.0290	1.10 X 0.0283	1.02 X 0.0260	0.89 X 0.0223	1.36 X 0.0338
12	0.42 X 0.0110	0.43 X 0.0112	0.45 X 0.0114	0.51 X 0.0126	0.49 X 0.0121
13	1.56 X 0.0410	1.54 X 0.0397	1.53 X 0.0391	1.49 X 0.0370	1.55 X 0.0386
14	2.21 X 0.0581	2.45 X 0.0632	2.68 X 0.0686	2.95 X 0.0735	2.11 X 0.0525
15	2.21 X 0.0581	2.45 X 0.0632	2.68 X 0.0686	2.95 X 0.0735	2.11 X 0.0525
16	0.40 X 0.0105	0.42 X 0.0109	0.44 X 0.0112	0.46 X 0.0115	0.41 X 0.0101
17	1.31 X 0.0343	1.35 X 0.0350	1.38 X 0.0353	1.42 X 0.0355	1.33 X 0.0330
18	1.94 X 0.0509	2.01 X 0.0518	2.05 X 0.0524	2.11 X 0.0526	1.96 X 0.0489
19	0.17 X 0.0044	0.17 X 0.0045	0.18 X 0.0046	0.18 X 0.0046	0.17 X 0.0043
20	0.08 X 0.0021	0.08 X 0.0021	0.08 X 0.0021	0.09 X 0.0021	0.08 X 0.0020
21	0.36 X 0.0095	0.37 X 0.0096	0.38 X 0.0097	0.39 X 0.0098	0.40 X 0.0098

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR	RECEPTOR 15	RECEPTOR 29	RECEPTOR 43	RECEPTOR 2
22	0.36 % 0.0095	0.37 % 0.0096	0.38 % 0.0097	0.39 % 0.0098	0.40 % 0.0098
23	0.29 % 0.0075	0.30 % 0.0076	0.30 % 0.0077	0.31 % 0.0078	0.31 % 0.0078
24	0.70 % 0.0185	0.57 % 0.0148	0.46 % 0.0119	0.38 % 0.0095	0.72 % 0.0179
25	0.70 % 0.0185	0.57 % 0.0148	0.46 % 0.0119	0.38 % 0.0095	0.72 % 0.0179
26	0.23 % 0.0060	0.23 % 0.0060	0.23 % 0.0060	0.24 % 0.0059	0.23 % 0.0058
27	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002	0.01 % 0.0002
28	0.12 % 0.0031	0.12 % 0.0030	0.12 % 0.0030	0.12 % 0.0029	0.12 % 0.0030
29	0.10 % 0.0027	0.11 % 0.0028	0.12 % 0.0030	0.13 % 0.0031	0.10 % 0.0026
30	0.91 % 0.0240	0.97 % 0.0250	1.03 % 0.0262	1.10 % 0.0275	0.92 % 0.0230
31	0.54 % 0.0141	0.57 % 0.0146	0.59 % 0.0152	0.63 % 0.0157	0.60 % 0.0150
32	1.36 % 0.0357	1.42 % 0.0367	1.47 % 0.0375	1.53 % 0.0381	1.58 % 0.0393
33	0.03 % 0.0009	0.04 % 0.0009	0.04 % 0.0010	0.04 % 0.0010	0.04 % 0.0010
34	1.11 % 0.0291	1.16 % 0.0300	1.23 % 0.0316	1.31 % 0.0327	1.29 % 0.0321
35	0.17 % 0.0043	0.18 % 0.0046	0.17 % 0.0045	0.18 % 0.0046	0.17 % 0.0042
36	1.42 % 0.0373	1.33 % 0.0345	1.20 % 0.0306	1.04 % 0.0259	1.34 % 0.0335
37	0.98 % 0.0257	0.92 % 0.0238	0.83 % 0.0211	0.72 % 0.0179	0.93 % 0.0231
38	0.03 % 0.0009	0.03 % 0.0008	0.03 % 0.0007	0.02 % 0.0005	0.03 % 0.0008
39	1.46 % 0.0383	1.28 % 0.0332	1.07 % 0.0274	0.84 % 0.0210	1.41 % 0.0350
40	0.66 % 0.0174	0.60 % 0.0154	0.51 % 0.0130	0.41 % 0.0103	0.64 % 0.0158
41	2.25 % 0.0591	1.98 % 0.0513	1.66 % 0.0423	1.30 % 0.0325	2.17 % 0.0540
42	0.63 % 0.0165	0.57 % 0.0147	0.50 % 0.0128	0.44 % 0.0109	0.65 % 0.0162

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 1	RECEPTOR 15	RECEPTOR 29	RECEPTOR 43	RECEPTOR 2
43	0.16 % 0.0042	0.15 % 0.0039	0.14 % 0.0036	0.13 % 0.0032	0.16 % 0.0040
44	0.12 % 0.0031	0.11 % 0.0027	0.09 % 0.0024	0.08 % 0.0020	0.12 % 0.0030
45	0.03 % 0.0008	0.03 % 0.0007	0.03 % 0.0008	0.03 % 0.0008	0.03 % 0.0007
46	0.02 % 0.0004	0.02 % 0.0004	0.02 % 0.0004	0.02 % 0.0004	0.02 % 0.0004
47	0.54 % 0.0142	0.56 % 0.0145	0.58 % 0.0147	0.65 % 0.0162	0.63 % 0.0158
48	0.68 % 0.0177	0.68 % 0.0177	0.59 % 0.0152	0.42 % 0.0104	0.58 % 0.0144
49	0.04 % 0.0012	0.05 % 0.0012	0.04 % 0.0011	0.04 % 0.0011	0.05 % 0.0013
50	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
51	0.38 % 0.0099	0.38 % 0.0099	0.39 % 0.0099	0.40 % 0.0099	0.41 % 0.0102
52	0.24 % 0.0063	0.25 % 0.0065	0.26 % 0.0066	0.27 % 0.0068	0.25 % 0.0061
53	0.18 % 0.0047	0.19 % 0.0048	0.19 % 0.0049	0.20 % 0.0049	0.19 % 0.0046
54	0.22 % 0.0058	0.23 % 0.0059	0.24 % 0.0062	0.26 % 0.0064	0.22 % 0.0055
55	1.64 % 0.0432	1.73 % 0.0446	1.84 % 0.0469	1.93 % 0.0482	1.66 % 0.0414
56	1.53 % 0.0401	1.60 % 0.0414	1.71 % 0.0436	1.80 % 0.0448	1.54 % 0.0384
57	0.91 % 0.0238	0.96 % 0.0248	1.06 % 0.0270	1.15 % 0.0285	0.91 % 0.0225
58	0.23 % 0.0062	0.25 % 0.0064	0.26 % 0.0067	0.28 % 0.0069	0.24 % 0.0059
59	0.77 % 0.0203	0.82 % 0.0212	0.90 % 0.0231	0.98 % 0.0245	0.77 % 0.0192
60	0.24 % 0.0062	0.25 % 0.0064	0.26 % 0.0067	0.28 % 0.0069	0.24 % 0.0059
61	5.04 % 0.1323	5.26 % 0.1358	5.60 % 0.1430	5.89 % 0.1469	5.07 % 0.1262
62	5.00 % 0.1312	5.21 % 0.1347	5.55 % 0.1418	5.84 % 0.1456	5.04 % 0.1253
63	0.64 % 0.0168	0.67 % 0.0173	0.71 % 0.0182	0.75 % 0.0187	0.65 % 0.0161

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ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR	RECEPTOR	RECEPTOR	RECEPTOR	RECEPTOR
	1	15	29	43	2
64	1.13 % 0.0297	1.20 % 0.0311	1.33 % 0.0340	1.45 % 0.0360	1.13 % 0.0280
65	1.33 % 0.0348	1.39 % 0.0358	1.48 % 0.0377	1.55 % 0.0388	1.34 % 0.0333
66	0.02 % 0.0006	0.02 % 0.0006	0.02 % 0.0006	0.02 % 0.0006	0.02 % 0.0006
67	0.39 % 0.0104	0.37 % 0.0095	0.34 % 0.0087	0.32 % 0.0079	0.38 % 0.0095
68	0.40 % 0.0104	0.37 % 0.0096	0.34 % 0.0088	0.32 % 0.0080	0.39 % 0.0096
69	1.26 % 0.0331	1.24 % 0.0321	1.22 % 0.0311	1.19 % 0.0297	1.23 % 0.0306
70	1.16 % 0.0305	1.15 % 0.0297	1.13 % 0.0288	1.11 % 0.0276	1.14 % 0.0282
71	1.03 % 0.0271	1.02 % 0.0264	1.01 % 0.0257	0.99 % 0.0247	1.01 % 0.0251
72	0.03 % 0.0009	0.03 % 0.0009	0.03 % 0.0009	0.03 % 0.0008	0.03 % 0.0008
73	0.03 % 0.0007	0.03 % 0.0007	0.03 % 0.0007	0.03 % 0.0007	0.03 % 0.0006
74	1.68 % 0.0441	1.71 % 0.0442	1.68 % 0.0430	1.68 % 0.0418	1.63 % 0.0406
75	0.16 % 0.0042	0.16 % 0.0042	0.16 % 0.0041	0.16 % 0.0039	0.15 % 0.0038
76	2.51 % 0.0660	2.56 % 0.0661	2.52 % 0.0643	2.51 % 0.0625	2.44 % 0.0608
77	1.69 % 0.0444	1.73 % 0.0446	1.70 % 0.0435	1.70 % 0.0424	1.64 % 0.0408
78	0.03 % 0.0008	0.03 % 0.0008	0.03 % 0.0008	0.03 % 0.0009	0.03 % 0.0007
79	0.93 % 0.0245	0.97 % 0.0251	0.99 % 0.0254	1.01 % 0.0252	0.92 % 0.0228
80	0.54 % 0.0141	0.57 % 0.0147	0.59 % 0.0152	0.62 % 0.0154	0.53 % 0.0133
81	0.66 % 0.0173	0.69 % 0.0178	0.70 % 0.0180	0.72 % 0.0178	0.65 % 0.0162
82	0.09 % 0.0023	0.09 % 0.0022	0.09 % 0.0023	0.10 % 0.0024	0.09 % 0.0021
83	0.09 % 0.0023	0.09 % 0.0022	0.09 % 0.0023	0.10 % 0.0024	0.08 % 0.0021
84	0.19 % 0.0050	0.19 % 0.0049	0.20 % 0.0051	0.21 % 0.0053	0.19 % 0.0047

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR	RECEPTOR	RECEPTOR	RECEPTOR	RECEPTOR
	1	15	29	43	2
85	0.52 % 0.0137	0.51 % 0.0133	0.53 % 0.0136	0.56 % 0.0139	0.52 % 0.0129
86	0.26 % 0.0067	0.25 % 0.0065	0.26 % 0.0067	0.27 % 0.0068	0.25 % 0.0063
87	0.19 % 0.0051	0.19 % 0.0050	0.20 % 0.0051	0.21 % 0.0052	0.19 % 0.0048
88	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
89	2.46 % 0.0647	2.43 % 0.0628	2.52 % 0.0643	2.63 % 0.0656	2.44 % 0.0608
90	1.16 % 0.0305	1.15 % 0.0297	1.19 % 0.0304	1.24 % 0.0310	1.15 % 0.0287
91	0.22 % 0.0057	0.21 % 0.0055	0.22 % 0.0057	0.23 % 0.0058	0.22 % 0.0054
92	0.42 % 0.0111	0.45 % 0.0115	0.46 % 0.0117	0.47 % 0.0117	0.42 % 0.0105
93	0.13 % 0.0034	0.14 % 0.0035	0.14 % 0.0036	0.14 % 0.0036	0.13 % 0.0032
94	0.03 % 0.0009	0.04 % 0.0010	0.04 % 0.0010	0.04 % 0.0011	0.03 % 0.0009
95	0.03 % 0.0008	0.03 % 0.0009	0.04 % 0.0009	0.04 % 0.0009	0.03 % 0.0008
96	0.03 % 0.0008	0.03 % 0.0009	0.04 % 0.0009	0.04 % 0.0009	0.03 % 0.0008
97	0.03 % 0.0007	0.03 % 0.0007	0.03 % 0.0007	0.03 % 0.0007	0.03 % 0.0006
98	0.16 % 0.0043	0.18 % 0.0045	0.18 % 0.0047	0.19 % 0.0048	0.16 % 0.0041
99	0.16 % 0.0041	0.17 % 0.0043	0.17 % 0.0045	0.18 % 0.0046	0.16 % 0.0039
100	0.20 % 0.0052	0.21 % 0.0055	0.22 % 0.0056	0.23 % 0.0057	0.20 % 0.0049
101	0.14 % 0.0037	0.15 % 0.0039	0.16 % 0.0041	0.17 % 0.0042	0.14 % 0.0035
102	0.16 % 0.0041	0.17 % 0.0043	0.17 % 0.0045	0.18 % 0.0046	0.16 % 0.0039
103	0.64 % 0.0168	0.67 % 0.0172	0.68 % 0.0174	0.70 % 0.0174	0.64 % 0.0159
104	0.81 % 0.0210	0.85 % 0.0219	0.87 % 0.0222	0.89 % 0.0222	0.82 % 0.0204
105	0.37 % 0.0097	0.38 % 0.0099	0.39 % 0.0100	0.40 % 0.0100	0.37 % 0.0092

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR	RECEPTOR	RECEPTOR	RECEPTOR	RECEPTOR
	1	15	29	#3	2
106	0.58 X	0.60 X	0.62 X	0.63 X	0.58 X
	0.0152	0.0156	0.0158	0.0158	0.0144
FRM- 107	5.79 X	6.03 X	6.17 X	6.32 X	5.82 X
	0.1521	0.1557	0.1576	0.1576	0.1447
108	0.23 X	0.24 X	0.24 X	0.25 X	0.23 X
	0.0060	0.0062	0.0062	0.0062	0.0057
109	0.02 X	0.02 X	0.02 X	0.02 X	0.02 X
	0.0006	0.0005	0.0005	0.0005	0.0005
110	0.75 X	0.70 X	0.67 X	0.63 X	0.74 X
	0.0196	0.0181	0.0170	0.0158	0.0185
111	0.75 X	0.70 X	0.67 X	0.63 X	0.74 X
	0.0196	0.0181	0.0170	0.0158	0.0185
112	1.06 X	1.00 X	0.95 X	0.90 X	1.06 X
	0.0279	0.0257	0.0242	0.0225	0.0263
113	0.16 X	0.15 X	0.14 X	0.13 X	0.16 X
	0.0042	0.0039	0.0036	0.0033	0.0040
114	0.40 X	0.37 X	0.35 X	0.33 X	0.40 X
	0.0105	0.0096	0.0090	0.0082	0.0099
115	0.84 X	0.78 X	0.74 X	0.71 X	0.83 X
	0.0219	0.0202	0.0190	0.0177	0.0207
116	0.02 X	0.02 X	0.02 X	0.02 X	0.02 X
	0.0006	0.0005	0.0005	0.0004	0.0005
117	0.64 X	0.59 X	0.56 X	0.53 X	0.64 X
	0.0167	0.0153	0.0143	0.0131	0.0158
118	2.73 X	2.54 X	2.39 X	2.25 X	2.72 X
	0.0716	0.0656	0.0611	0.0562	0.0676
119	1.31 X	1.22 X	1.15 X	1.09 X	1.31 X
	0.0345	0.0316	0.0294	0.0271	0.0326
120	0.26 X	0.24 X	0.23 X	0.22 X	0.26 X
	0.0068	0.0062	0.0059	0.0054	0.0064
121	0.08 X	0.07 X	0.07 X	0.07 X	0.08 X
	0.0021	0.0019	0.0018	0.0017	0.0020
122	0.12 X	0.11 X	0.10 X	0.10 X	0.12 X
	0.0031	0.0028	0.0026	0.0024	0.0029
123	0.09 X	0.09 X	0.09 X	0.09 X	0.09 X
	0.0025	0.0024	0.0024	0.0023	0.0024
124	1.15 X	1.15 X	1.15 X	1.14 X	1.16 X
	0.0302	0.0298	0.0293	0.0285	0.0289
125	0.77 X	0.77 X	0.76 X	0.76 X	0.77 X
	0.0201	0.0199	0.0195	0.0191	0.0193
126	0.02 X	0.02 X	0.02 X	0.02 X	0.02 X
	0.0004	0.0004	0.0004	0.0004	0.0004

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 1	RECEPTOR 15	RECEPTOR 29	RECEPTOR 43	RECEPTOR 2
127	1.10 % 0.0289	0.98 % 0.0252	0.82 % 0.0209	0.64 % 0.0160	1.06 % 0.0263
128	0.93 % 0.0243	0.80 % 0.0208	0.66 % 0.0168	0.50 % 0.0128	0.89 % 0.0222
129	0.32 % 0.0083	0.27 % 0.0071	0.22 % 0.0057	0.17 % 0.0042	0.30 % 0.0076
130	0.02 % 0.0006	0.02 % 0.0006	0.02 % 0.0006	0.03 % 0.0006	0.03 % 0.0006
131	0.13 % 0.0034	0.13 % 0.0033	0.12 % 0.0032	0.12 % 0.0031	0.13 % 0.0032
132	0.17 % 0.0045	0.17 % 0.0043	0.17 % 0.0042	0.16 % 0.0041	0.17 % 0.0043
133	0.86 % 0.0226	0.84 % 0.0217	0.83 % 0.0213	0.83 % 0.0207	0.87 % 0.0216
134	0.79 % 0.0209	0.77 % 0.0199	0.76 % 0.0194	0.75 % 0.0187	0.79 % 0.0197
135	0.01 % 0.0004	0.01 % 0.0004	0.01 % 0.0004	0.01 % 0.0004	0.01 % 0.0004
136	3.27 % 0.0860	3.23 % 0.0835	3.22 % 0.0823	3.09 % 0.0771	3.26 % 0.0810
137	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
138	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
139	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
140	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
141	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
142	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
143	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
144	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
145	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
146	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0
147	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0	0.0 % 0.0

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR 1	RECEPTOR 15	RECEPTOR 29	RECEPTOR 43	RECEPTOR 2
148	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
149	0.0 X	0.0 X	0.0 X	0.0 X	0.0 X
150	0.19 X	0.19 X	0.19 X	0.18 X	0.21 X
151	0.0050	0.0048	0.0049	0.0045	0.0052
152	0.01 X	0.01 X	0.01 X	0.01 X	0.01 X
153	0.04 X	0.04 X	0.04 X	0.03 X	0.04 X
154	0.09 X	0.09 X	0.09 X	0.08 X	0.10 X
155	0.09 X	0.09 X	0.09 X	0.08 X	0.10 X
156	0.00 X	0.00 X	0.00 X	0.00 X	0.00 X
157	0.00 X	0.00 X	0.00 X	0.00 X	0.00 X
158	0.11 X	0.11 X	0.10 X	0.10 X	0.11 X
159	0.08 X	0.08 X	0.08 X	0.08 X	0.08 X
160	0.05 X	0.04 X	0.04 X	0.04 X	0.05 X
161	1.00 X	0.93 X	0.86 X	0.81 X	0.88 X
162	0.02 X	0.02 X	0.02 X	0.02 X	0.02 X
163	1.15 X	1.06 X	0.98 X	0.93 X	1.01 X
164	0.98 X	0.91 X	0.84 X	0.79 X	0.86 X
165	0.76 X	0.70 X	0.65 X	0.61 X	0.63 X
166	0.05 X	0.05 X	0.05 X	0.04 X	0.05 X
167	0.16 X	0.15 X	0.15 X	0.15 X	0.16 X
168	0.16 X	0.15 X	0.15 X	0.15 X	0.16 X

ALL POINT SOURCES, EXCEPT LU, 1982

SOURCE CONTRIBUTIONS TO FIVE MAXIMUM RECEPTORS

ANNUAL PARTICULATES

MICROGRAMS PER CUBIC METER

SOURCE	RECEPTOR	RECEPTOR	RECEPTOR	RECEPTOR	RECEPTOR
	1	15	29	43	2
169	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
	0.0	0.0	0.0	0.0	0.0
BACK-	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
GROUND	0.	0.	0.	0.	0.
TOTAL	100.1 %	100.1 %	100.1 %	100.1 %	100.1 %
	2.6279	2.5853	2.5573	2.4947	2.4895

PLANT NAME: CITY OF LAKELAND
 IMPACT OF LARSEN UNITS 4-7, 1982
 5 YEAR MET DATA FROM TPA 71-75

POLLUTANT: 802

EMISSION UNITS: GM/SEC

AIR QUALITY UNITS: GM/M**3

MET FILE REQUESTED
 STN NO. YR STN NO. YR
 SURFACE 12842 71 12842 71
 UPPER AIR 12842 71 12842 71
 PLANT LOCATION: RURAL
 NO TAPE OUTPUT
 MET DATA WILL NOT BE PRINTED

DAY--	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

* * * * * NOTE * * * * *

ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED ONLY ON THOSE DAYS
 MARKED BY "1" IN THE ABOVE TABLE

RING DISTANCES(KM)= 0,50 1,00 1,50 2,00 2,50

STACK # 1--LARSEN UNIT 4
STACK # 2--LARSEN UNIT 5
STACK # 3--LARSEN UNIT 6
STACK # 4--LARSEN UNIT 7

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG,K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	61,6000	50,30	3,05	3,90	450,00	28,49
2	ALL	77,0000	50,30	3,05	4,90	450,00	35,80
3	ALL	78,9700	50,30	3,05	5,00	450,00	36,53
4	ALL	144,1000	50,30	3,05	8,30	411,00	60,64

PLANT NAME: CITY OF LAKELAND
 IMPACT OF MCINTOSH UNITS 1-3, 1982
 5 YEAR MET DATA FROM TPA 71-75

POLLUTANT: 902

EMISSION UNITS: GM/SEC

AIR QUALITY UNITS: GM/M**3

MET FILE REQUESTED
 STN NO. YR STN NO. YR
 SURFACE 12842 71 12842 71
 UPPER AIR 12842 71 12842 71
 PLANT LOCATION: RURAL
 NO TAPE OUTPUT
 MET DATA WILL NOT BE PRINTED

DAY--	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

* * * * * NOTE * * * * *

ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED ONLY ON THOSE DAYS MARKED BY "1" IN THE ABOVE TABLE

RING DISTANCES(KM)= 0.50 1.00 1.50 2.00 2.50

STACK # 1--MCINTOSH UNIT 1
STACK # 2--MCINTOSH UNIT 2
STACK # 3--MCINTOSH UNIT 3

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	247,9000	47,70	2,74	17,20	411,00	101,42
2	ALL	85,3100	47,70	3,15	13,40	389,00	104,43
3	ALL	489,1001	76,20	4,88	24,63	350,00	460,67

PLANT NAME: CITY OF LAKELAND POLLUTANT: 802 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3
 IMPACT OF LARSEN UNITS 4-7, BASELINE, 1974
 5 YEAR MET DATA FROM TPA 71-75

MET FILE REQUESTED
 STN NO. YR STN NO. YR
 SURFACE 12842 71 12842 71
 UPPER AIR 12842 71 12842 71
 PLANT LOCATION: RURAL
 NO TAPE OUTPUT
 MET DATA WILL NOT BE PRINTED

DAY--	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

* * * * * NOTE * * * * *

ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED ONLY ON THOSE DAYS
 MARKED BY "1" IN THE ABOVE TABLE.

RING DISTANCES(KM)= 0.50 1.00 1.50 2.00 2.50

STACK # 1--LARSEN UNIT 4
STACK # 2--LARSEN UNIT 5
STACK # 3--LARSEN UNIT 6
STACK # 4--LARSEN UNIT 7

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG.K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	59,8900	50,30	3.05	3,90	450,00	28,49
2	ALL	71,8600	50,30	3.05	4,90	450,00	35,80
3	ALL	76,7800	50,30	3.05	5,00	450,00	36,53
4	ALL	140,1000	50,30	3.05	8,30	411,00	60,64

PLANT NAME: CITY OF LAKELAND POLLUTANT: SO2 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3
 INCREMENTAL IMPACT OF MCINTOSH UNIT 3 ON 1,2 # COAL ONLY, 1982
 5 YEAR MET DATA FROM TPA 71-75

MET FILE REQUESTED
 STN NO, YR STN NO, YR
 SURFACE 12842 71 12842 71
 UPPER AIR 12842 71 12842 71
 PLANT LOCATION: RURAL
 NO TAPE OUTPUT
 MET DATA WILL NOT BE PRINTED

DAY--	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

* * * * * NOTE * * * * *
 ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED ONLY ON THOSE DAYS
 MARKED BY "1" IN THE ABOVE TABLE

RING DISTANCES(KM)= 1.00 2.00 3.00 4.00 5.00

STACK # 1--MCINTOSH UNIT 3

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG,K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	489.1001	76.20	4.88	24.63	350.00	460.67

PLANT NAME: CITY OF LAKELAND POLLUTANT: 802 EMISSION UNITS: GM/SEC AIR QUALITY UNITS: GM/M**3
IMPACT OF MCINTOSH UNITS 1 & 2, BASELINE, 1974
5 YEAR NET DATA FROM TPA 71-75

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MET FILE REQUESTED
STN NO. YR STN NO. YR
SURFACE 12842 71 12842 71
UPPER AIR 12842 71 12842 71
PLANT LOCATION: RURAL
NO TAPE OUTPUT
MET DATA WILL NOT BE PRINTED

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[illegible]

340

160°

***** NOTE *****

ALL TABLES, INCLUDING SOURCE CONTRIBUTION, THAT CONTAIN "ANNUAL" IN THE HEADING ARE BASED ONLY ON THOSE DAYS MARKED BY "1" IN THE ABOVE TABLE

RING DISTANCES(KM)= 0.50 1.00 1.50 2.00 2.50

STACK # 1--MCINTOSH UNIT 1
STACK # 2--MCINTOSH UNIT 2

STACK	MONTH	EMISSION RATE (GMS/SEC)	HEIGHT (METERS)	DIAMETER (METERS)	EXIT VELOCITY (M/SEC)	TEMP (DEG,K)	VOLUMETRIC FLOW (M**3/SEC)
1	ALL	236.8600	47.70	2.74	17.20	411.00	101.42
2	ALL	85.3100	47.70	3.15	13.40	389.00	104.43

APPENDIX C

CITY OF LAKELAND AIR QUALITY DATA

LAKELAND UTILITIES

24 HOUR SC2 DATA SUMMARY

DATE SAMPLED	RUN NUMBER	TIME START	AMBIENT TEMP	STATION NUMBER	MICROGRAMS/M	3 P.P.B.
07/18/77	1	1	80	1	4.04	
				2	3.48	
07/24/77	1	1	87	1	3.98	
				2	3.97	
07/30/77	1	1	86	1	22.23	
				2	20.25	
08/05/77	1	1	85	1	4.49	
				2	18.55	
08/11/77	1	1	81	1	4.12	
				2		
08/17/77	1	1	80	1	4.11	
				2		
08/23/77	1	1	77	1		
				2		
08/29/77	1	1	77	1		
				2		
09/04/77	1	1	77	1		
				2		
09/10/77	1	1	81	1		
				2	4.42	
09/16/77	1	1	79	1		
				2	5.04	
09/22/77	1	1	77	1		
				2		
09/28/77	1	1	78	1		
				2	4.61	
10/04/77	1	1	70	1		
				2	1.54	
10/10/77	1	1	78	1		
				2	5.91	
10/16/77	1	1	64	1		
				2	1.95	
10/22/77	1	1	69	1		
				2	1.91	
10/28/77	1	1	77	1		
				2		

LAKELAND UTILITIES

24 HOUR TSP DATA SUMMARY

DATE SAMPLED	RUN NUMBER	TIME START	AMBIENT TEMP	STATION NUMBER	MICROGRAMS/M ³	P.P.B.
07/18/77	1	1	80	1	24	
				2		
07/24/77	1	1	87	1	27	
				2	24	
07/30/77	1	1	86	1	50	
				2	46	
08/05/77	1	1	85	1	21	
				2		
08/11/77	1	1	81	1	24	
				2		
08/17/77	1	1	80	1	35	
				2		
08/23/77	1	1	77	1	42	
				2		
08/29/77	1	1	78	1	34	
				2		
09/04/77	1	1	79	1	22	
				2		
09/10/77	1	1	81	1	57	
				2	33	
09/16/77	1	1	79	1	31	
				2	29	
09/22/77	1	1	77	1		
				2		
09/28/77	1	1	78	1	33	
				2	26	
10/04/77	1	1	70	1	40	
				2	26	
10/10/77	1	1	78	1	108	
				2	25	
10/16/77	1	1	64	1	48	
				2	40	
10/22/77	1	1	69	1	25	
				2	22	
10/28/77	1	1	75	1	43	
				2	34	

LAKELAND UTILITIES

24 HOUR TSP DATA SUMMARY

DATE SAMPLED	RUN NUMBER	TIME START	AMBIENT TEMP	STATION NUMBER	MICROGRAMS/M ³
11/ 3/77	1	0001	71	1	29
				2	23
11/ 9/77	1	0001	73	1	13
				2	33
11/15/77	1	0001	64	1	41
				2	26

LAKELAND UTILITIES

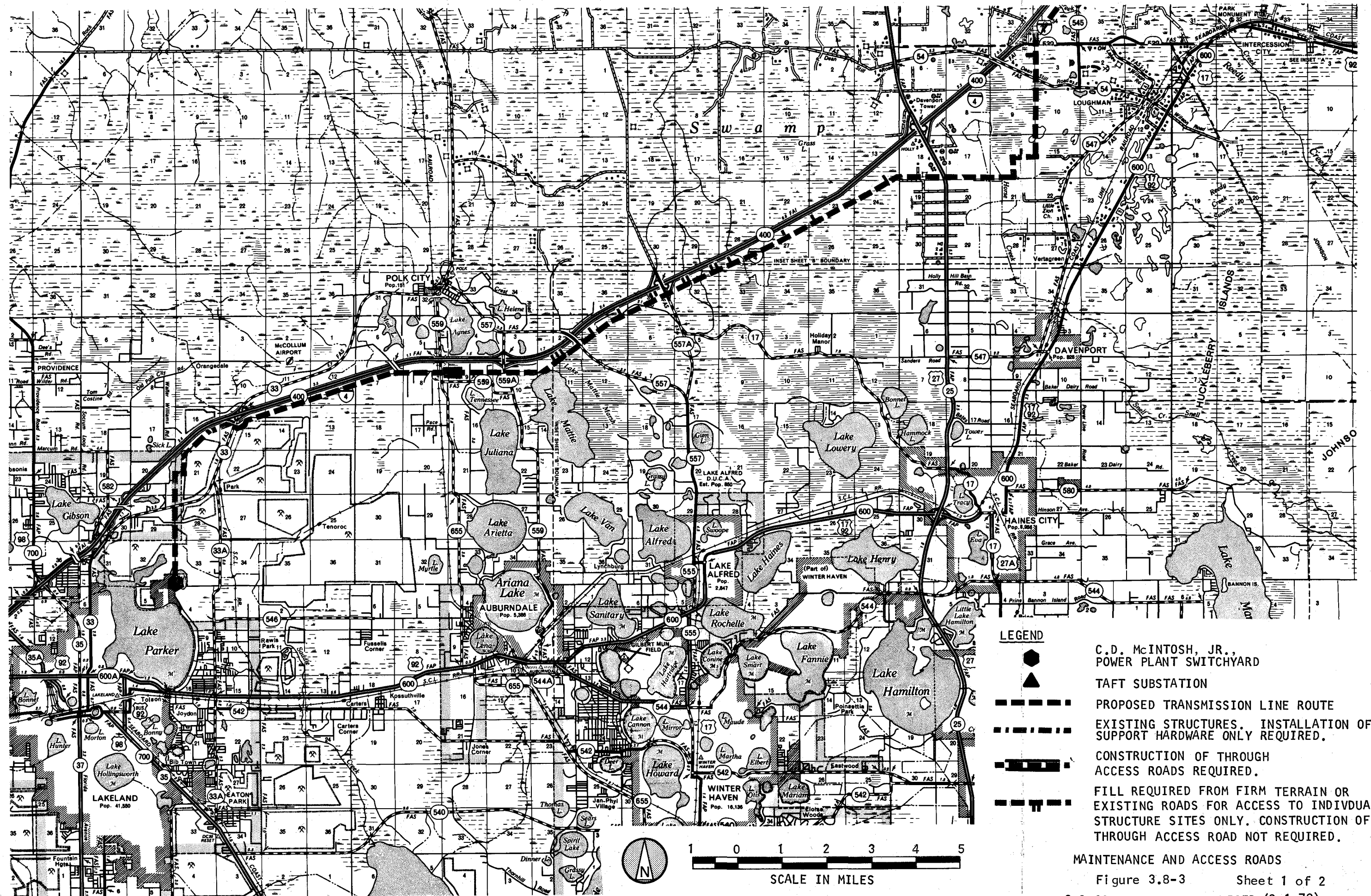
24 HOUR

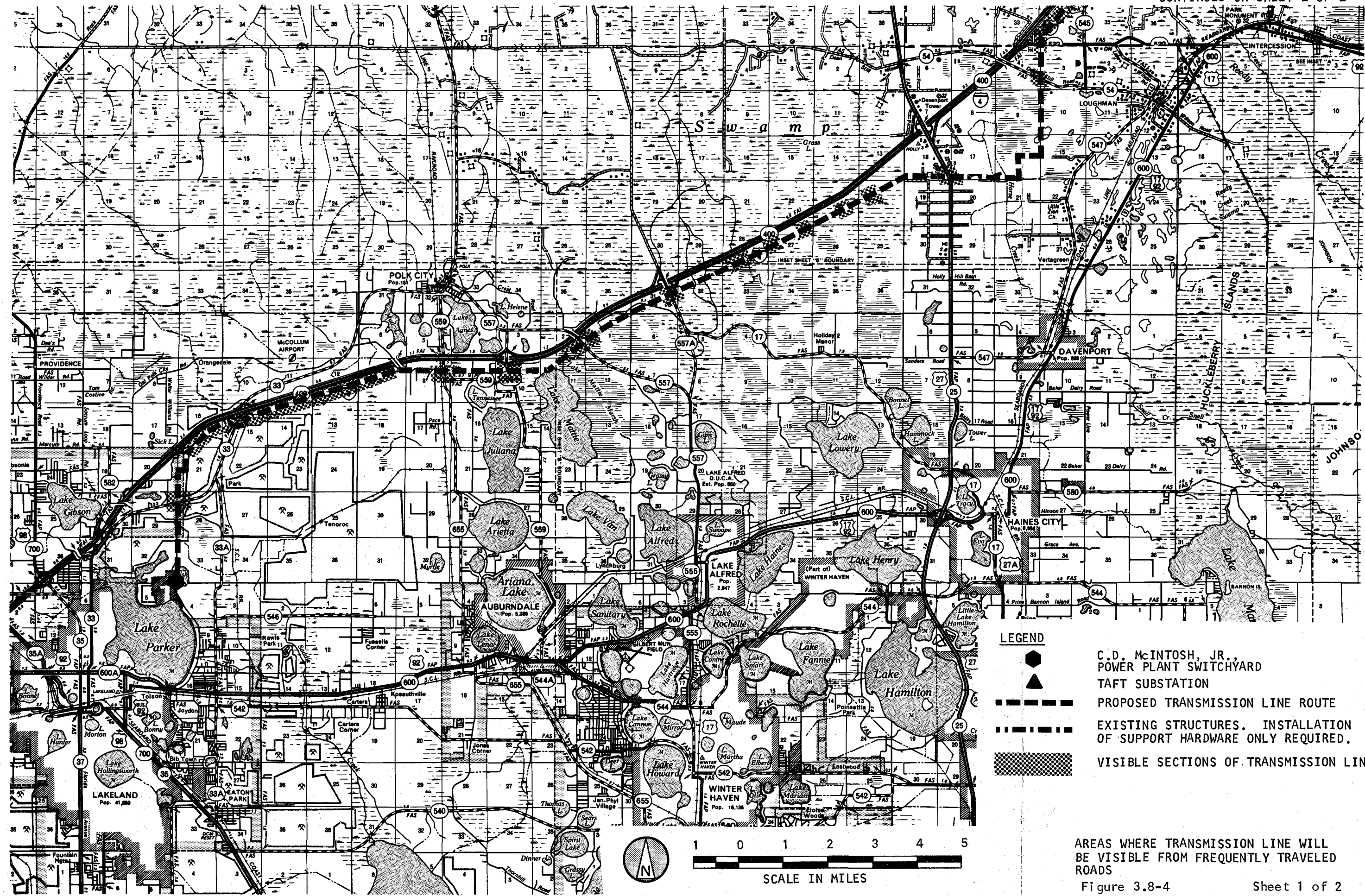
SO2

DATA SUMMARY

DATE SAMPLED	RUN NUMBER	TIME START	AMBIENT TEMP	STATION NUMBER	MICROGRAMS/M ³	P.P.B.
11/ 3/77	1	0001	71	1		
				2	6	2,17
11/ 9/77	1	0001	73	1		
				2	5	1,80
11/15/77	1	0001	64	1		
				2	6	2,31
11/21/77	1	0001	71	1		
				2		
11/27/77	1	0001	59	1		
				2	4	1,40
12/ 3/77	1	0001	65	1		
				2	5	1,88
12/ 9/77	1	0001	64	1		
				2	4	1,42

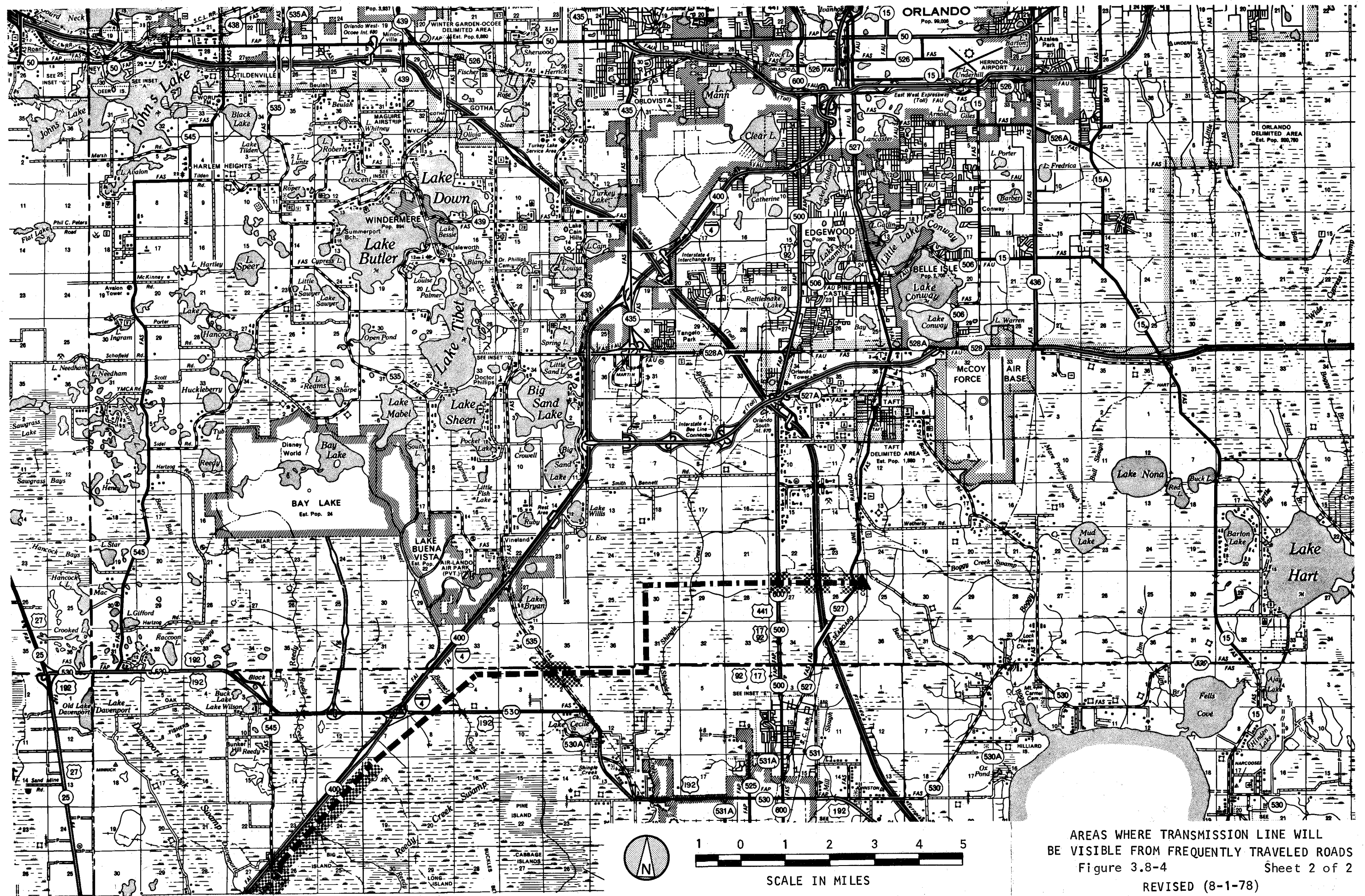
TRANSMISSION LINE CORRIDOR SEGMENTS
Figure 3.8-2 Sheet 1 of 2
3.8-37
REVISED (8-1-78)



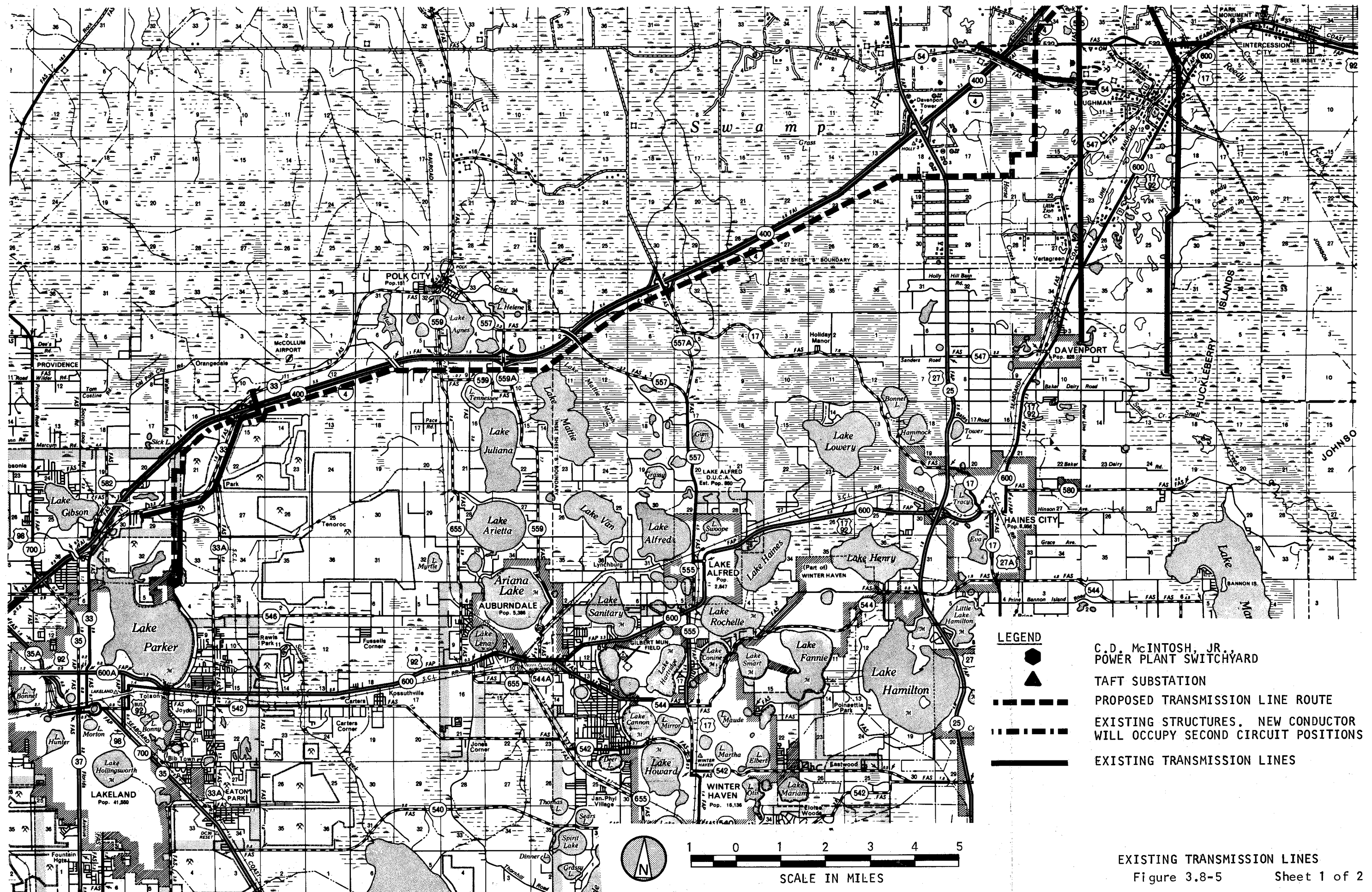


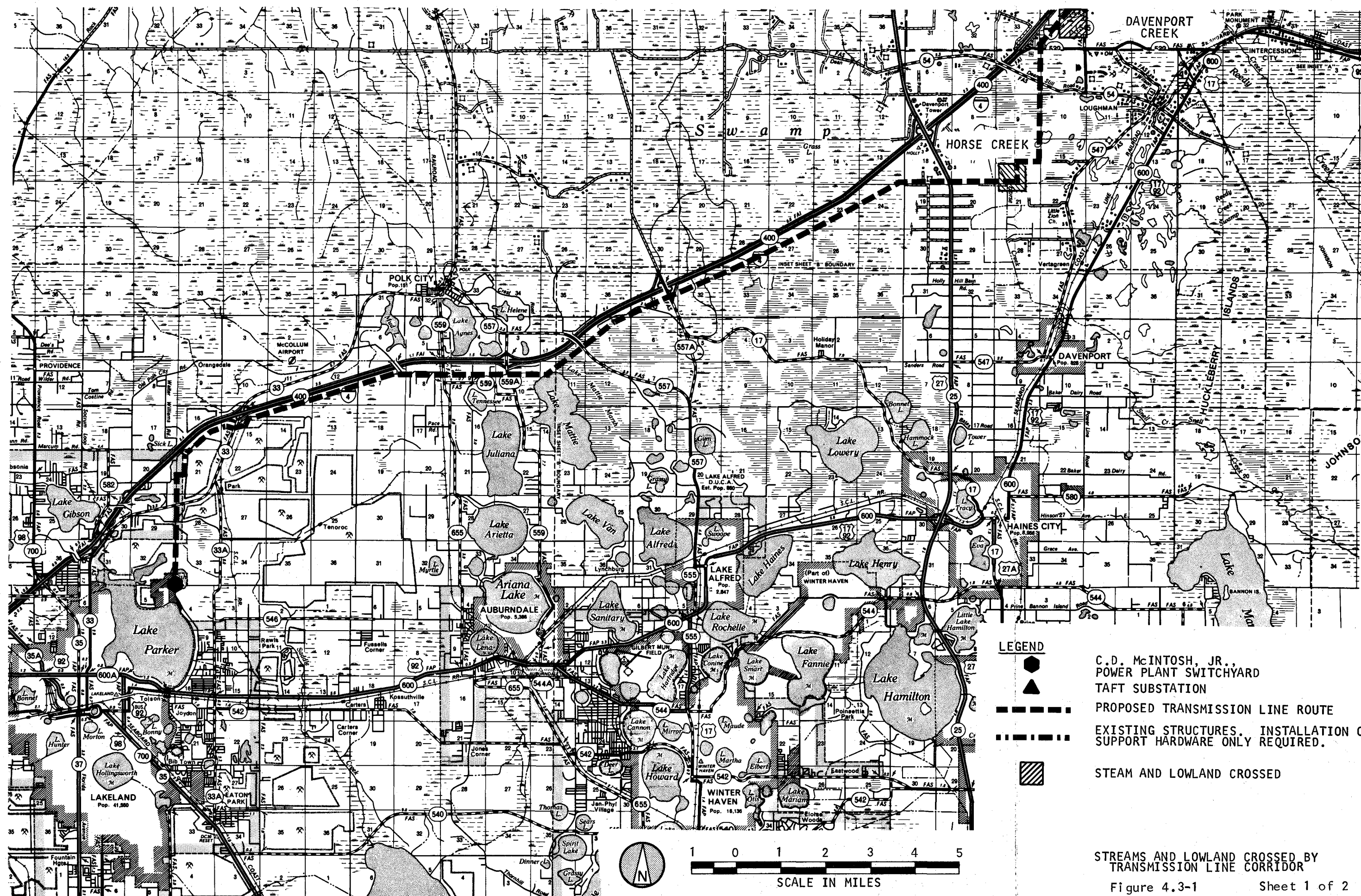
AREAS WHERE TRANSMISSION LINE WILL BE VISIBLE FROM FREQUENTLY TRAVELED ROADS
Figure 3.8-4
p 3.8-41

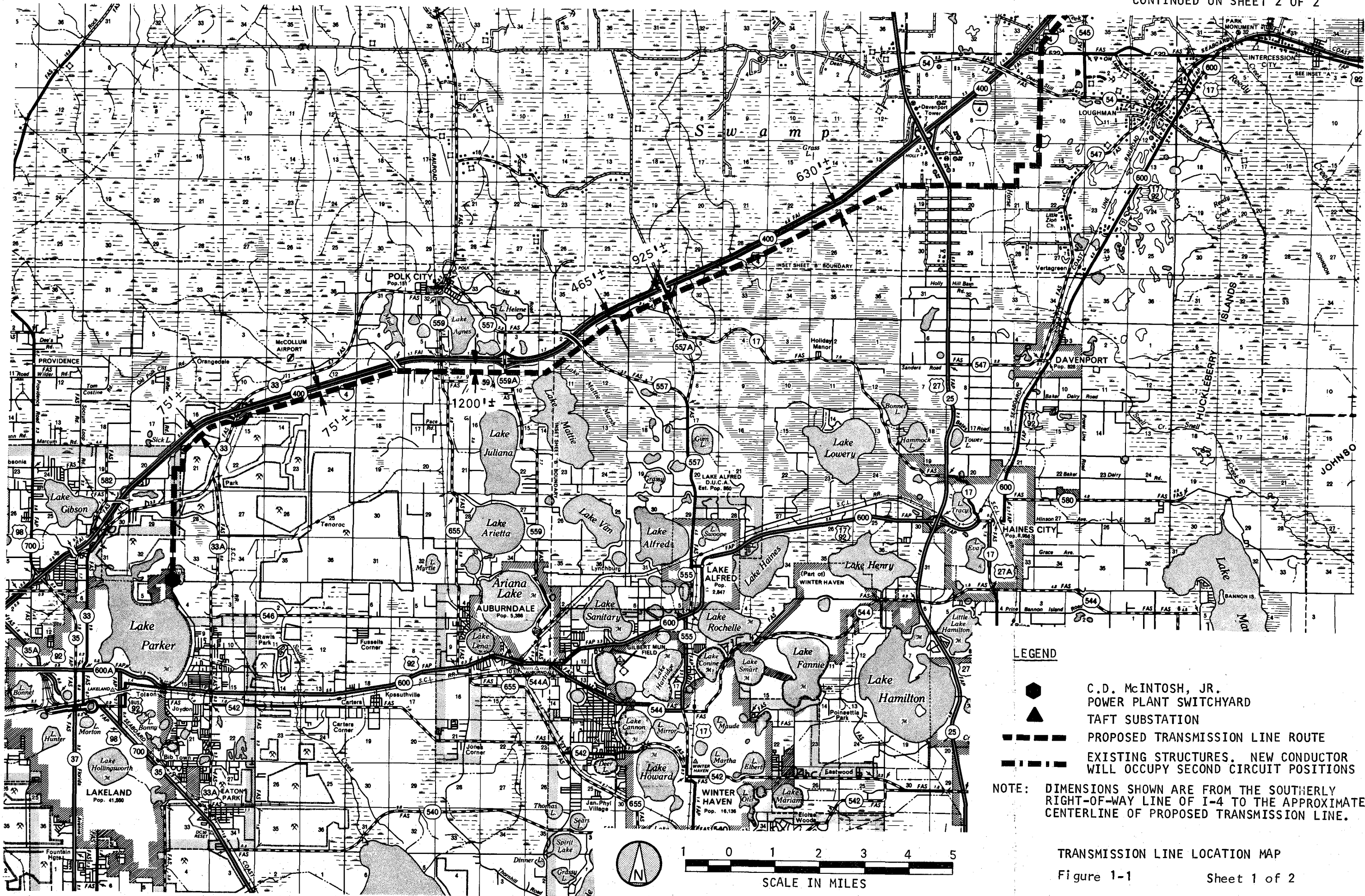
Sheet 1 of 2
REVISED (8-1-78)

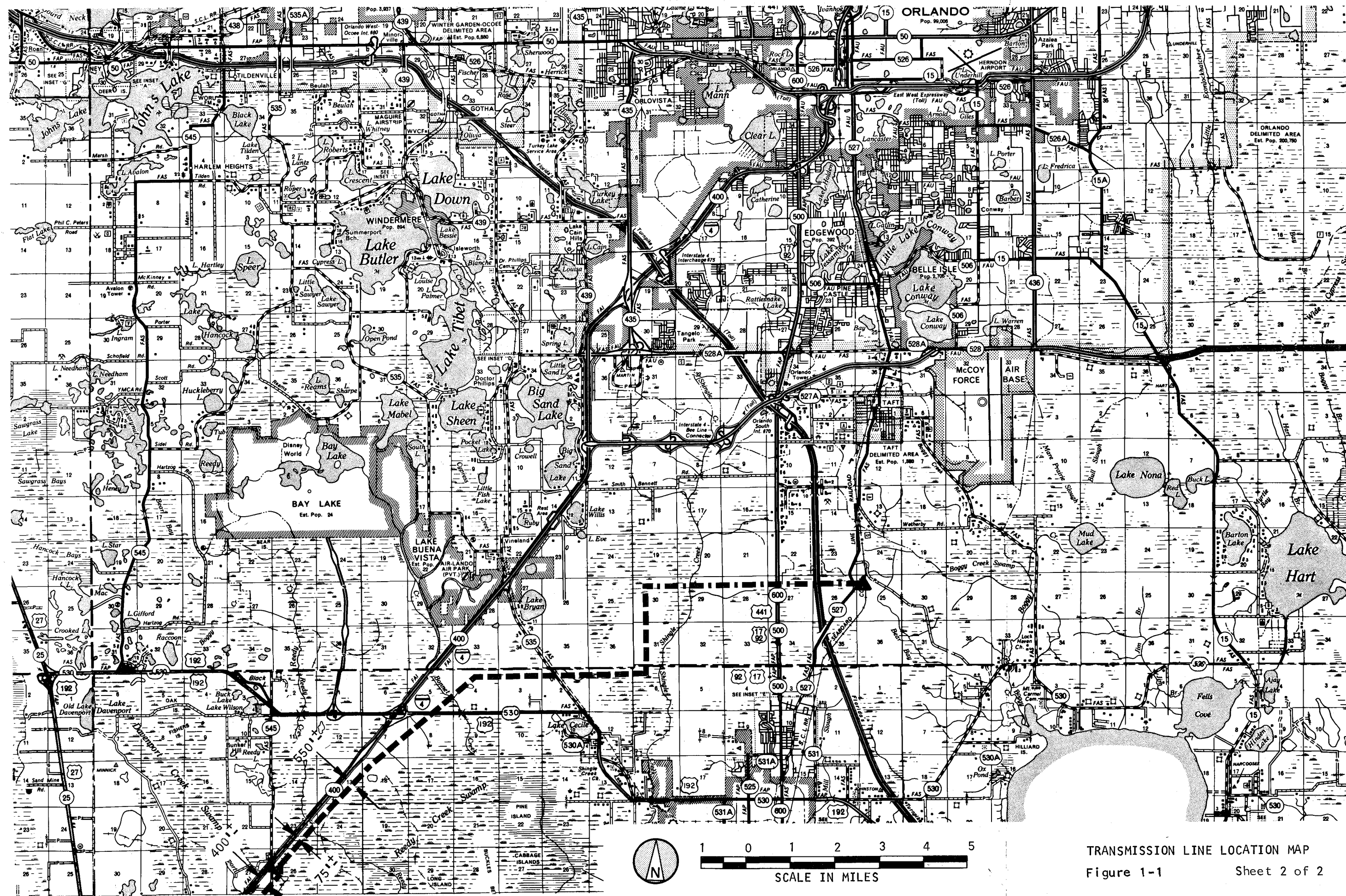


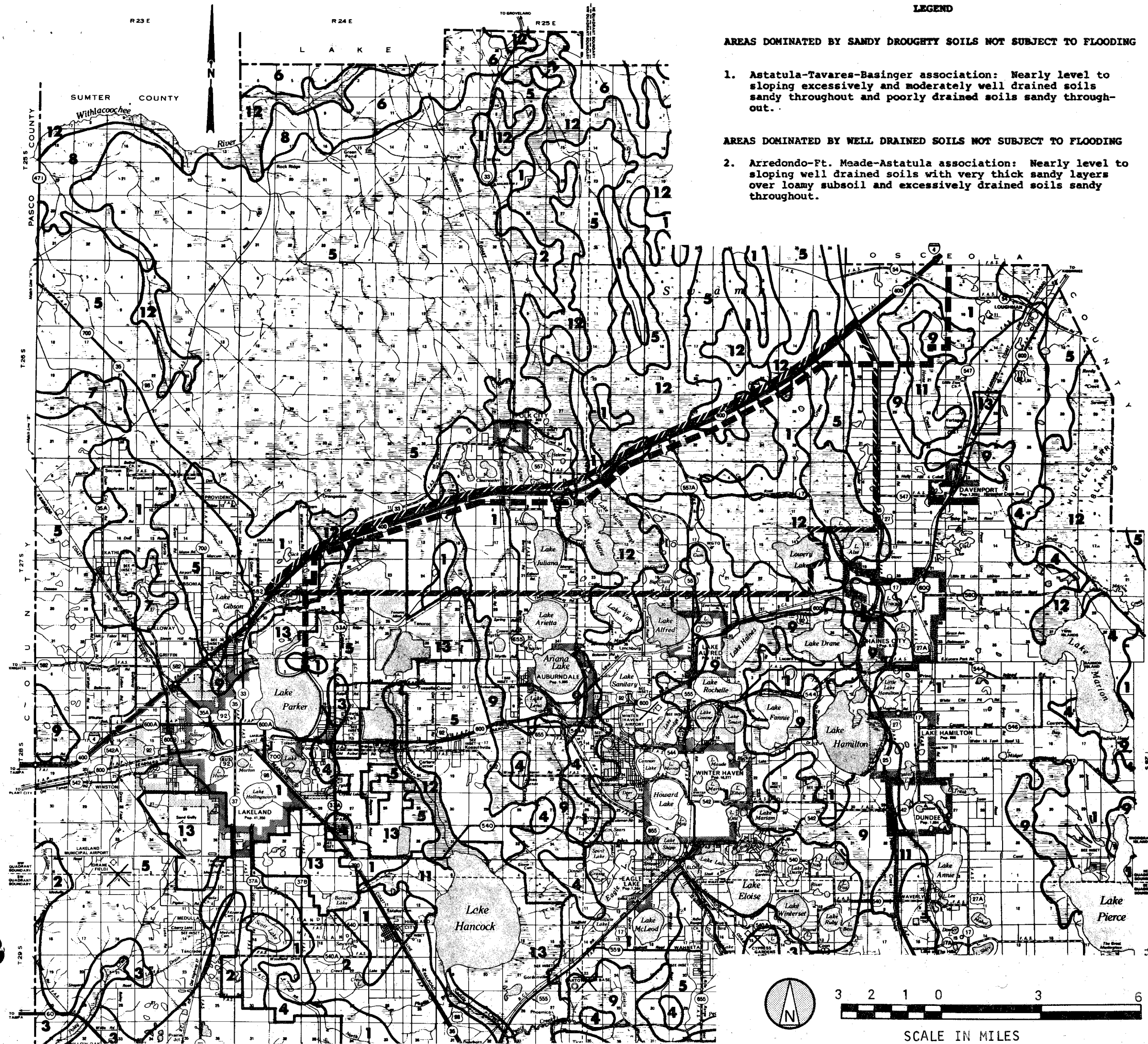
AREAS WHERE TRANSMISSION LINE WILL
BE VISIBLE FROM FREQUENTLY TRAVELED ROADS
Figure 3.8-4
Sheet 2 of 2
REVISED (8-1-78)











LEGEND

AREAS DOMINATED BY SANDY DROUGHTY SOILS NOT SUBJECT TO FLOODING

1. Astatula-Tavares-Basinger association: Nearly level to sloping excessively and moderately well drained soils sandy throughout and poorly drained soils sandy throughout.

AREAS DOMINATED BY WELL DRAINED SOILS NOT SUBJECT TO FLOODING

2. Arredondo-Ft. Meade-Astatula association: Nearly level to sloping well drained soils with very thick sandy layers over loamy subsoil and excessively drained soils sandy throughout.

AREAS DOMINATED BY MODERATELY WELL TO POORLY DRAINED SOILS NOT SUBJECT TO FLOODING

3. Tavares-Myakka-Pomello association: Nearly level to sloping moderately well drained soils sandy throughout and poorly and moderately well drained sandy soils with weakly cemented sandy subsoil.
4. Pomello-Basinger-St. Lucie association: Nearly level to gently sloping moderately well drained sandy soils with weakly cemented sandy subsoil; poorly drained soils sandy throughout; and excessively drained soils sandy throughout.
5. Myakka-Pomello-Basinger association: Nearly level to gently sloping poorly and moderately well drained sandy soils with weakly cemented sandy subsoil and poorly drained soils sandy throughout.
6. Myakka-Placid-Swamp association: Nearly level poorly drained sandy soils with weakly cemented sandy subsoil; very poorly drained soils sandy throughout, and very poorly drained soils subject to prolonged flooding.
7. Felida-Pompano-Wabasso association: Nearly level poorly drained sandy soils with loamy subsoil; poorly drained soils sandy throughout; and poorly drained sandy soils with a weakly cemented sandy subsoil layer over loamy subsoil.
8. Paisley-Bushnell association: Nearly level to gently sloping poorly and somewhat poorly drained soils with thin sandy layers over clayey subsoil.

AREAS DOMINATED BY POORLY AND VERY POORLY DRAINED SOILS SUBJECT TO FLOODING

9. Basinger-Pompano-Swamp association: Nearly level poorly drained soils sandy throughout and very poorly drained soils subject to prolonged flooding.
10. Chobee-Delray association: Nearly level very poorly drained soils loamy throughout and very poorly drained soils with thick sandy layers over loamy subsoil.
11. Brighton-Placid association: Nearly level very poorly drained poorly decomposed organic soils 51 to 80 inches or more thick, and very poorly drained soils sandy throughout.
12. Fresh Water Swamp association: Nearly level very poorly drained soils subject to prolonged flooding.

MISCELLANEOUS LAND TYPES

13. Mine Pits and Dumps

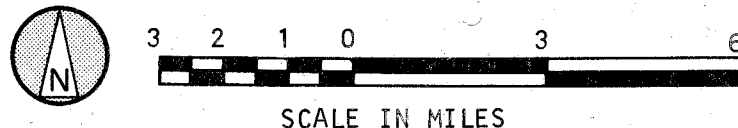
AREA OF GREEN SWAMP UNDER CONSIDERATION

C.D. McINTOSH, JR.
POWER PLANT SWITCHYARD

PROPOSED TRANSMISSION LINE ROUTE

ORLANDO - LAKELAND 230KV TRANSMISSION LINE
GENERAL SOIL MAP - GREEN SWAMP AREA

Figure 8-1



TAFT SUBSTATION

PROPOSED TRANSMISSION LINE ROUTE

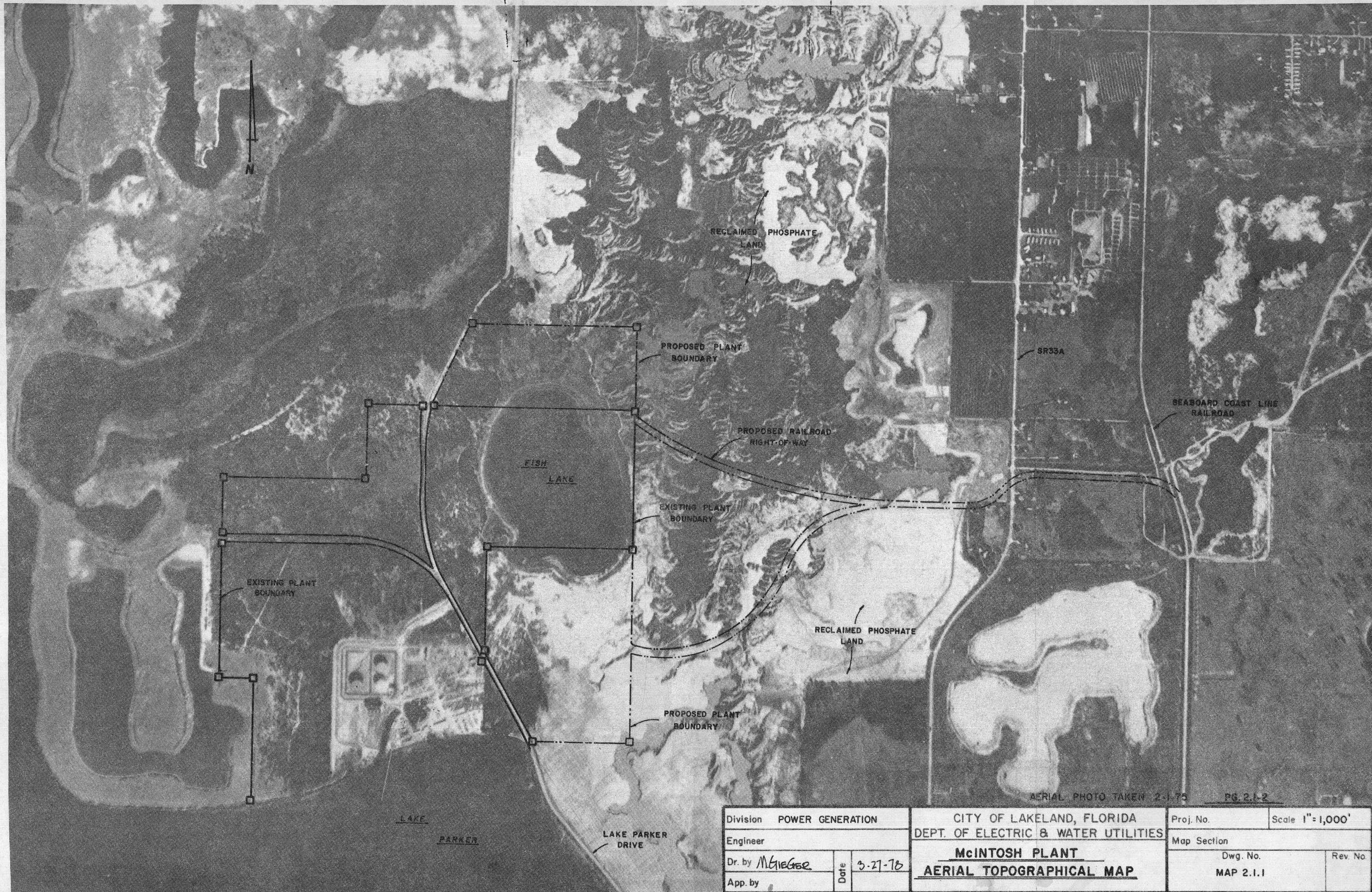
EXISTING STRUCTURES. INSTALLATION OF
SUPPORT HARDWARE ONLY REQUIRED.

CONSTRUCTION OF THROUGH
ACCESS ROADS REQUIRED.

FILL REQUIRED FROM FIRM TERRAIN OR
EXISTING ROADS FOR ACCESS TO INDIVIDUAL
STRUCTURE SITES ONLY. CONSTRUCTION OF
THROUGH ACCESS ROAD NOT REQUIRED.

MAINTENANCE AND ACCESS ROADS

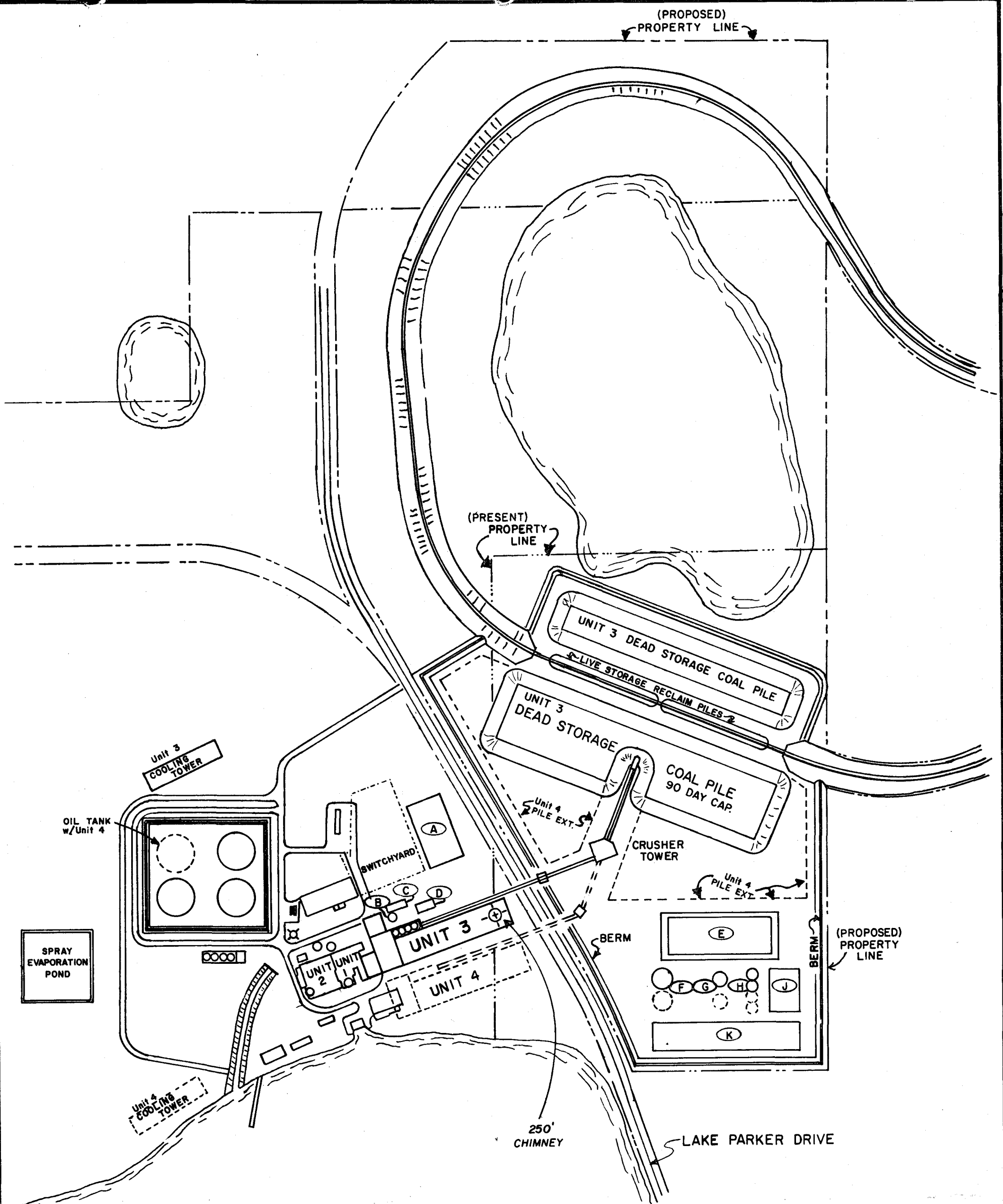
Figure 10-1



Division POWER GENERATION	
Engineer	
Dr. by <i>McIntosh</i>	Date 3-27-75
App. by	

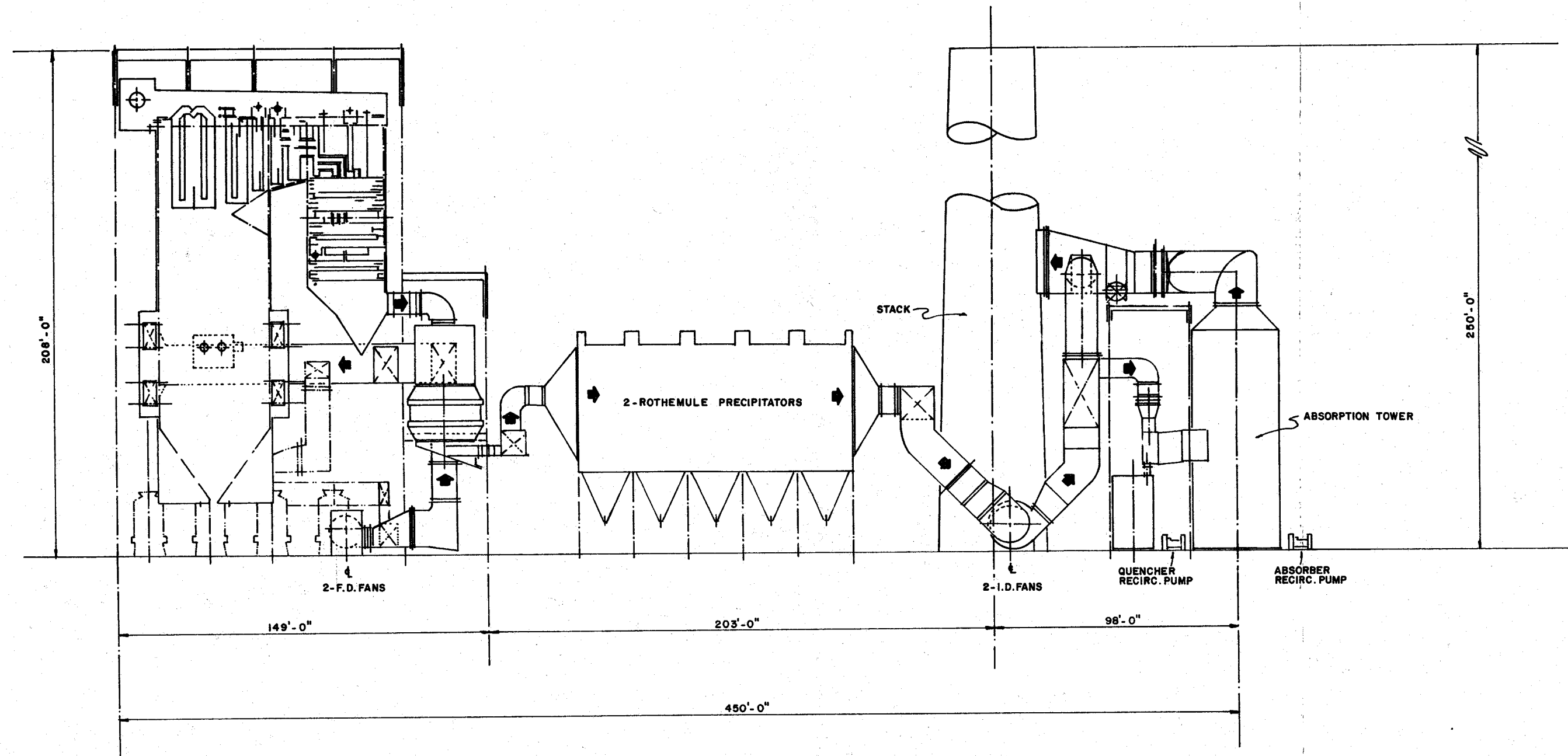
CITY OF LAKELAND, FLORIDA	
DEPT. OF ELECTRIC & WATER UTILITIES	
McINTOSH PLANT	
AERIAL TOPOGRAPHICAL MAP	

Proj. No.	Scale 1"=1,000'
Map Section	
Dwg. No.	Rev. No.
MAP 2.1.1	



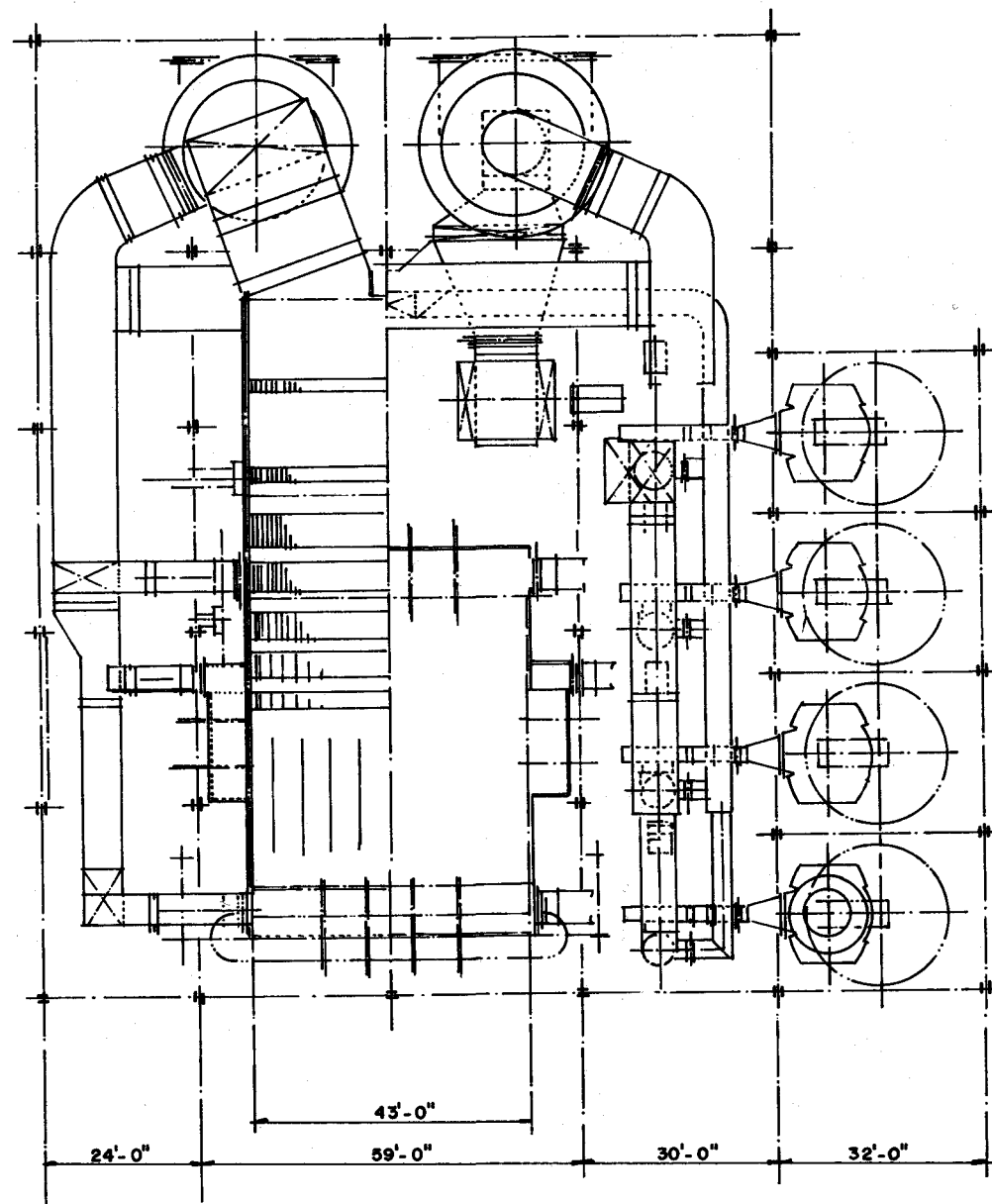
LEGEND

Division <i>POWER GENERATION</i>			CITY OF LAKE LAND, FLORIDA		Proj. No.		Scale <i>N/A</i>	
Engineer			DEPT. OF ELECTRIC & WATER UTILITIES		Map Section			
Dr. by <i>A. HENDRIX</i>		Date	PLOT PLAN		Dwg. No.			Rev. No.
App. by			McINTOSH PLANT UNIT no. 3		MAP 2.1.2			

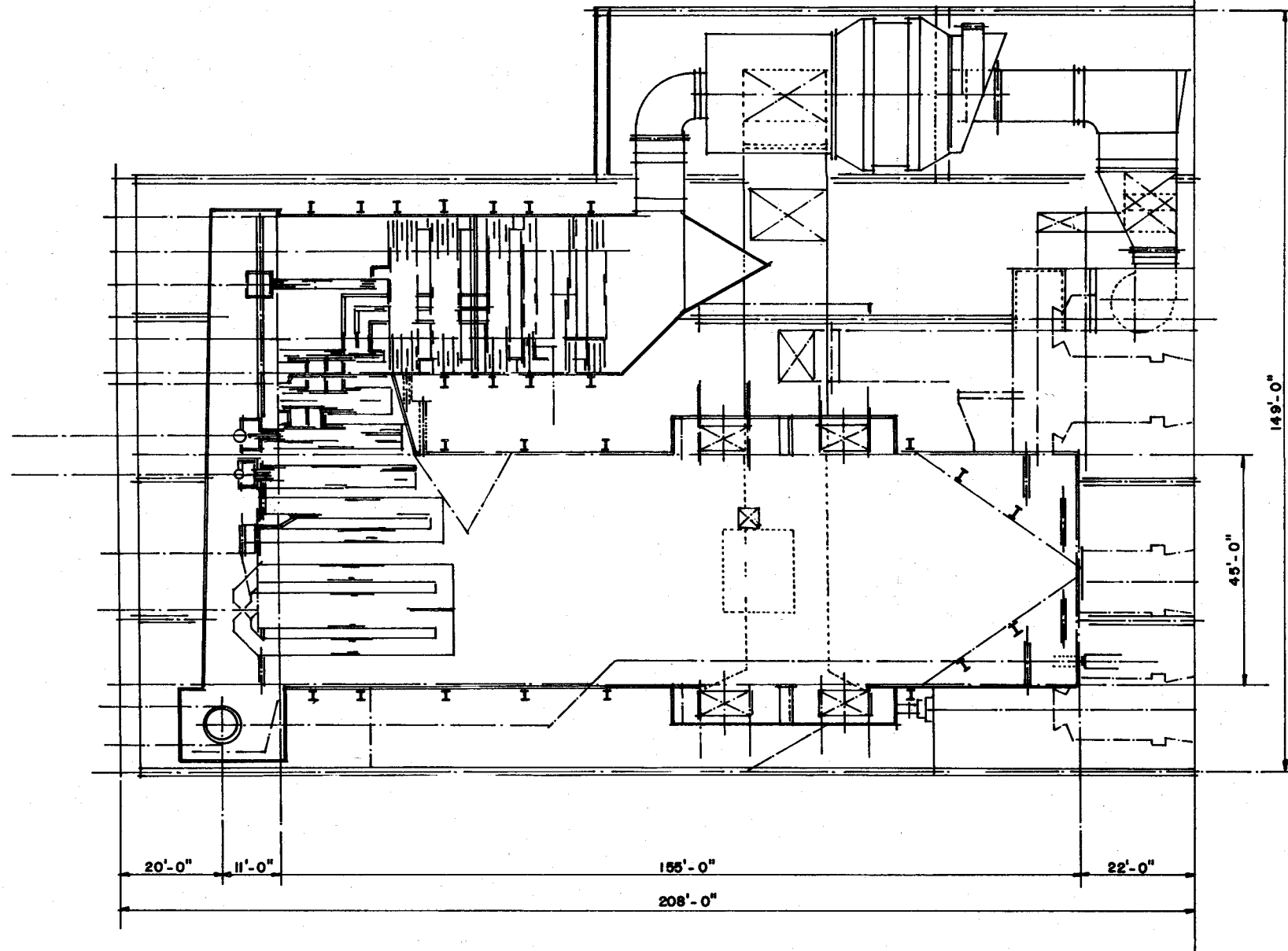


P.3.1-2

Division POWER GENERATION			CITY OF LAKELAND, FLORIDA		Proj. No.	Scale: <i>f</i>
Engineer			DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by <i>M/G</i>	Date	1-23-78	BOILER AND FLUE GAS CLEANING EQUIPMENT		Dwg. No.	Rev. No.
App. by					FIG. 3.1.1	



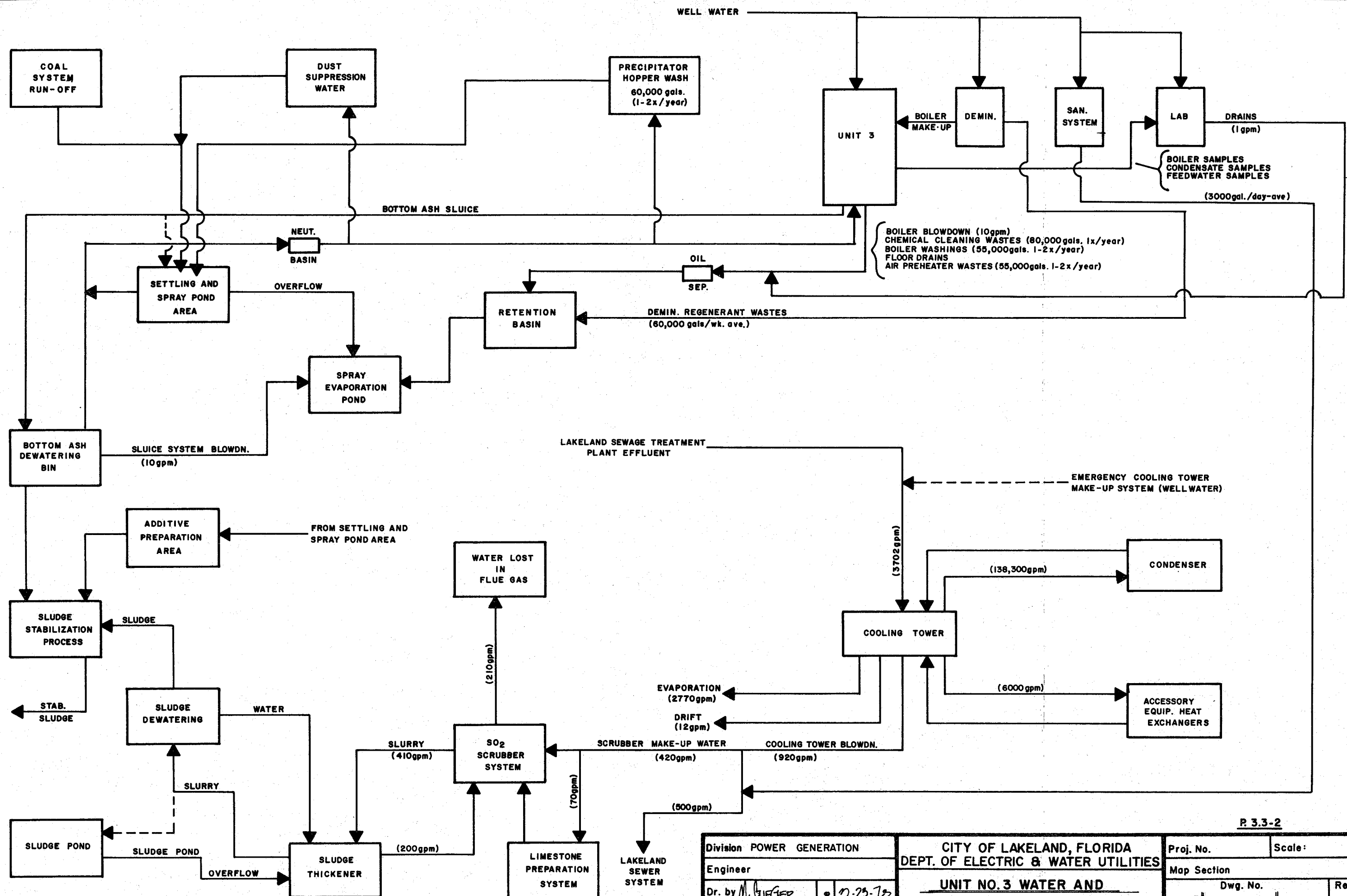
BOILER PLAN VIEW



BOILER ELEVATION VIEW

P.3.1-3

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale: #
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by M. GIESER	Date 4-5-78	BOILER VIEWS		Dwg. No.	Rev. No.
App. by				FIG. 3.1.2	



Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.		Scale:	
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section		Rev. No.	
Dr. by M. GIEGER		UNIT NO. 3 WATER AND		Dwg. No.		FIG. 3.3.1	
App. by		WASTEWATER FLOW DIAGRAM					
Date 7-25-75							

FLUE GAS AND POLLUTANT FLOWS BURNING
VARIOUS FUEL COMBINATIONS

			PRECIPITATOR INLET GAS		SCRUBBER INLET GAS		SCRUBBER OUTLET GAS			STACK EXIT GAS			SO ₂ EMISSIONS		T.S.P. EMISSIONS		NO _x EMISSIONS	
FUEL	LOAD	FUEL FLOW ⁽¹⁾	°F	A.C.F.M.	°F	A.C.F.M.	°F	A.C.F.M.	% H ₂ O	°F	ft/sec	A.C.F.M.	lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
COAL ONLY	364	4695	300	1027360	300	1027360	130	914483	13.1	170	80.8	974852	3720	1.15	143.7	0.044	2268	0.7
	272	3784.4	300	828102	300	828102	130	737117	13.1	170	65.0	785778	2997	1.15	115.8	0.044	1828	0.7
COAL/REFUSE	364	4315/875	300	1027500	300	1027500	130	906112	13.2	170	80.1	965915	3438	1.06	167.3	0.050	2268	0.7
	272	3404/875	300	828136	300	828136	130	728182	13.3	170	64.4	776304	2717	1.04	139.4	0.053	1828	0.7
OIL ONLY	364	371.8	-	-	-	-	-	-	-	250	76.2	919121	2495	0.77	226.8	0.070	972	0.3
	272	299.7	-	-	-	-	-	-	-	250	61.4	740810	2011	0.77	182.8	0.070	783	0.3
OIL /REFUSE	364	341.7/875	300	987627	-	-	-	-	-	250	76.5	922415	2397	0.74	243.7	0.075	972	0.3
	272	269.5/875	300	796741	-	-	-	-	-	250	61.7	744134	1914	0.73	199.7	0.076	783	0.3

NOTE:
364Mw = MAXIMUM LOAD
272Mw = AVERAGE LOAD

(1) COAL & COAL/REFUSE = lbs/min
OIL = gals/min
OIL/REFUSE = gals/min & lbs/min

P3.7-4

Division POWER GENERATION			CITY OF LAKELAND, FLORIDA		Proj. No.		Scale 1/4"	
Engineer			DEPT. OF ELECTRIC & WATER UTILITIES		Map Section			
Dr. by M. Kieper		Date 11-22-77	C.D. McINTOSH, JR. POWER PLANT		Dwg. No.		Rev. No.	
App. by			UNIT NO. 3					

FLUE GAS AND POLLUTANT FLOWS BURNING
VARIOUS FUEL COMBINATIONS

FUEL	LOAD	FUEL FLOW ⁽¹⁾	PRECIPITATOR INLET GAS		SCRUBBER INLET GAS		SCRUBBER OUTLET GAS			STACK EXIT GAS			SO ₂ EMISSIONS		T.S.P. EMISSIONS		NO _x EMISSIONS	
			°F	A.C.F.M.	°F	A.C.F.M.	°F	A.C.F.M.	%H ₂ O	°F	ft/sec	A.C.F.M.	lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
COAL ONLY	364	4695	300	1027360	300	1027360	130	914483	13.1	170	80.8	974852	3720	1.15	143.7	0.044	2268	0.7
	272	3784.4	300	828102	300	828102	130	737117	13.1	170	65.0	785778	2997	1.15	115.8	0.044	1828	0.7
COAL/REFUSE	364	4315/875	300	1027500	300	1027500	130	906112	13.2	170	80.1	965915	3438	1.06	167.3	0.050	2268	0.7
	272	3404/875	300	828136	300	828136	130	728182	13.3	170	64.4	776304	2717	1.04	139.4	0.053	1828	0.7
OIL ONLY	364	371.8	-	-	-	-	-	-	-	250	76.2	919121	2495	0.77	226.8	0.070	972	0.3
	272	299.7	-	-	-	-	-	-	-	250	61.4	740810	2011	0.77	182.8	0.070	783	0.3
OIL/REFUSE	364	341.7/875	300	987627	-	-	-	-	-	250	76.5	922415	2397	0.74	243.7	0.075	972	0.3
	272	269.5/875	300	796741	-	-	-	-	-	250	61.7	744134	1914	0.73	199.7	0.076	783	0.3

NOTE:

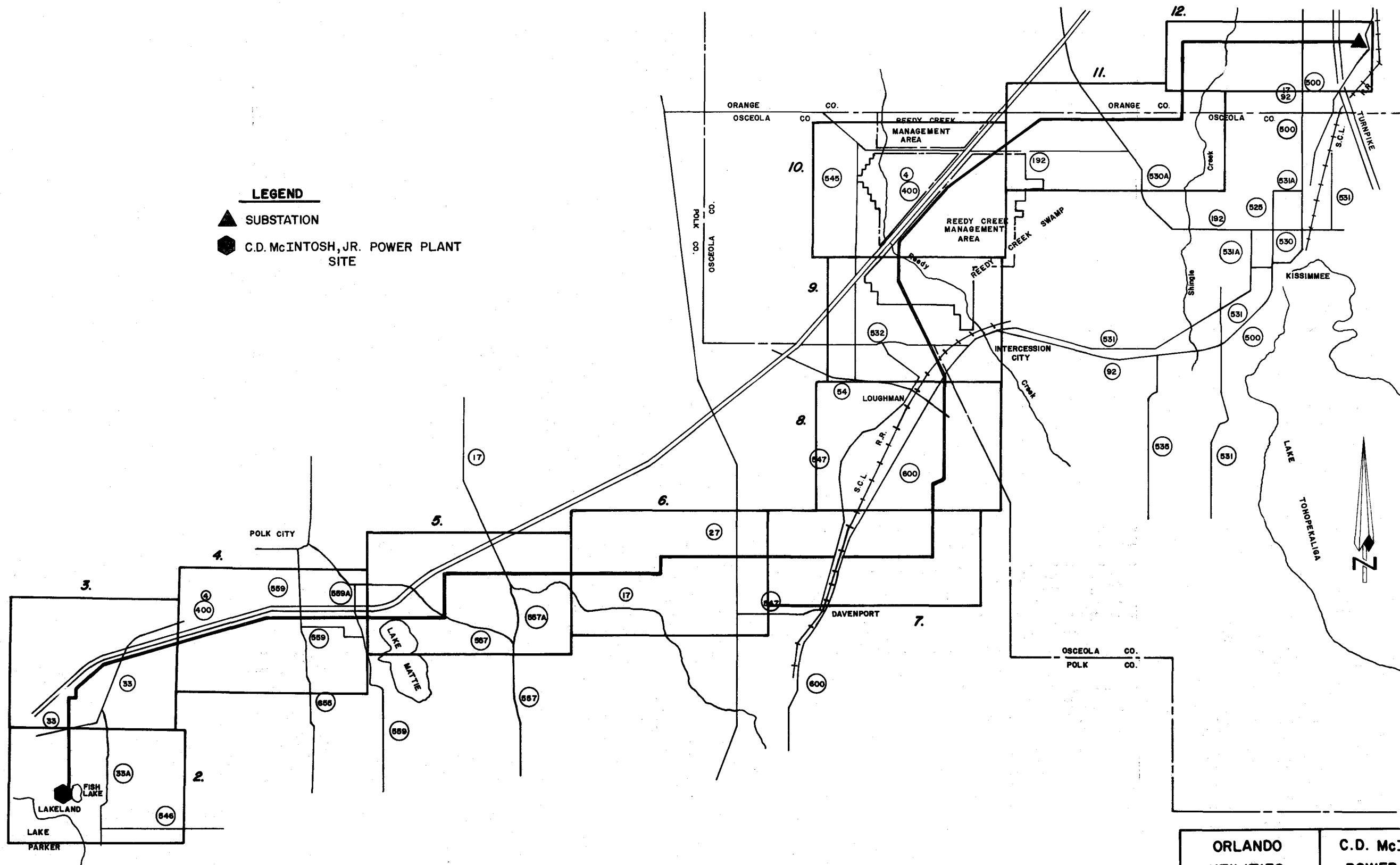
364Mw = MAXIMUM LOAD

272Mw = AVERAGE LOAD

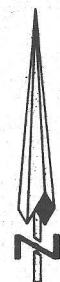
(1) COAL & COAL/REFUSE = lbs/min
OIL = gals/min
OIL/REFUSE = gals/min & lbs/min

P. 3.7-5

Division POWER GENERATION		CITY OF LAKELAND, FLORIDA		Proj. No.	Scale 74
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section	
Dr. by <i>M. Kieper</i>	Date 11-22-77	C.D. McINTOSH, JR. POWER PLANT		Dwg. No.	Rev. No.
App. by		UNIT NO. 3			



ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 1 OF 12)	



LEGEND
 - - - - - TRANSMISSION STUDY AREA
 ■ ■ ■ ■ ■ NEW 230-kv TRANSMISSION LINE

ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 2 OF 12)	



- LEGEND**
- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE

ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 3 OF 12)	

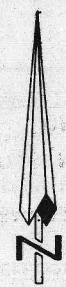
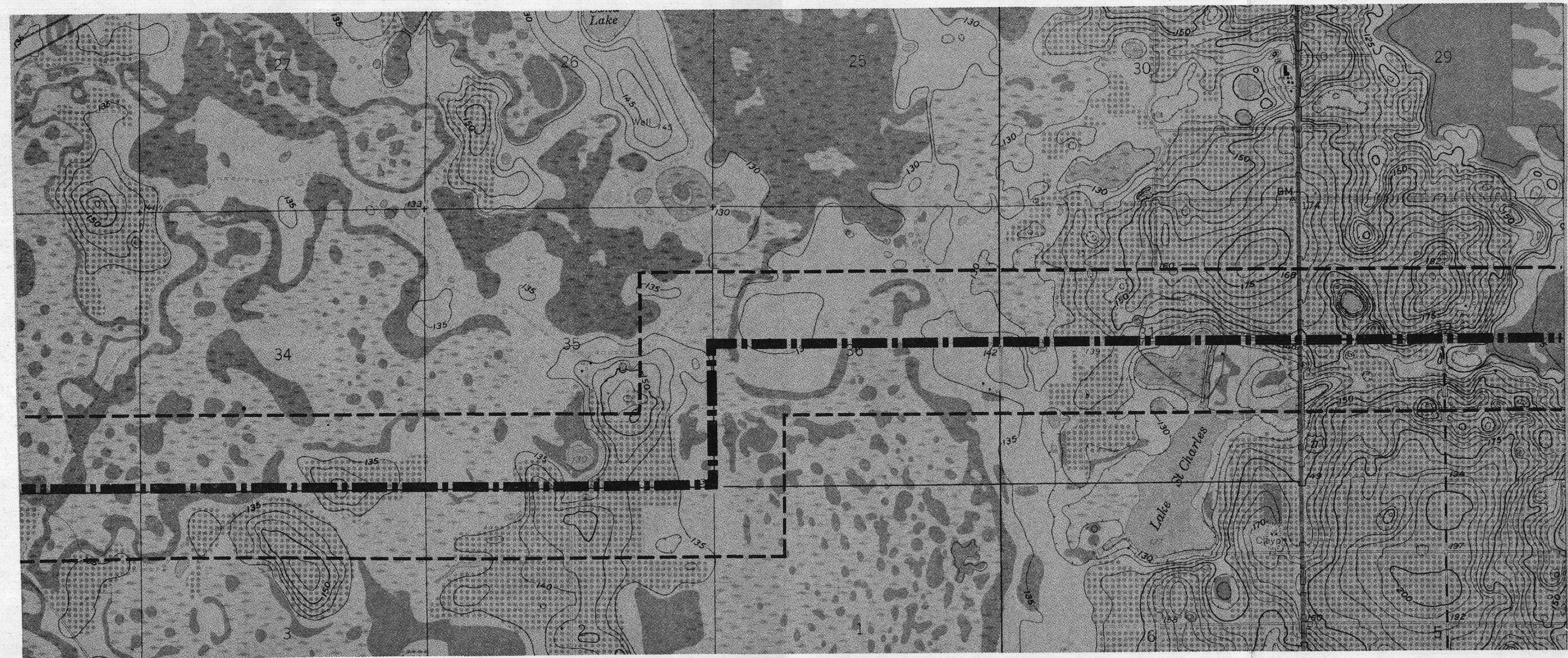


LEGEND

- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE



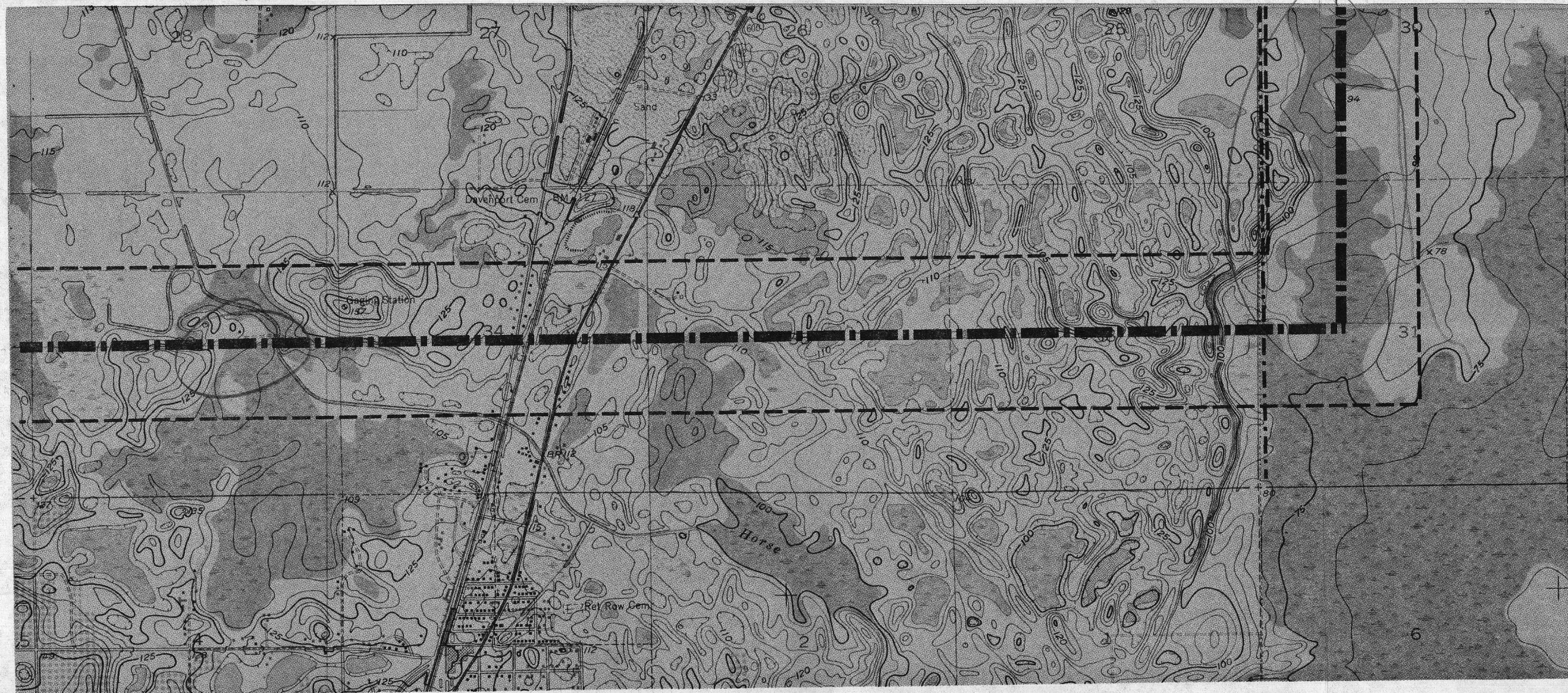
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 4 OF 12)	



LEGEND

- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE

ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHHEET 6 OF 12)	



LEGEND

- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE
- EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 7 OF 12)	



LEGEND

- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE
- ... EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 8 OF 12)	



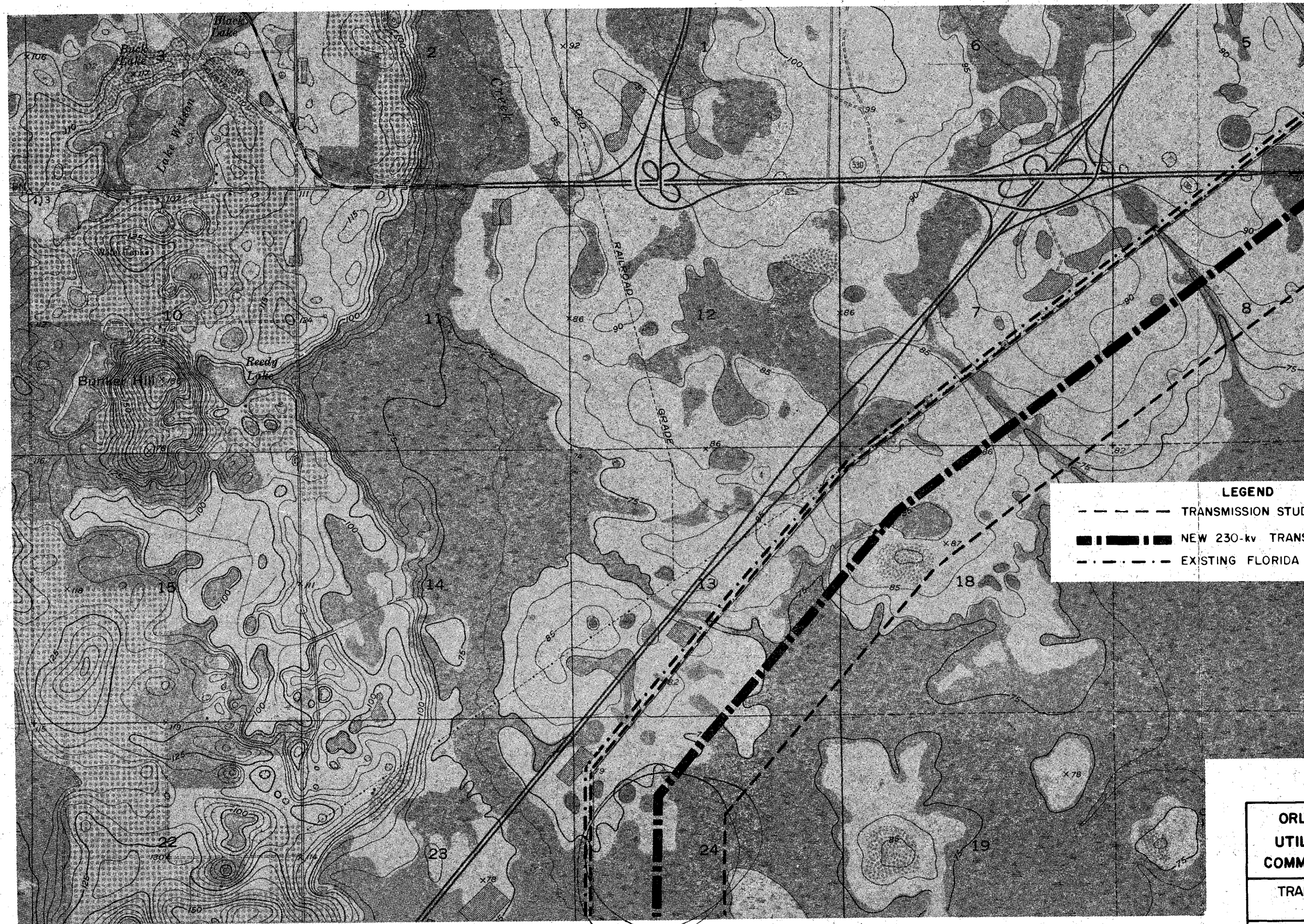
LEGEND

- TRANSMISSION STUDY AREA
- NEW 230-kv TRANSMISSION LINE
- EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3

TRANSMISSION LINES' LOCATION AND
SEGMENTS THEREOF

FIGURE 3.8-1 (SHEET 9 OF 12)



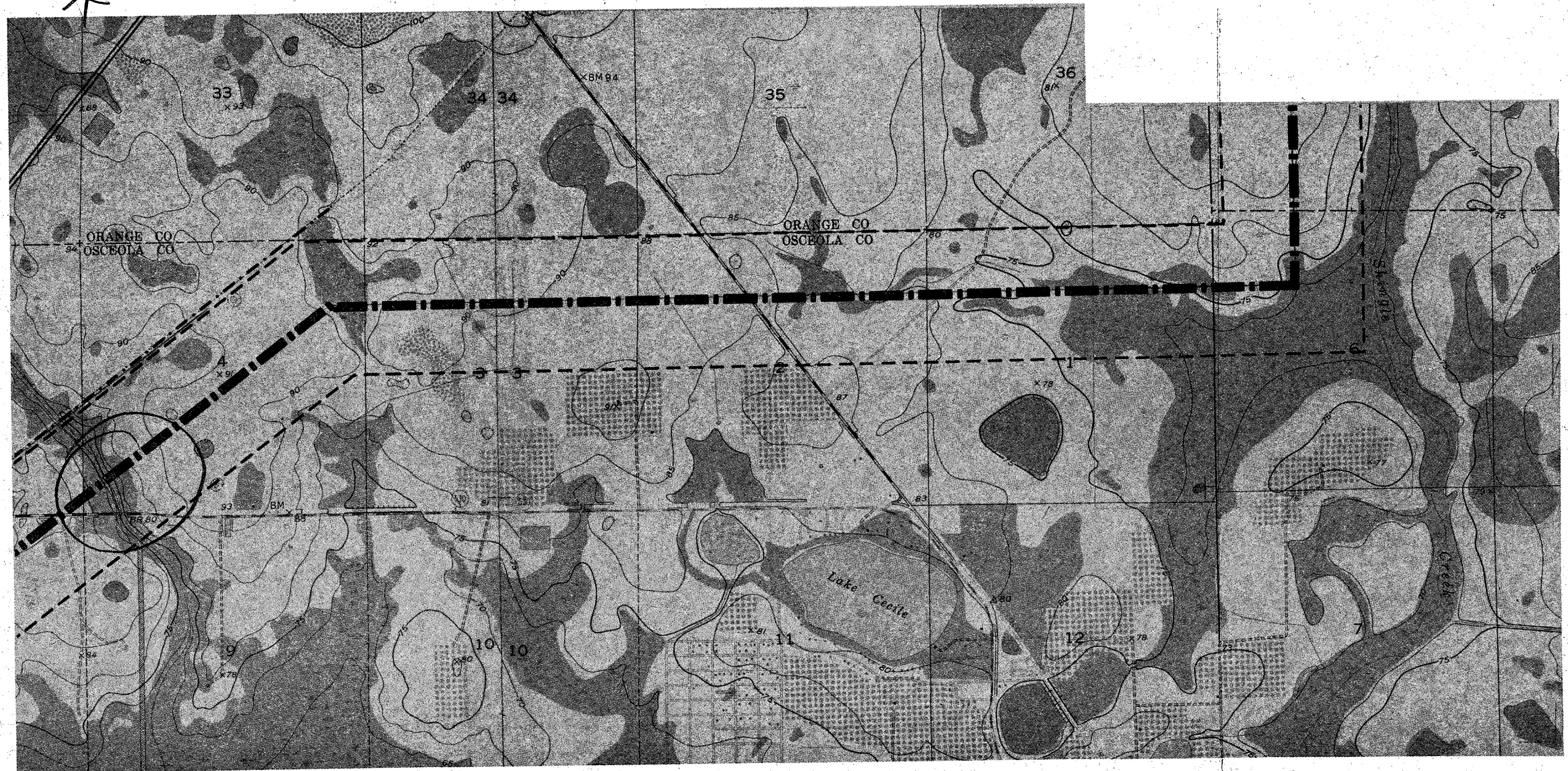
LEGEND

--- TRANSMISSION STUDY AREA

--- NEW 230-kv TRANSMISSION LINE

--- EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

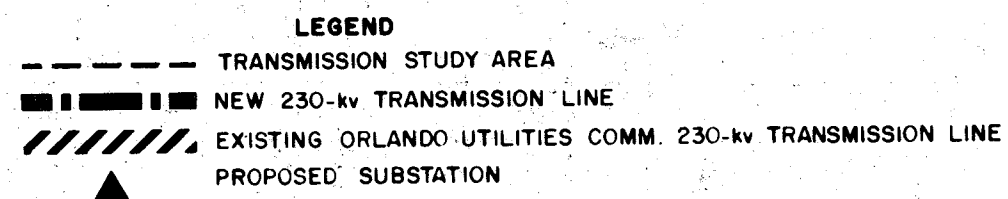
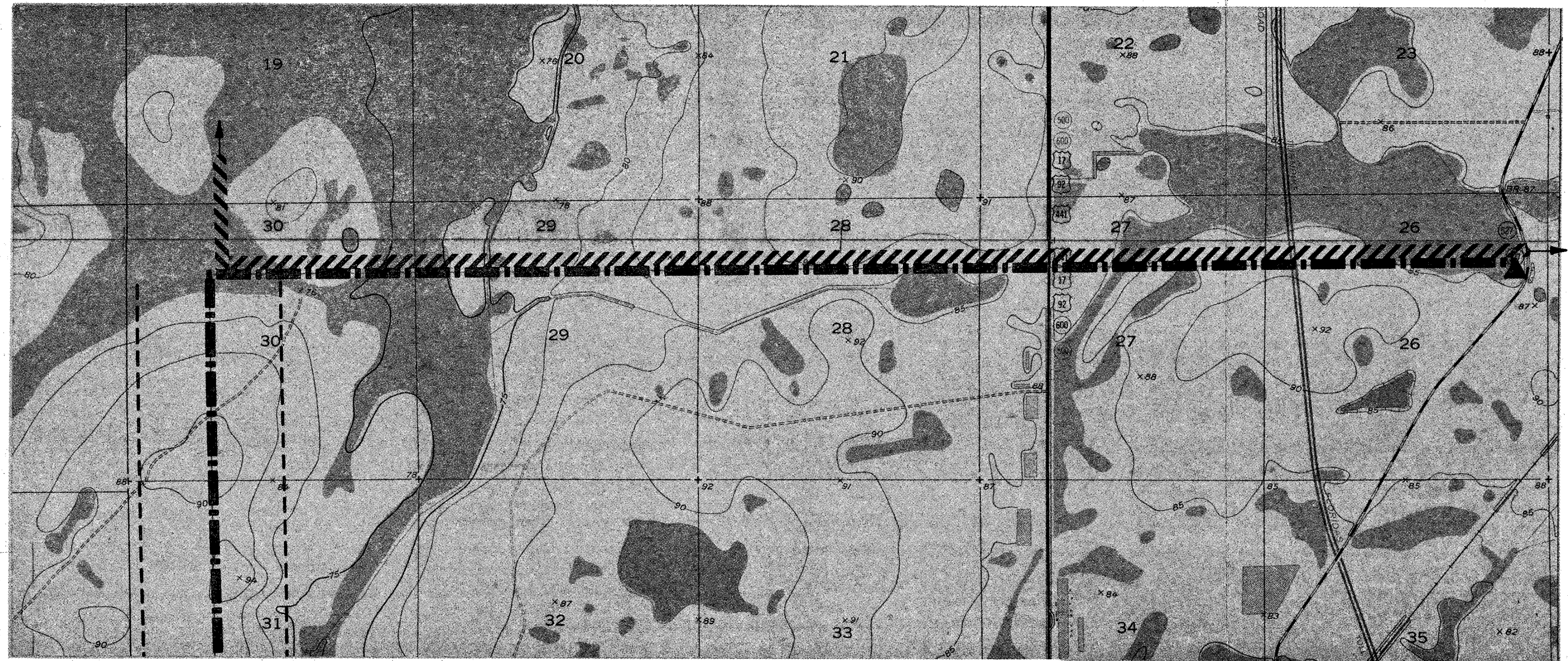
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 10 OF 12)	



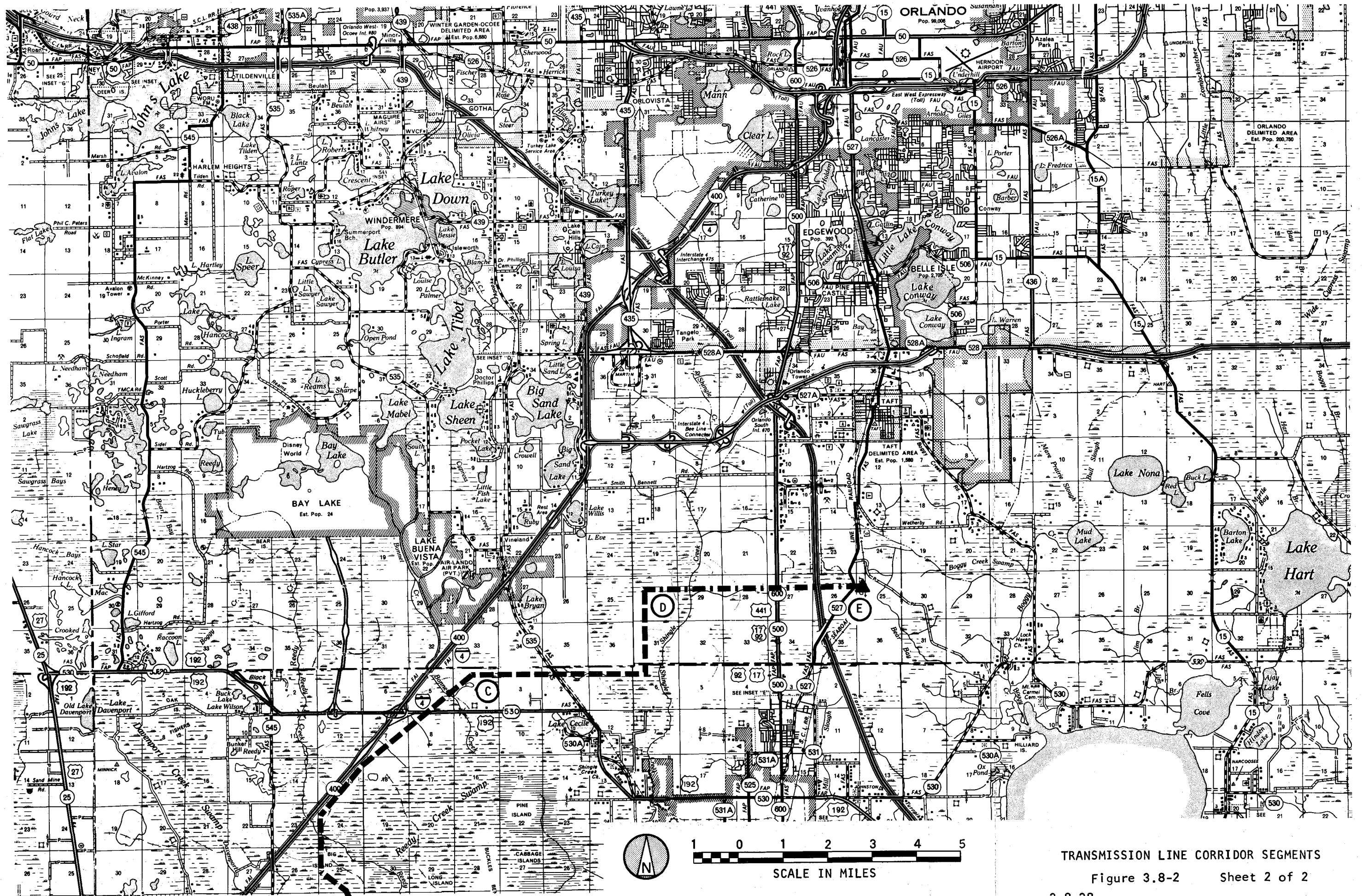
- LEGEND**
- TRANSMISSION STUDY AREA
 - NEW 230-kv TRANSMISSION LINE
 - - - - - EXISTING FLORIDA POWER CORP. TRANSMISSION LINE

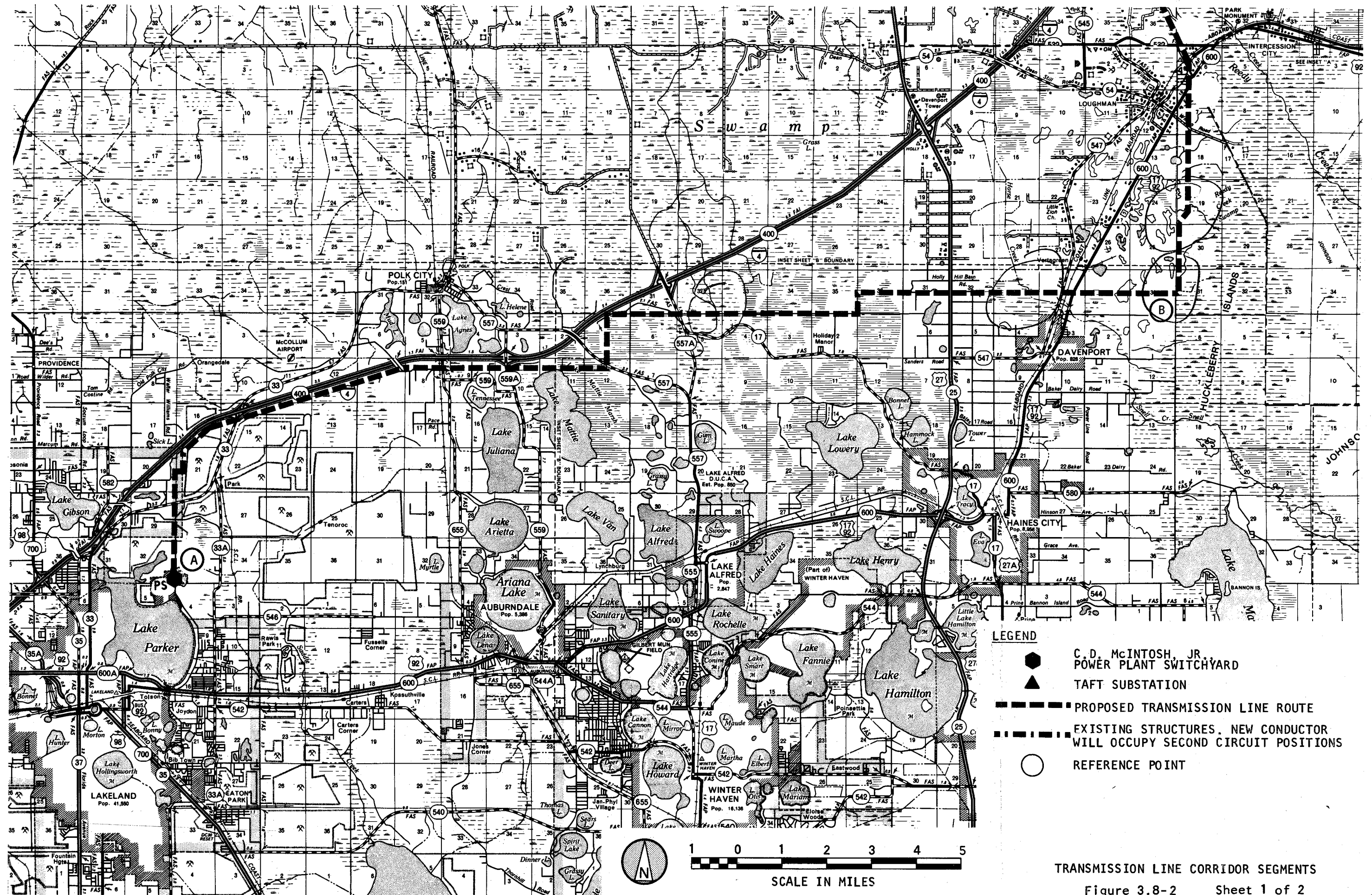


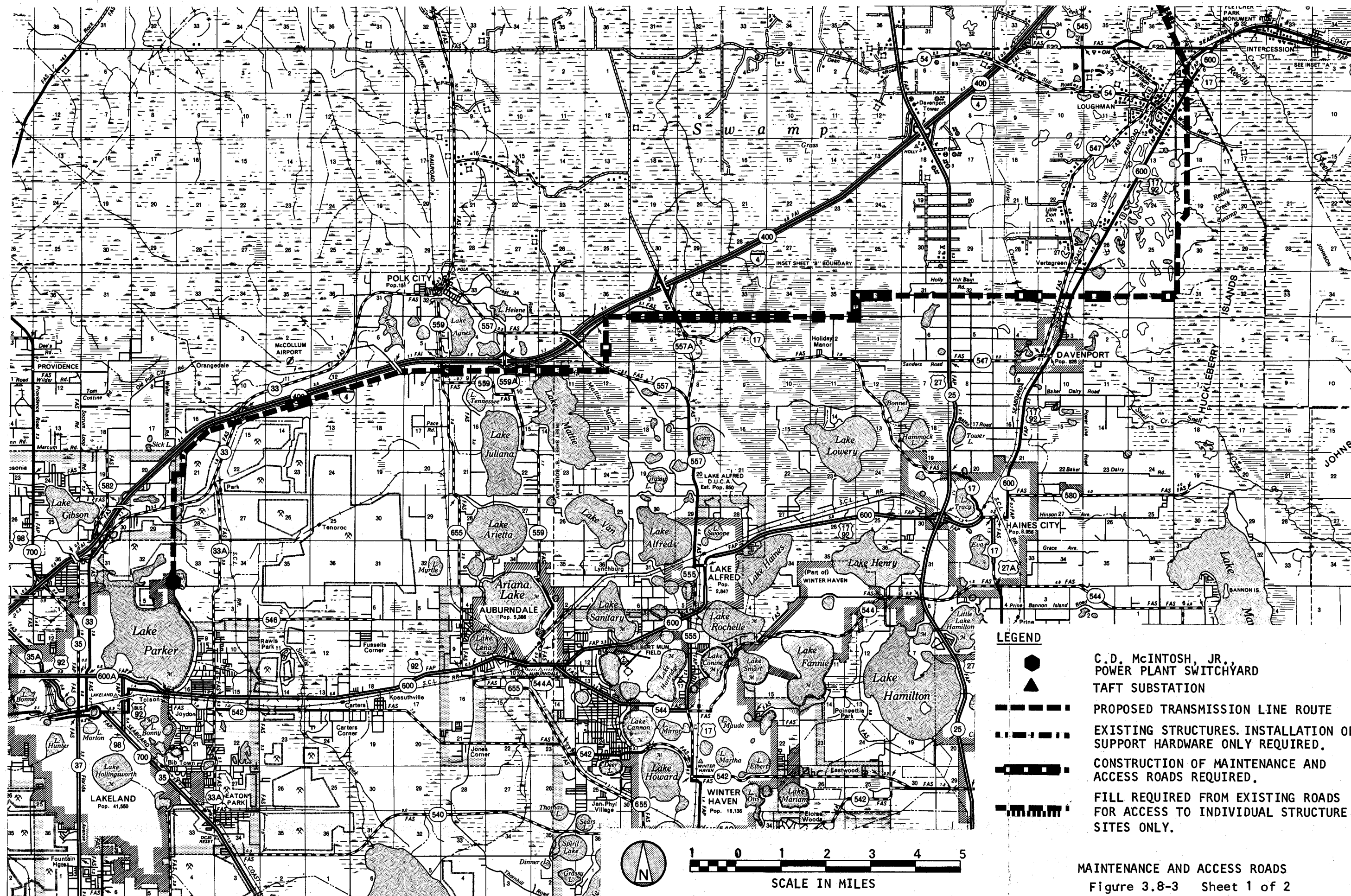
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 11 OF 12)	



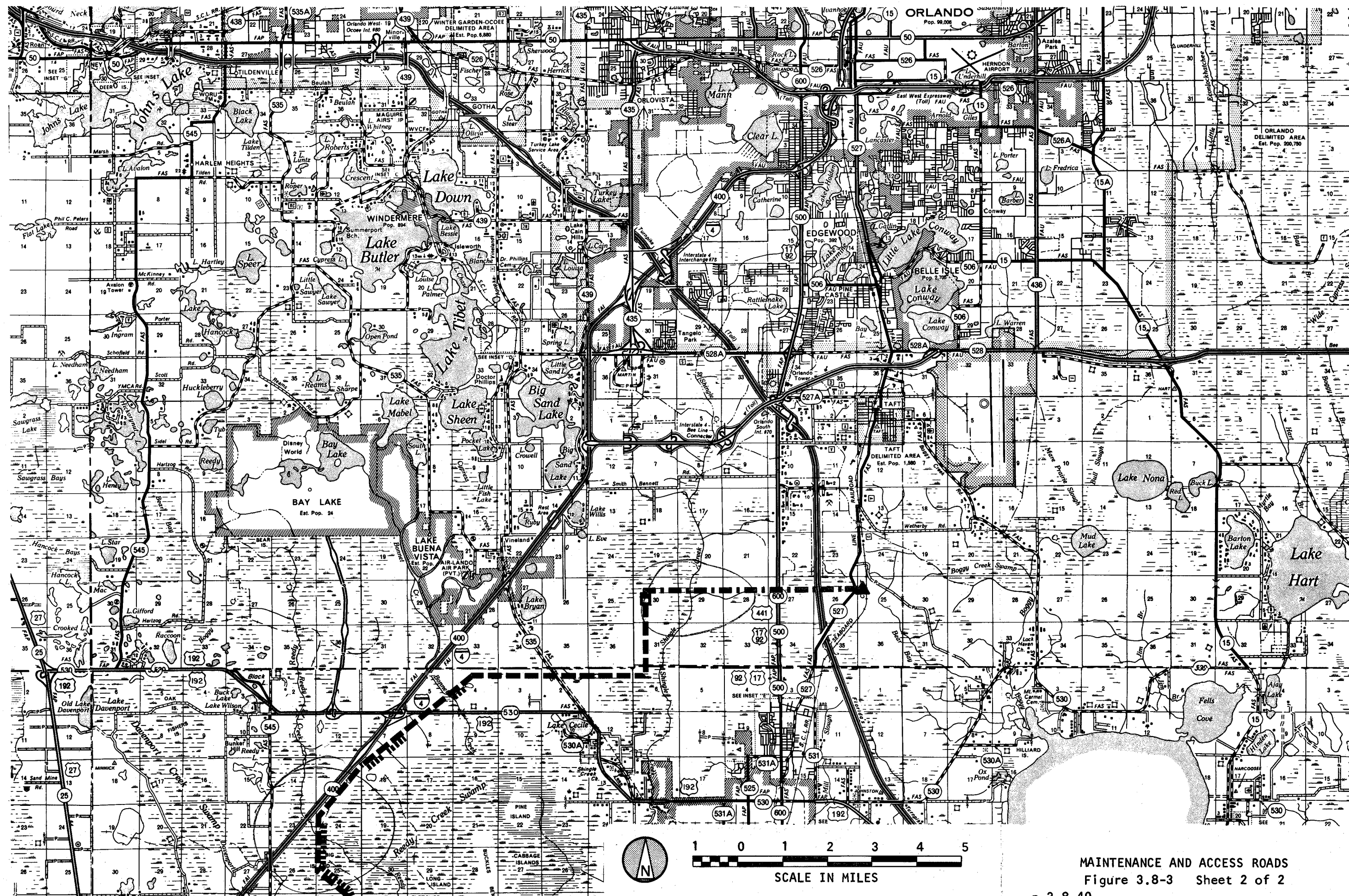
ORLANDO UTILITIES COMMISSION	C.D. McINTOSH, JR. POWER PLANT , UNIT NO. 3
TRANSMISSION LINES' LOCATION AND SEGMENTS THEREOF	
FIGURE 3.8-1 (SHEET 12 OF 12)	



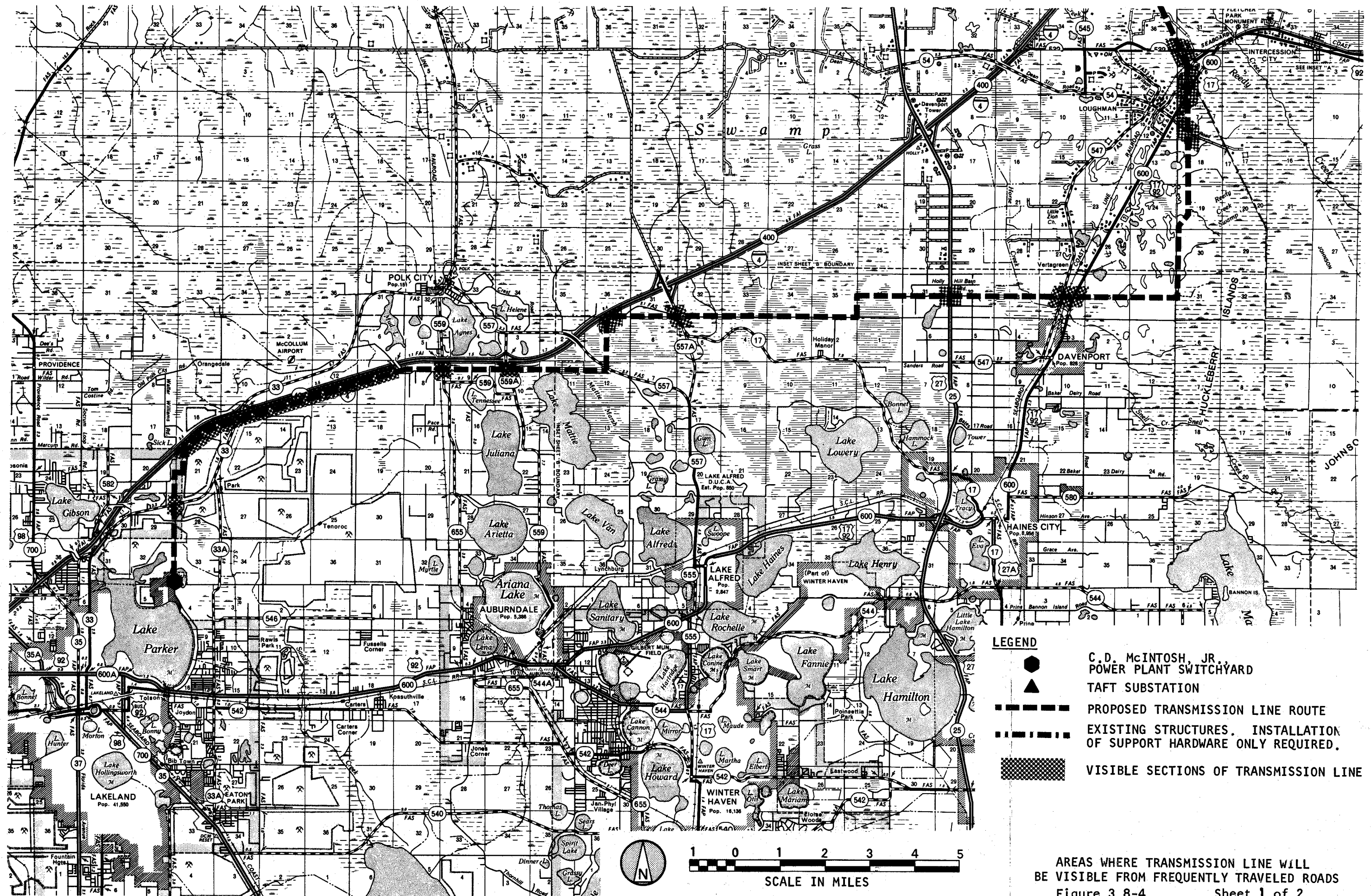




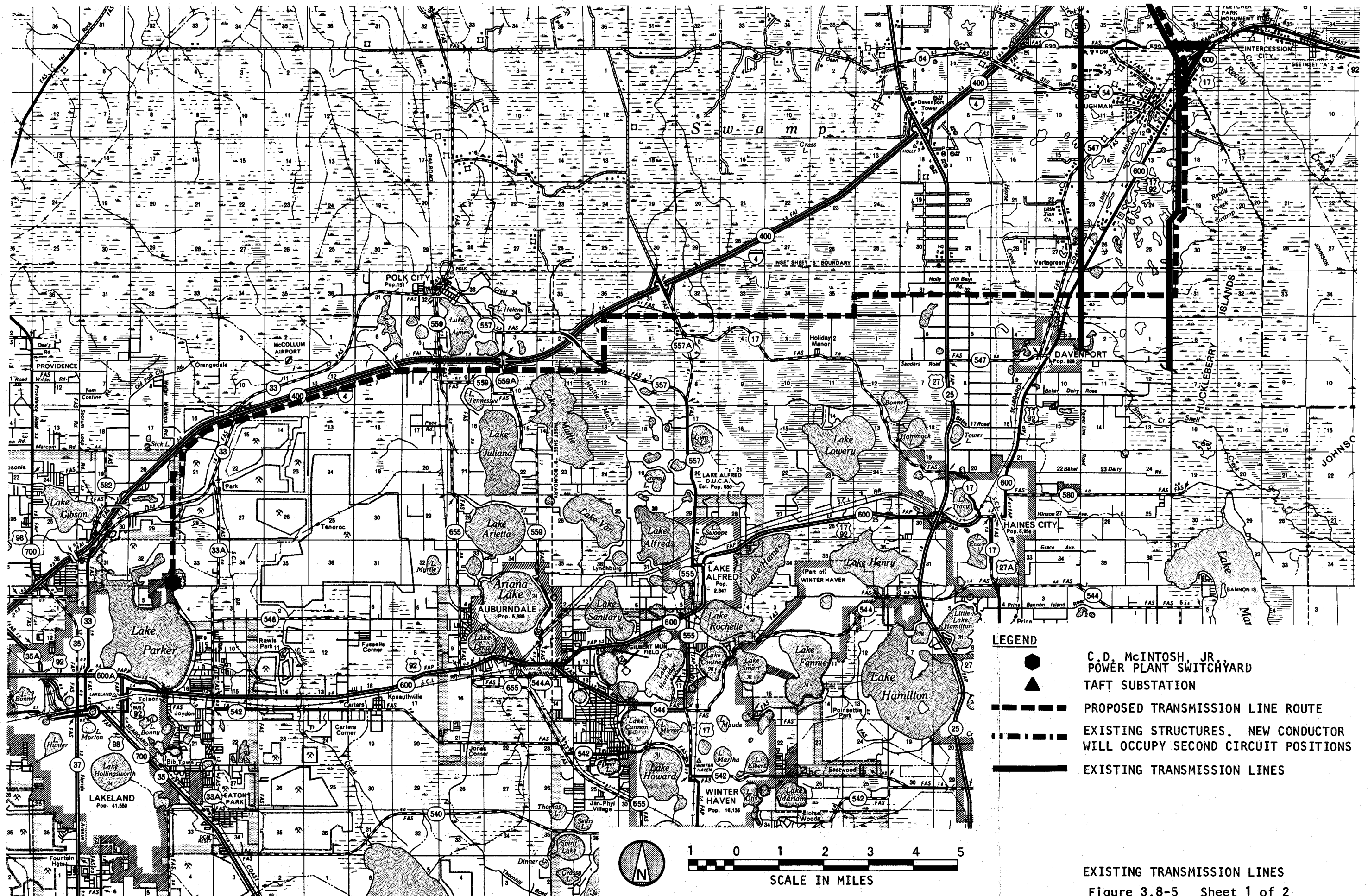
MAINTENANCE AND ACCESS ROADS
Figure 3.8-3 Sheet 1 of 2

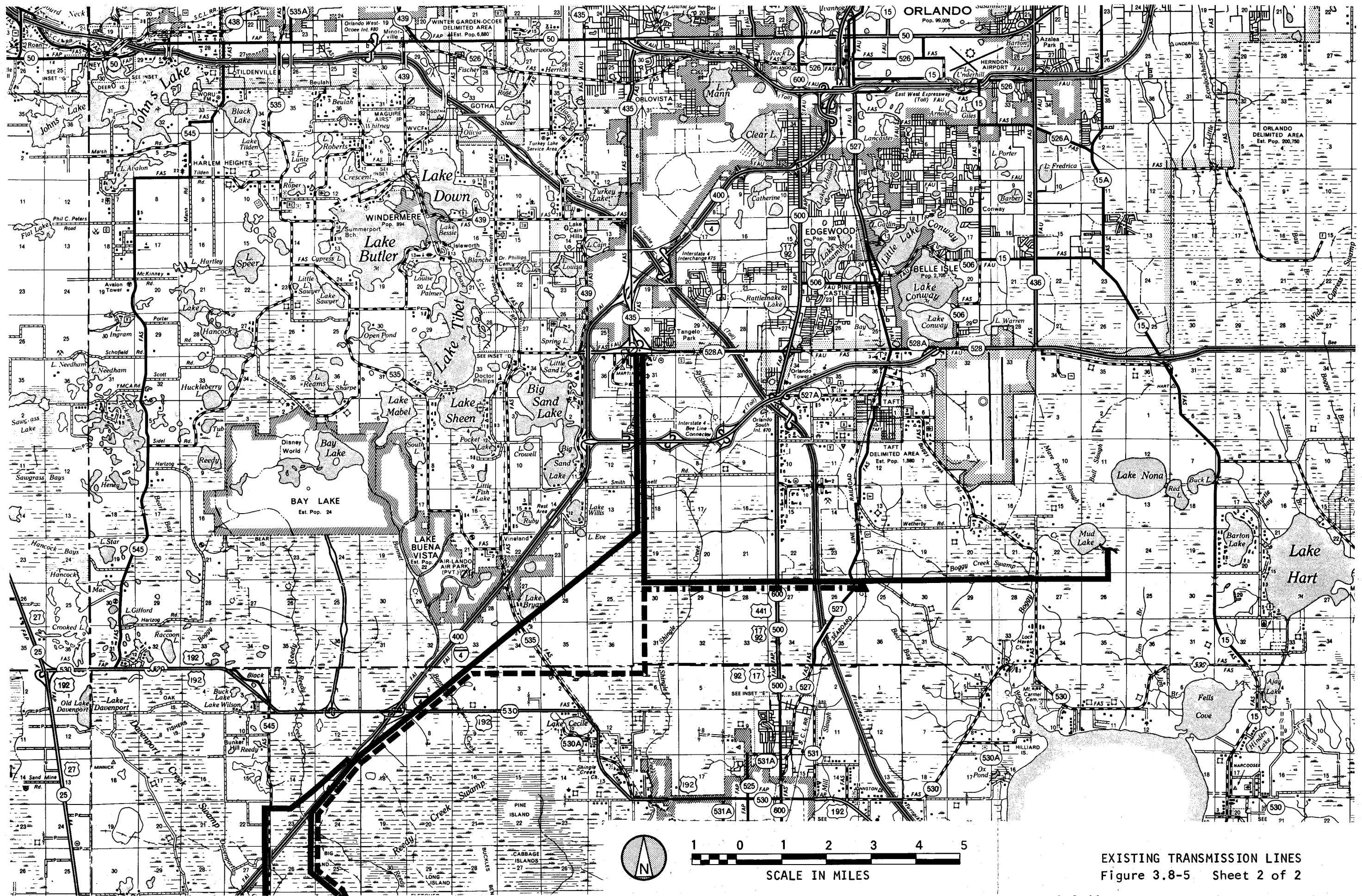


MAINTENANCE AND ACCESS ROADS
Figure 3.8-3 Sheet 2 of 2

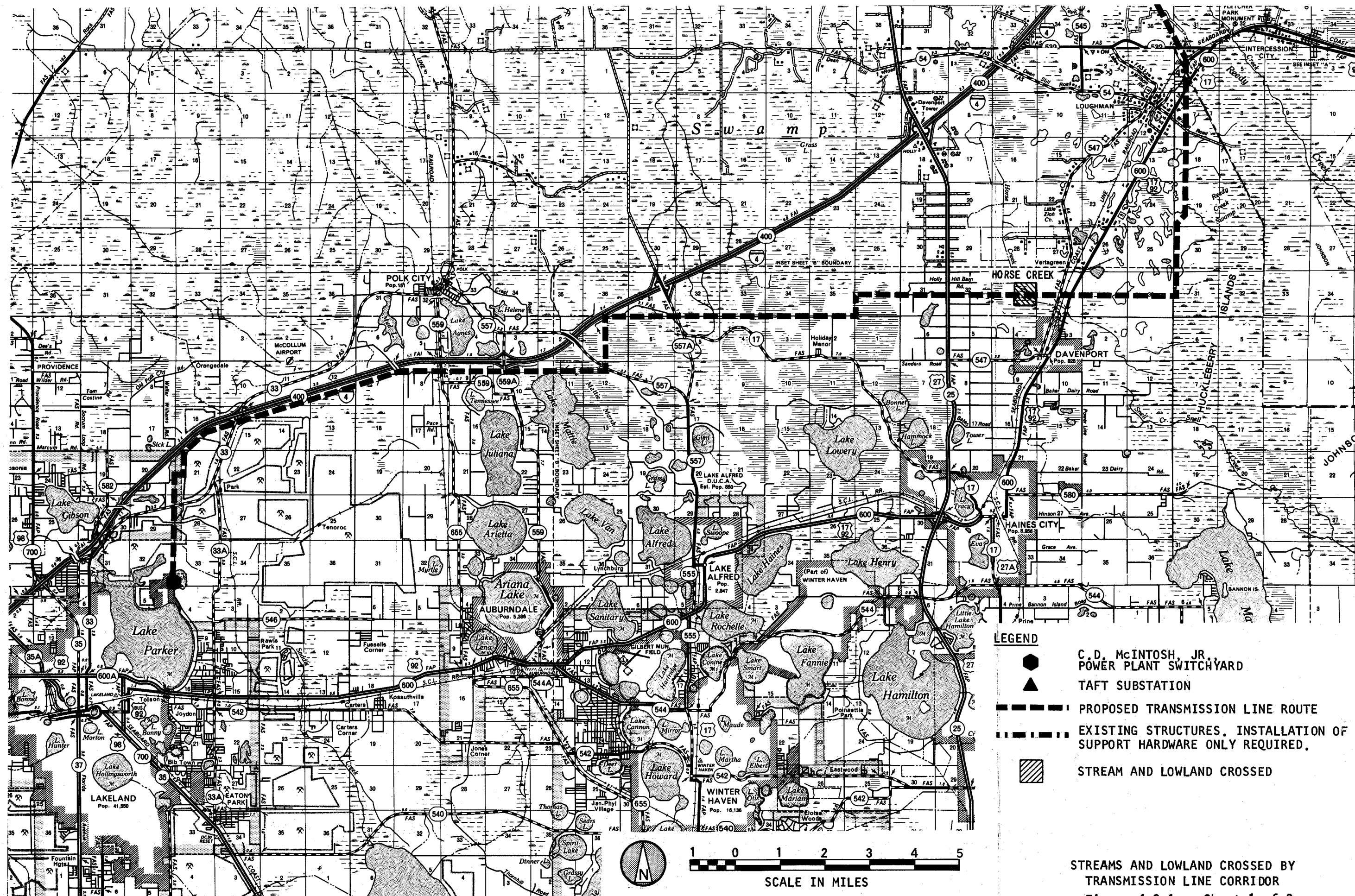


AREAS WHERE TRANSMISSION LINE WILL BE VISIBLE FROM FREQUENTLY TRAVELED ROADS
 Figure 3.8-4 Sheet 1 of 2
 p 3.8-41



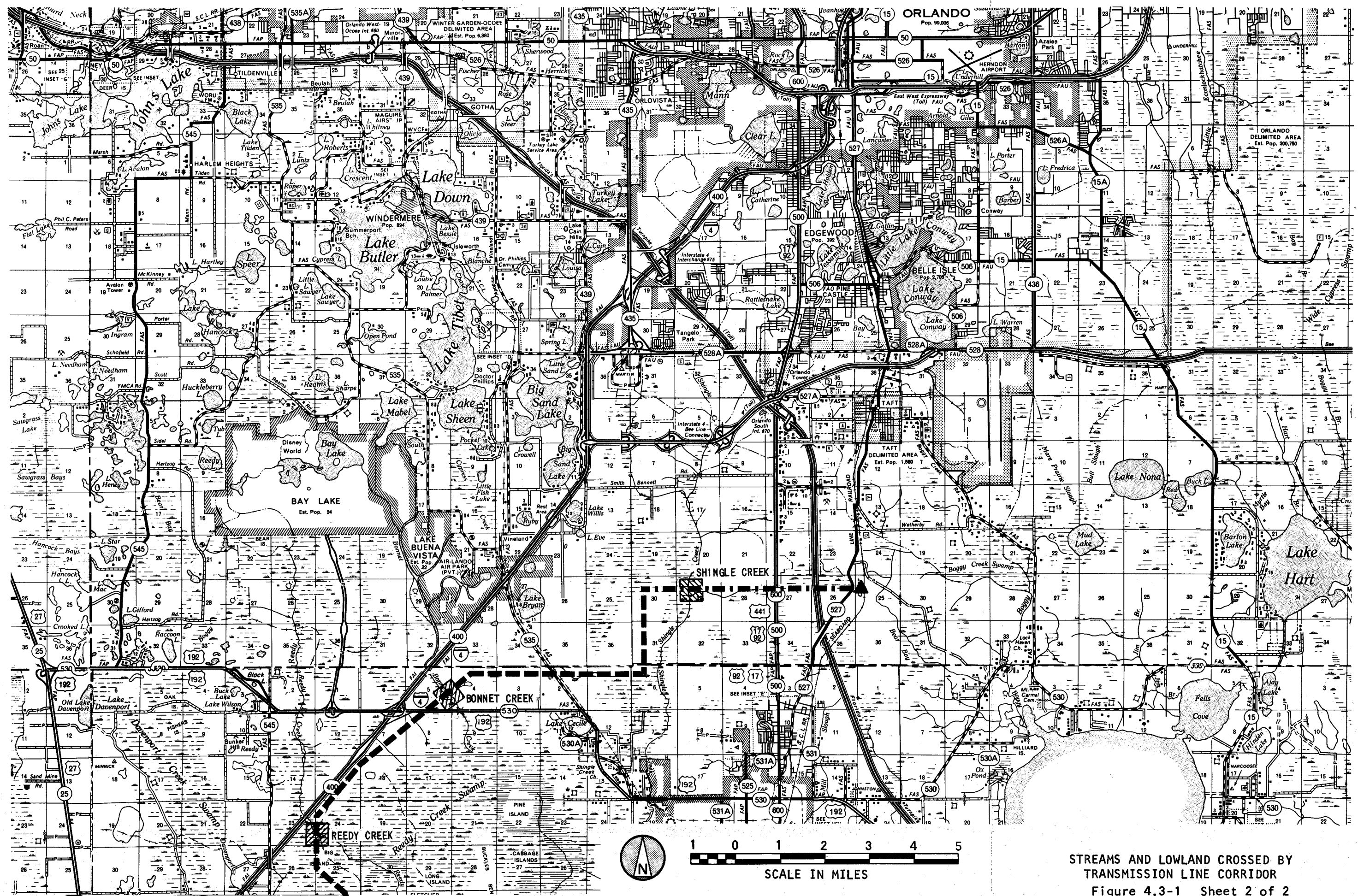


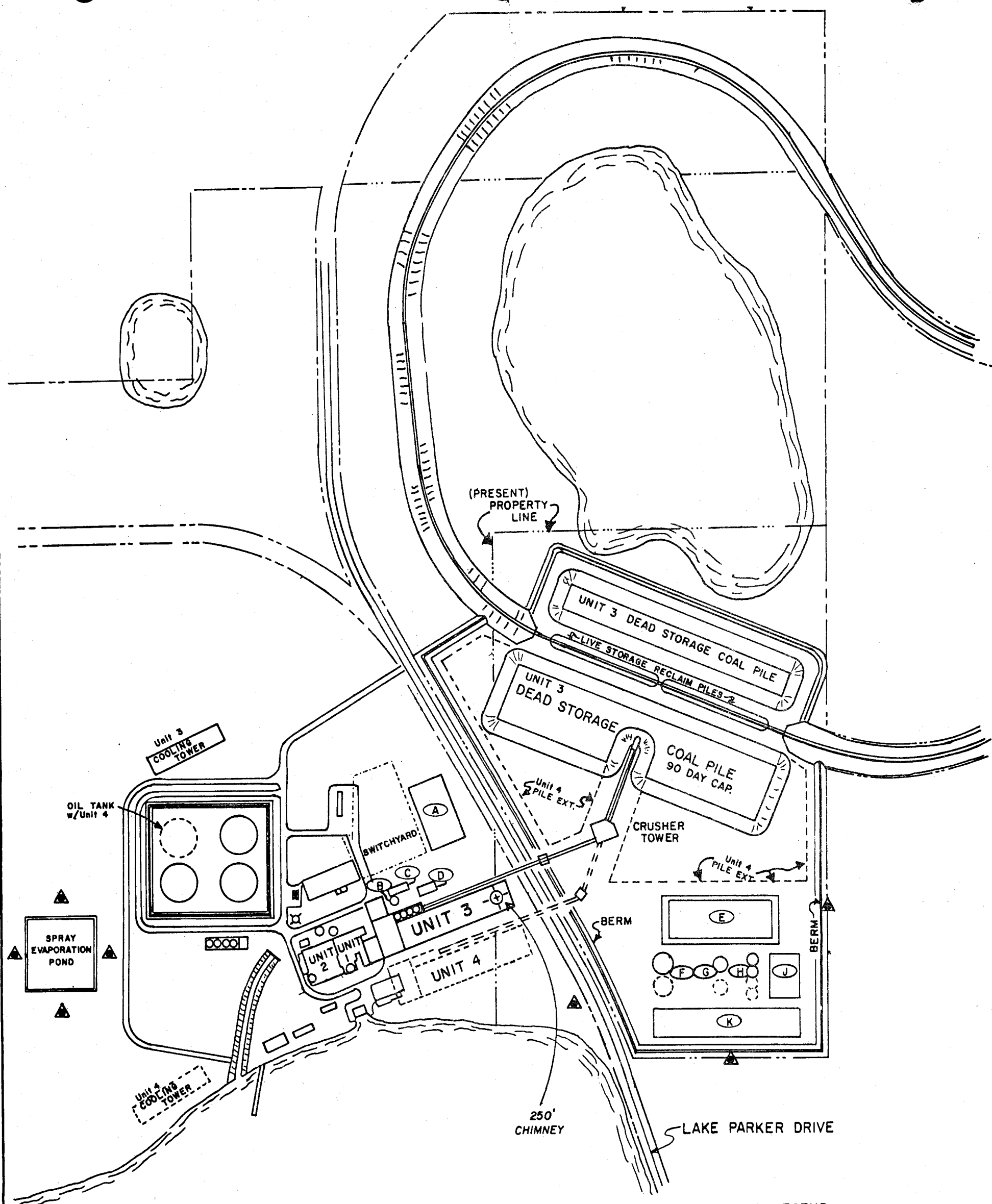
CONTINUED FROM SHEET 1 OF 2



STREAMS AND LOWLAND CROSSED BY
TRANSMISSION LINE CORRIDOR

Figure 4.3-1 Sheet 1 of 2



 SHALLOW GROUNDWATER
MONITORING WELLS

- (A) REFUSE PREPARATION BLDG
- (B) CONDENSATE STORAGE TANK
- (C) MAKE-UP DEMINERALIZER BLDG
- (D) BULK GAS and CHEMICAL STORAGE
- (E) SETTLING and SPRAY POND AREA
- (F) SO₂ THICKENER
- (G) FLY ASH SILO
- (H) BOTTOM ASH DEWATERING BINS
- (J) SLUDGE CONDITIONING AREA
- (K) LIMESTONE RECEIVING and PREPARATION AREA

Division <i>POWER GENERATION</i>		CITY OF LAKE LAND, FLORIDA		Proj. No.		Scale <i>N/A</i>	
Engineer		DEPT. OF ELECTRIC & WATER UTILITIES		Map Section			
Dr. by <i>A. Hendrix</i>	Date	LOCATION OF MONITORING WELLS		Dwg. No.		Rev. No.	
App. by	<i>5-19-78</i>	McINTOSH PLANT UNIT no. 3		MAP 6.4-1			

RECEIVED
AUG 7 1978

SUPPLEMENT FOR ASSOCIATED TRANSMISSION FACILITIES TO
THE C. D. MCINTOSH, JR. POWER PLANT, UNIT NO. 3
SITE RECERTIFICATION APPLICATION

PERMIT

The following information is supplementary to the C. D. McIntosh, Jr. Power Plant, Unit No. 3 Site Recertification Application dated April 17, 1978.

The Orlando-Lakeland 230 kV Transmission Line routing was reviewed with the Department of Environmental Regulations (DER) on July 10, 1978. Following this meeting the possibility of rerouting portions of the line were examined in the field by Orlando Utilities Commission (OUC) and a new route for portions of the line was selected. The rerouted portions of the line were discussed again with the DER on July 17, 1978 and were favorably received.

Because of the new route, certain portions of the application submitted on April 17, 1978 are out-of-date and require updating. Those portions requiring updating are detailed below.

1. The second paragraph of Section 3.8.1 TRANSMISSION LINE DESCRIPTION should describe the transmission line route as follows: The proposed transmission route will be approximately 46 miles in length. Of this total length, 36.30 miles (79.4 per cent) of the route will require routing through areas where existing transmission lines do not presently occur, while 4.60 miles (10.1 per cent) of the route will parallel existing transmission route segments and 4.80 miles (10.5 per cent) will use existing Orlando Utilities Commission transmission structures. Table 3.8-1 tabulates this information by major segments. Figure 3.8-2 indicates the major transmission line segments as discussed above.

2. Section 3.8.3 ACCESS ROADS AND FACILITIES should read as follows:

Access to the transmission line right-of-way will be from county roads, highways, existing pasture and farm roads where possible. Creation of through access roads along the transmission route will be required only in corridor segments presently inaccessible. Through access roads are roads which traverse wetlands. In areas where through access roads are not necessary, isolated areas of fill may be required to permit construction access to individual structure locations from existing roads or firm terrain. The vehicles used for maintenance and inspection will be capable of traversing the transmission line right-of-way in its natural state without the need for road improvements with the exception of inundated marshes and swamps. Figure 3.8-3 shows where construction of access roads on the right-of-way will be required through marshes and swamps.

Where access roads to individual structure sites and through access roads are necessary through wetlands, corrugated metal pipe (CMP) culverts will be constructed at regular intervals to maintain equal water level between the sides of the road. The number and placement of these culverts will be determined by the Orlando Utilities Commission's field inspectors during construction. Bridges will not be required at any creek crossings.

3. The second, third and fourth paragraphs of Section 3.8.4 LAND USE ALONG RIGHT-OF-WAY should be replaced with the following: New or additional right-of-way will need to be acquired for the approximately 41 miles of

3. Continued

the 46 mile transmission line corridor. Approximately three-fourths of the proposed corridor will require acquisition of a new corridor while the other one-fourth will parallel existing corridors. Of that portion requiring new acquisition, mixed cypress-hardwood swamps and pine flatwoods constitute the two major land use types along the proposed corridor consisting of approximately 11 and 10.5 miles respectively. Approximately 7.5 miles of citrus groves and approximately 4 miles of active or reclaimed strip mining areas will also be crossed.

All vegetation greater than 4 feet in height and within the area from the center of the transmission line to 10 feet outside the outer conductors will be removed. All vegetation outside this area, but within the right-of-way and greater than 10 feet in height will be removed. Tall timber outside of the right-of-way which could fall into the transmission line as a result of high winds or storms will be trimmed or removed. No clearing of fruit trees in citrus groves will be required. No changes in topography other than indicated elsewhere herein are expected from the physical disturbances associated with the movement and use of machinery to be employed in various aspects of clearing, construction, and maintenance of the corridor.

4. Item C of Section 3.8.7 TRANSMISSION LINE MAINTENANCE should read as follows:

- C. Use of farm type tractors with brush-cutting attachments and/or by hand as required to maintain the initial tree trimming and clearing of vegetation to maintain initial transmission line access routes.

5. Subsection 3.8.8.5 FRESHWATER MARSHES should read as follows: There are three freshwater marshes along the proposed transmission route. They are Mattie Marsh, Reedy Creek, and Shingle Creek. The dominate vegetation in the community are maidencane, cordgrass, pickerelweed, cattail, bulrush, rushes, and saw-grass.
6. TABLE 3.8-1 MAJOR TRANSMISSION CORRIDOR SEGMENTS COMPARING LENGTHS AND PERCENTAGES OF PARALLEL ROUTING AND NEW ROUTING REQUIREMENTS was revised and is attached.
7. TABLE 3.8-5 PER CENT COMPOSITION OF MAJOR COMMUNITY TYPES WITHIN A 0.5* MILE CORRIDOR was revised and is attached.
8. The following figures were revised and are attached:
 - 3.8-2 TRANSMISSION LINE CORRIDOR SEGMENTS, SHEETS 1 and 2
 - 3.8-3 MAINTENANCE AND ACCESS ROADS, SHEETS 1 and 2
 - 3.8-4 AREAS WHERE TRANSMISSION LINE WILL BE VISIBLE FROM FREQUENTLY TRAVELED ROADS, SHEETS 1 and 2
 - 3.8-5 EXISTING TRANSMISSION LINES, SHEETS 1 and 2
 - 3.8-12 PRINCIPLE VEGETATION COMMUNITIES ALONG THE TRANSMISSION LINE ROUTE, SHEETS 1, 2, and 3
9. Section 4.3.1 INTRODUCTION, Items A and B should read as follows:
 - A. Approximately 295 acres of the proposed transmission corridor will be maintained at a 4 foot level of vegetation production and approximately 295 acres will be maintained at a 10 foot level of vegetation production. The transmission corridor can be used for agricultural purposes and only land that is actually occupied by structures cannot be utilized.

TABLE 3.8-1

MAJOR TRANSMISSION CORRIDOR SEGMENTS COMPARING LENGTHS AND
PERCENTAGES OF PARALLEL ROUTING AND NEW ROUTING REQUIREMENTS

TRANSMISSION CORRIDOR SEGMENT (See Figure 3.8-2)	LENGTH			PER CENT	WIDTH (FEET)	AREA (ACRES)
	NEW (MILES)	PARALLEL EXIST (MILES)	*EXIST STRUCTURES (MILES)			
Plant Switchyard (PS)-A	0.25	-	-	0.55	145	4.40
A - B	11.70	-	-	25.60	145	205.60
B - C	18.75	-	-	41.00	145	329.50
C - D	-	4.60	-	10.05	145	80.90
D - E	5.60	-	-	12.30	145	98.40
E - F	-	-	4.80	10.50	0	0
NEW ROUTING	36.30			*Existing structures are double circuit lattice steel towers with one circuit existing. New circuit will occupy second circuit positions.		
PARALLEL ROUTING		4.60				
EXISTING STRUCTURES			4.80			
TOTAL (NEW + PARALLEL + EXISTING)		45.70		REVISED (8-1-78)		

TABLE 3.8-5

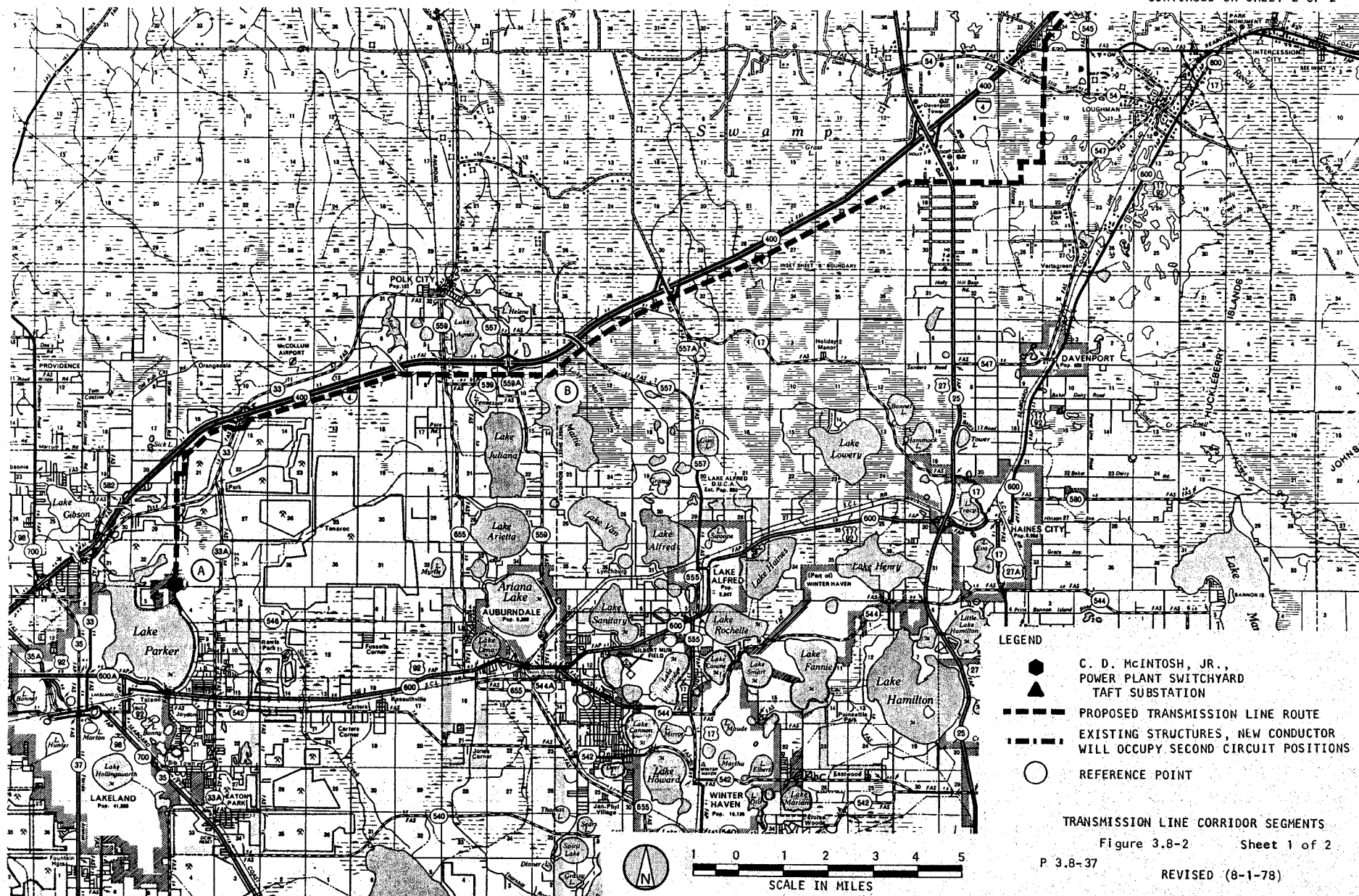
PER CENT COMPOSITION OF MAJOR COMMUNITY TYPES WITHIN A 0.5* MILE CORRIDOR

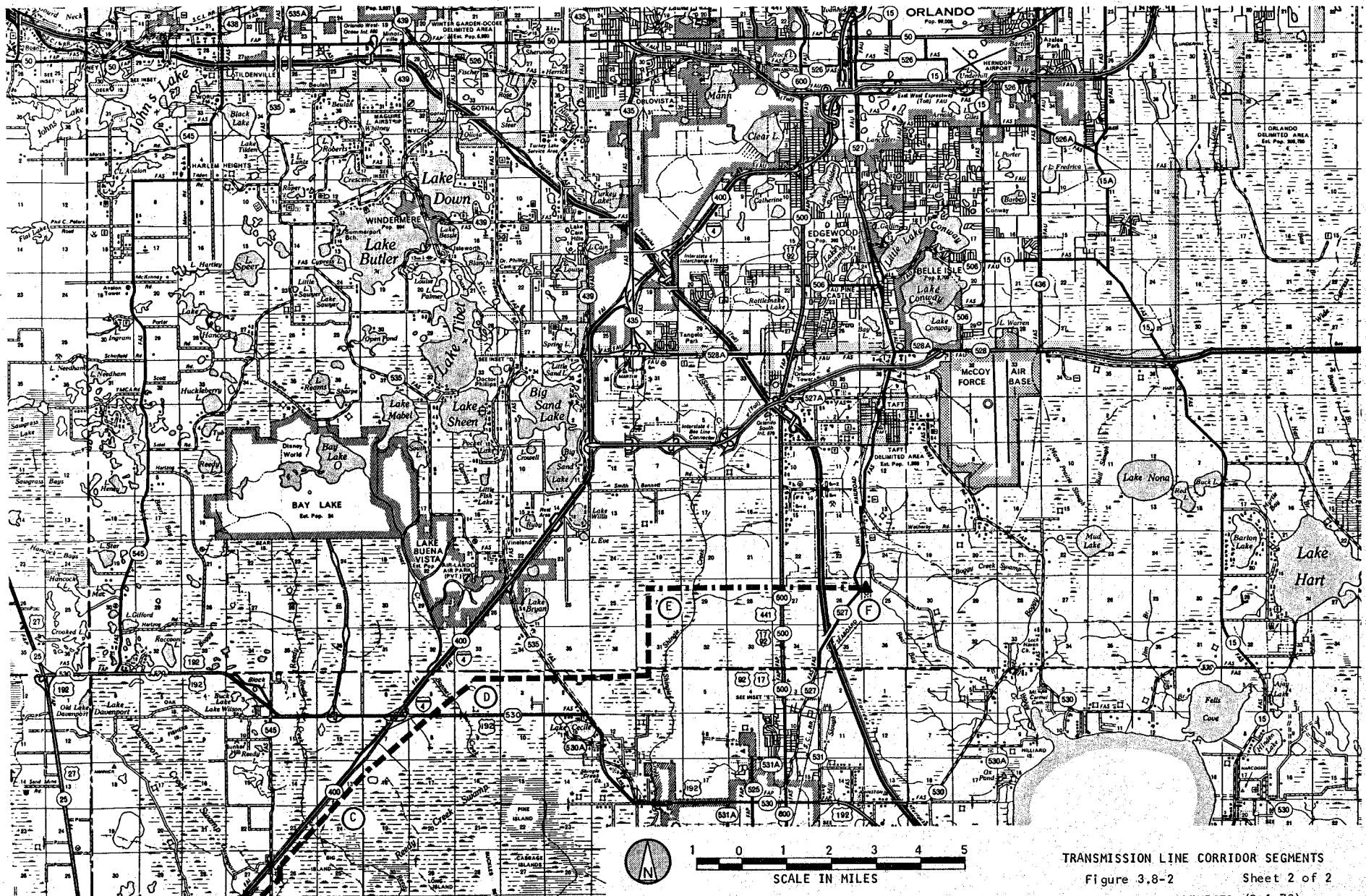
Vegetational Community Type	CORRIDOR SECTION**						TOTAL**
	Plant Switchyard (PS)-A	A-B	B-C	C-D	D-E	E-F	
Pine Flatwoods	50.0	18.8	8.0	54.0	56.0	30.9	23
Pasture		4.3	13.0	28.0	19.0	35.1	15.1
Cypress Domes and Strands		3.0	17.0		16.0		10
Mixed Cypress- Hardwood Swamps		15.4	32.0	18.0	9.0	34.0	24
Ruderal Areas		18.4					4.7
Citrus Groves		14.0	30.0				16.5
Open Water		2.6					.7
Other***	50.0	23.5					6.0
TOTALS	100.0	100.0	100.0	100.0	100.0	100.0	100.0

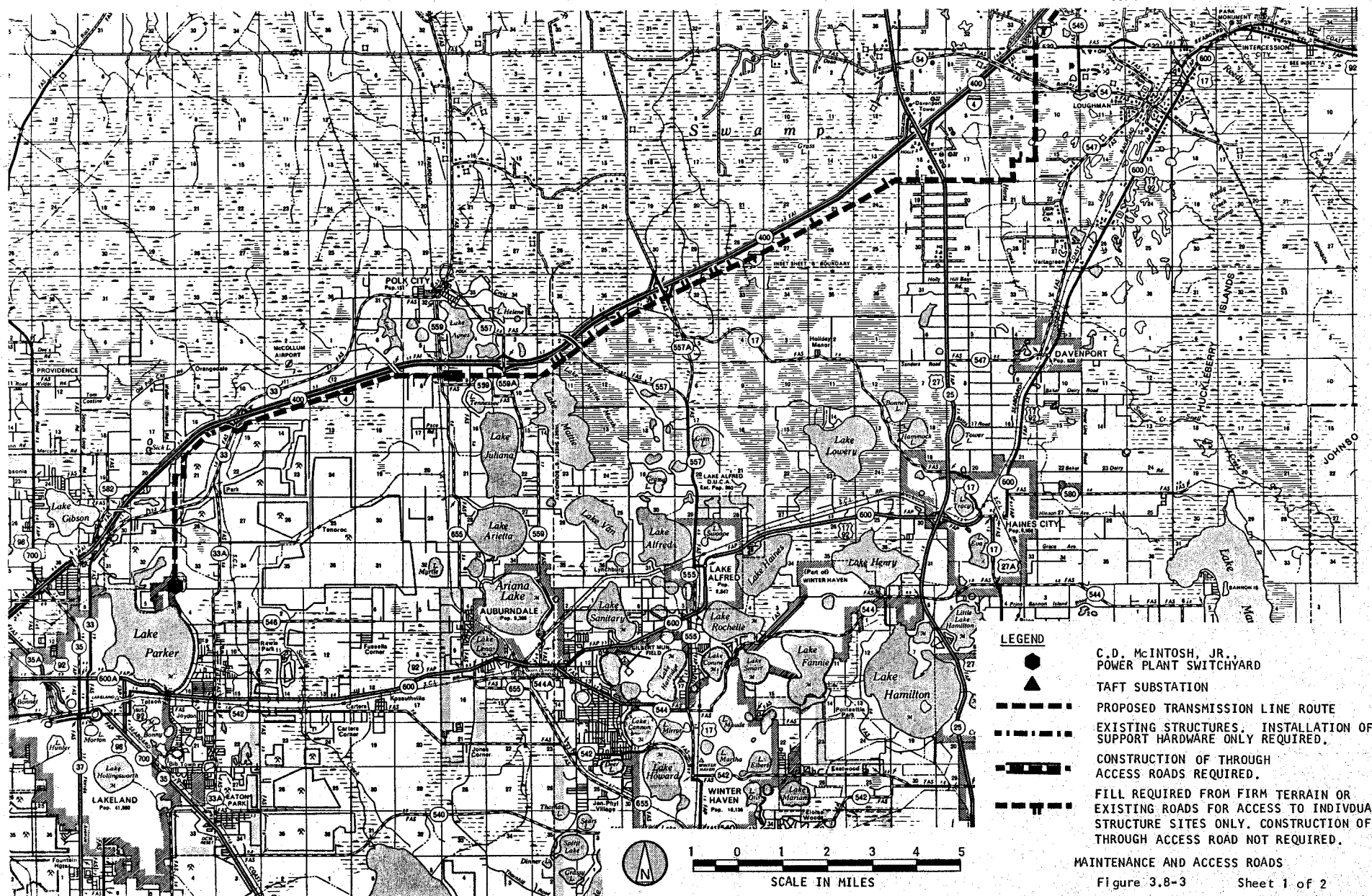
*The 0.5 mile wide corridor is the zone of study. The actual transmission line right-of-way corridor width for the new corridors will be between 80 and 160 feet.

**All numbers shown are percentages. Location of sections are shown on Figure 3.8-2.

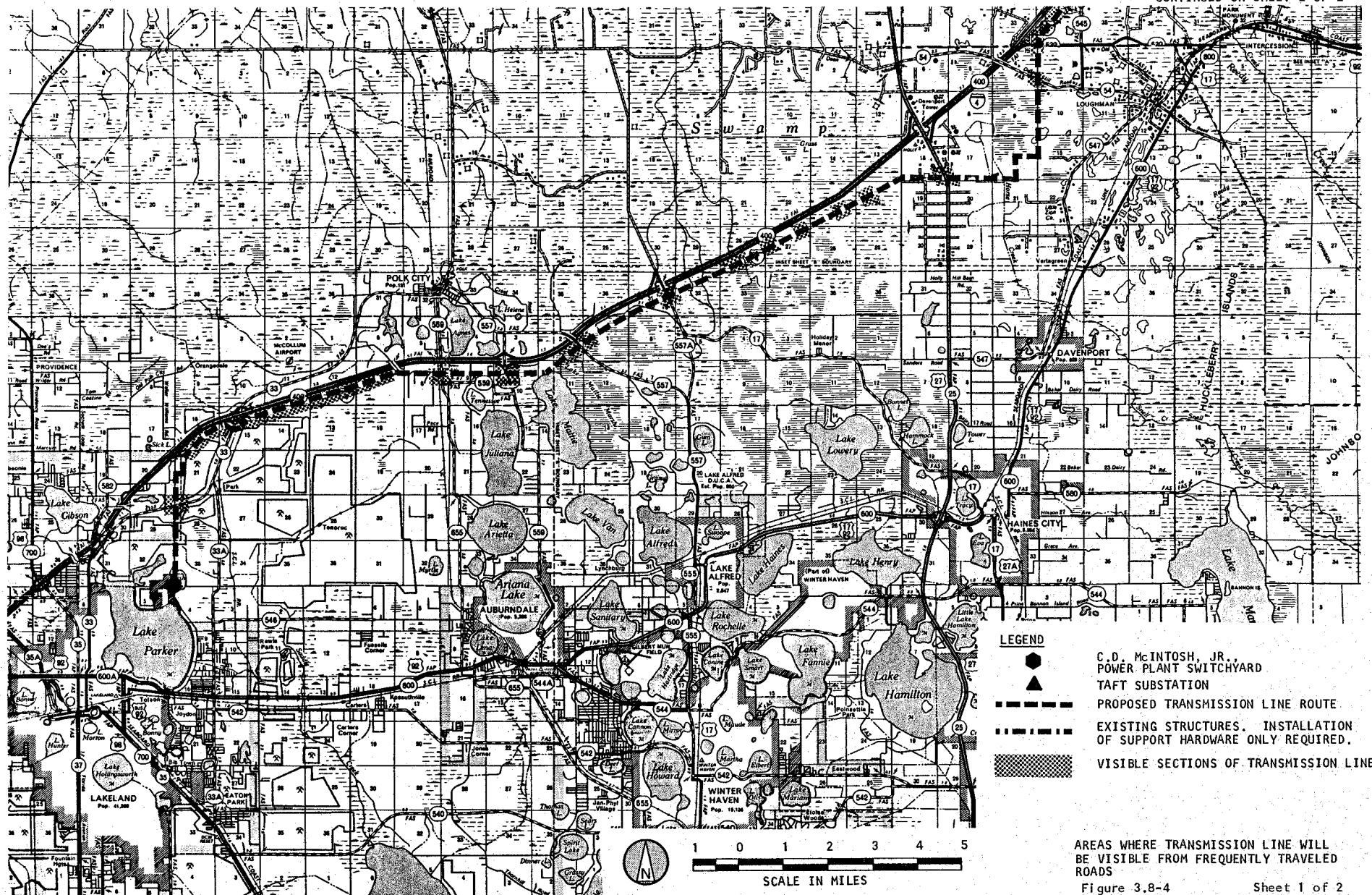
***Includes major highways and urbanized areas.







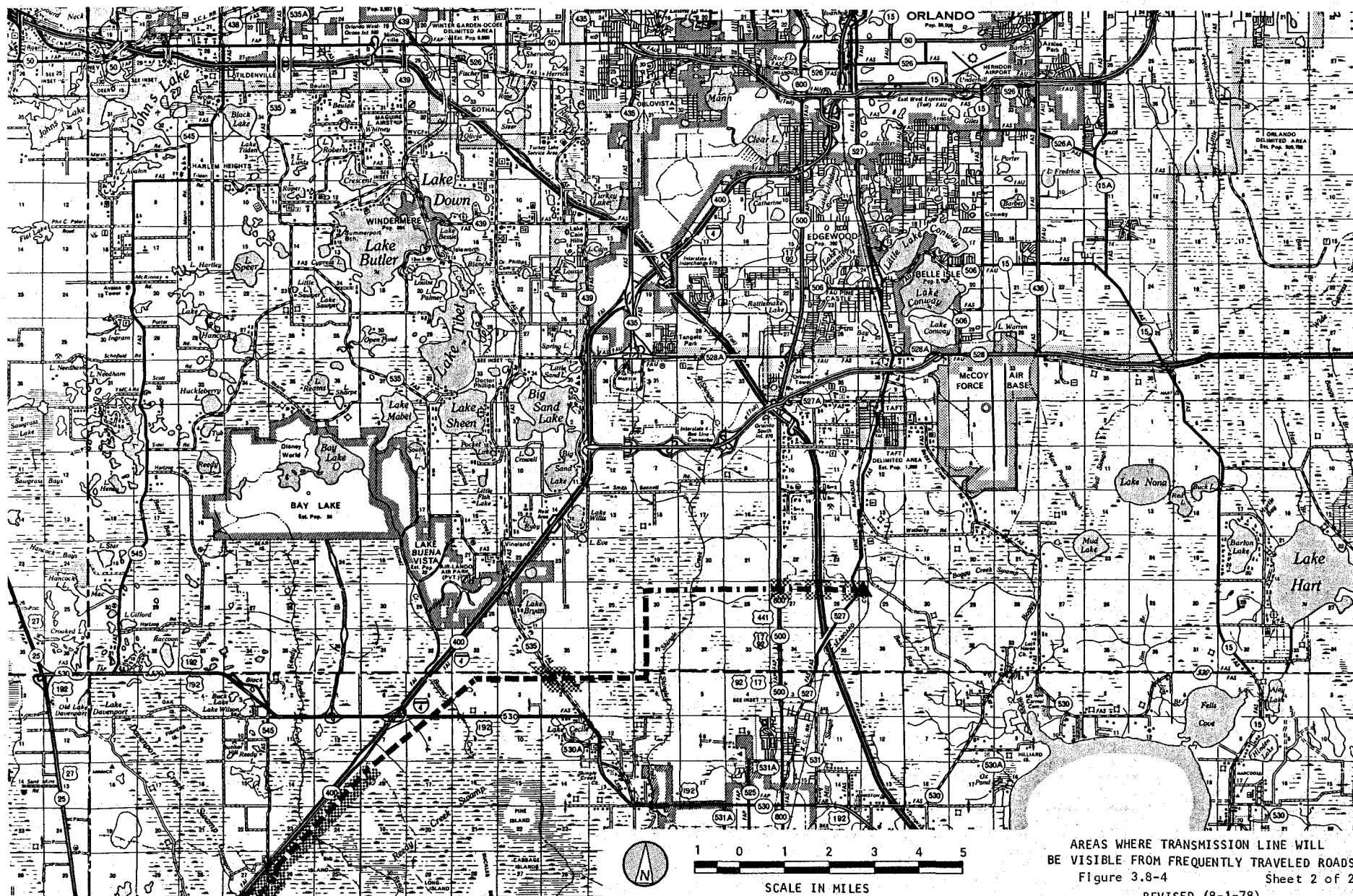
CONTINUED ON SHEET 2 OF 2



AREAS WHERE TRANSMISSION LINE WILL BE VISIBLE FROM FREQUENTLY TRAVELED ROADS

Figure 3.8-4
p 3.8-41

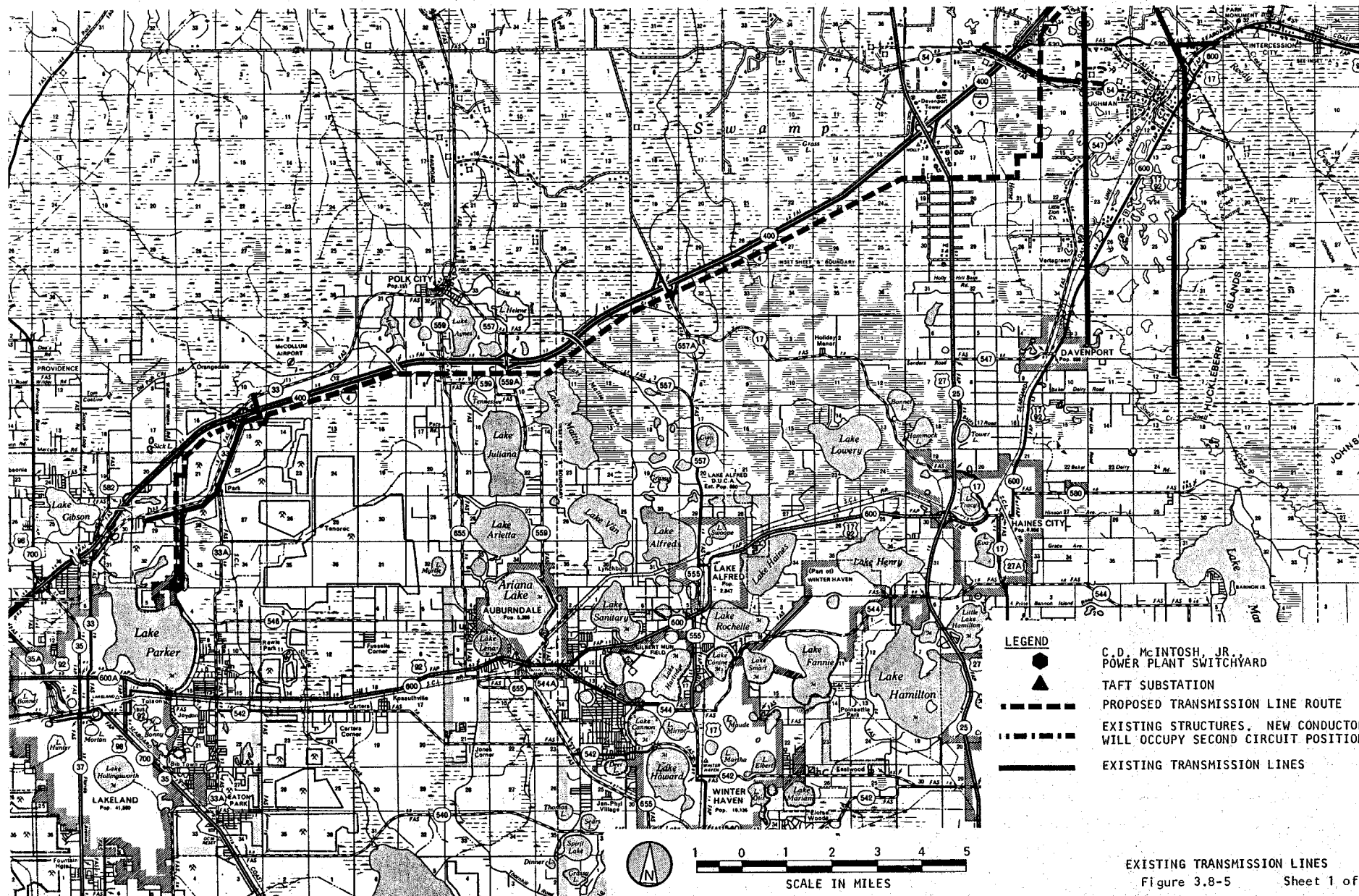
Sheet 1 of 2
REVISED (8-1-78)



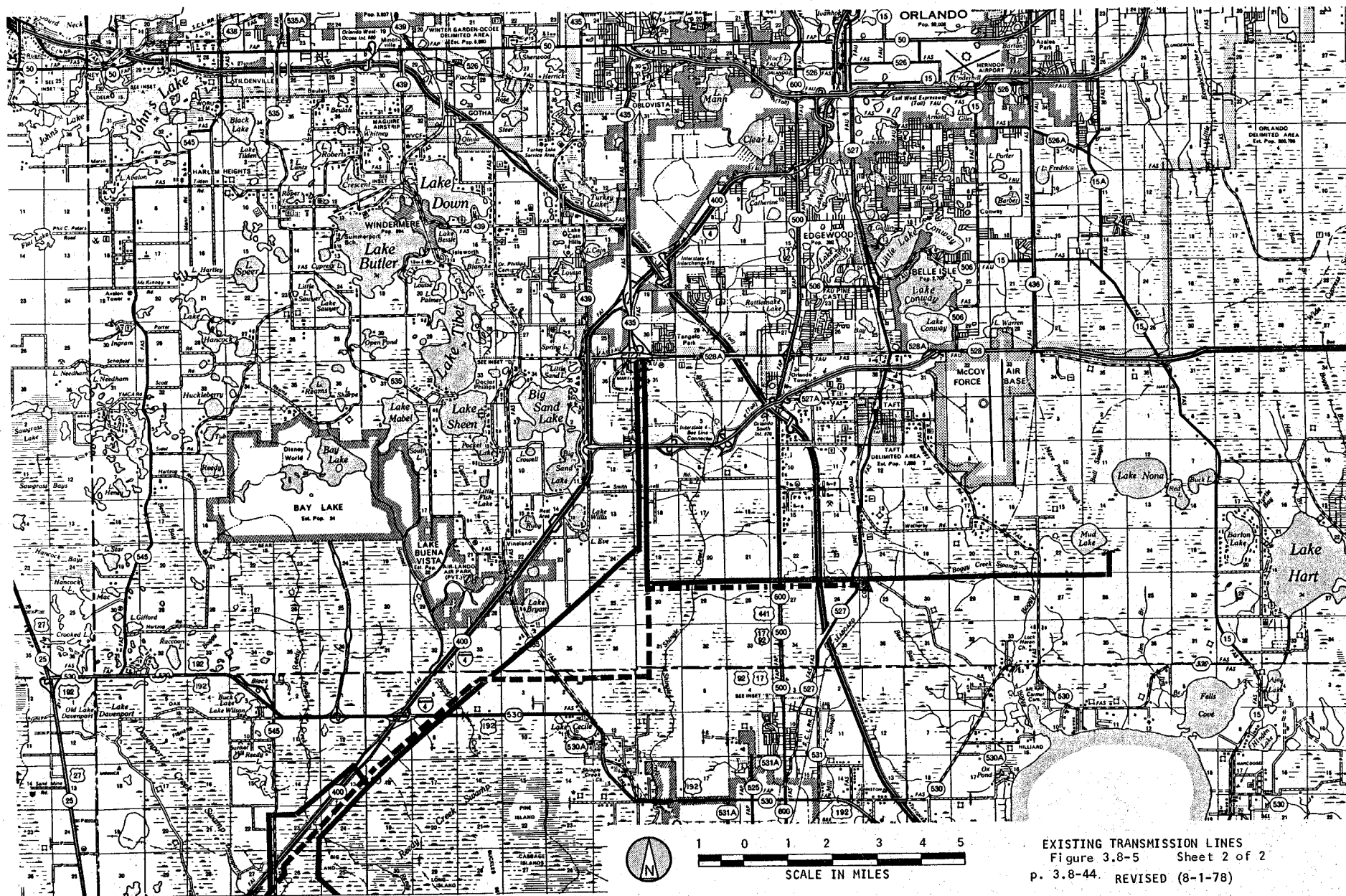
CONTINUED FROM SHEET 1 OF 2

AREAS WHERE TRANSMISSION LINE WILL
BE VISIBLE FROM FREQUENTLY TRAVELED ROADS
Figure 3.8-4 Sheet 2 of 2

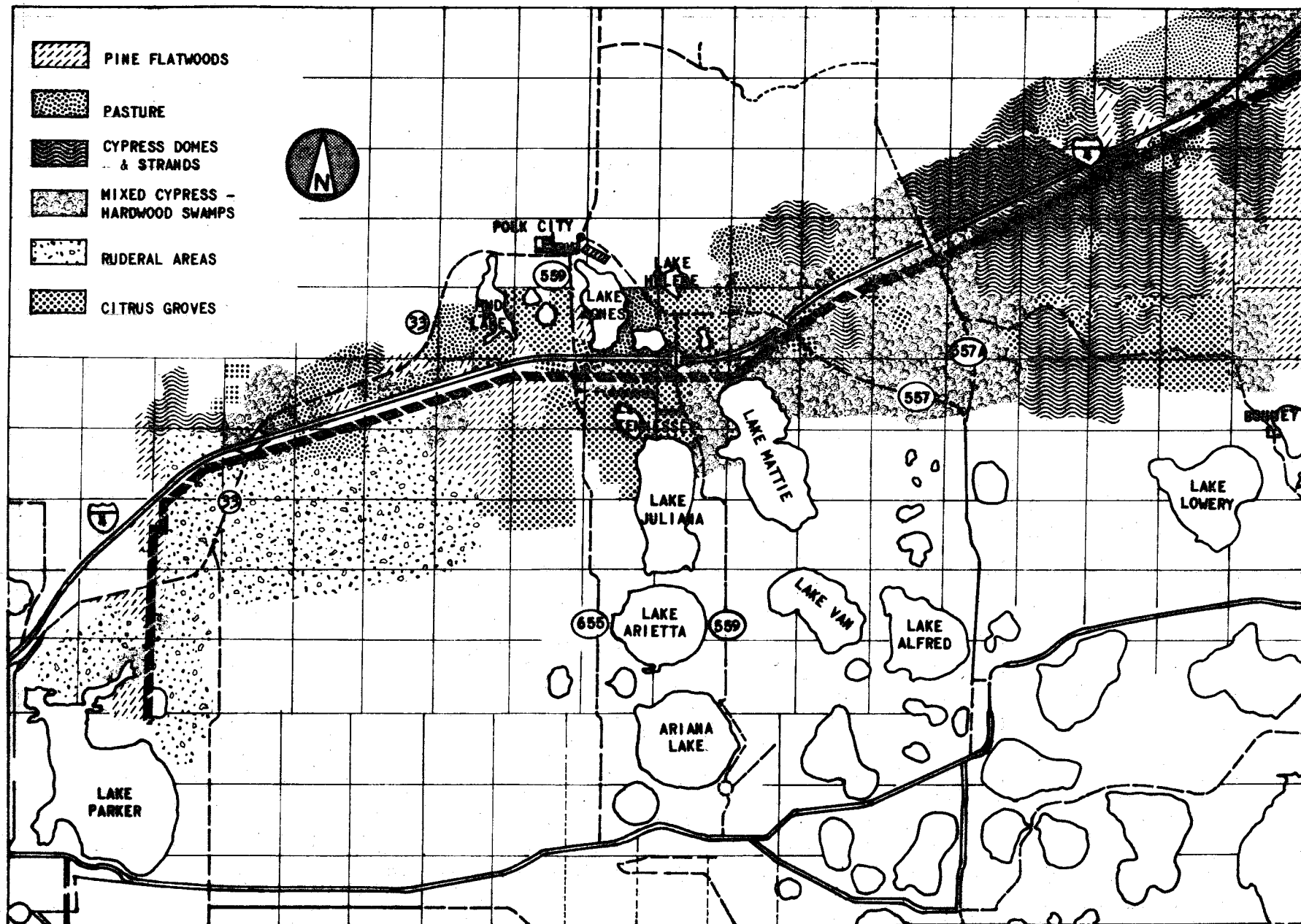
REVISED (8-1-78)



EXISTING TRANSMISSION LINES
Figure 3.8-5 Sheet 1 of 2



CONTINUED FROM SHEET 1 OF 2



A
CONTINUED ON
SHEET 2 OF 3

FIGURE 3.8-12
PRINCIPLE VEGETATION COMMUNITIES
ALONG THE TRANSMISSION LINE ROUTE (SHEET 1 OF 3)

REVISED (8-1-78)

CONTINUED ON
B SHEET 3 OF 3

p 3.8-48

A CONTINUED FROM
SHEET 1 OF 3

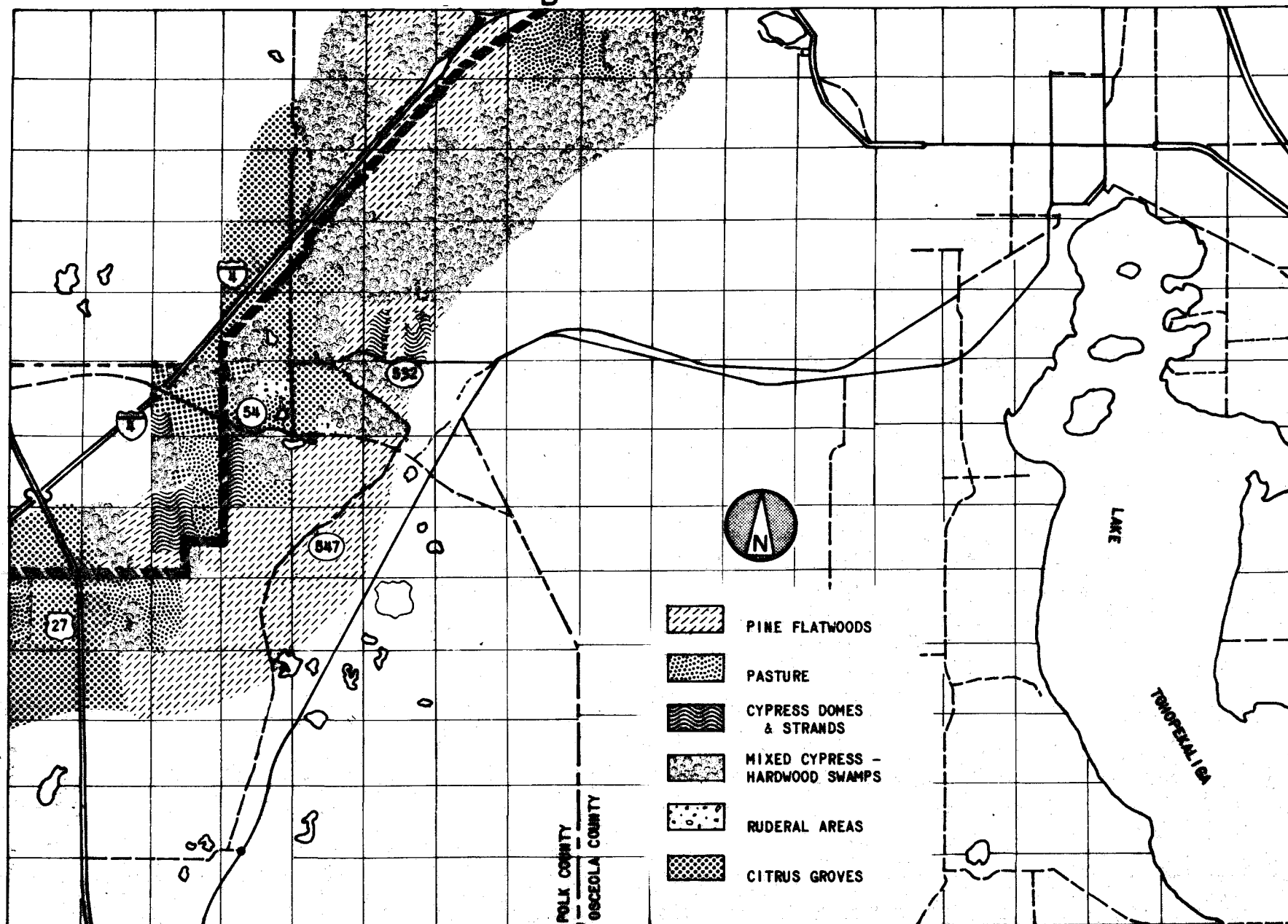
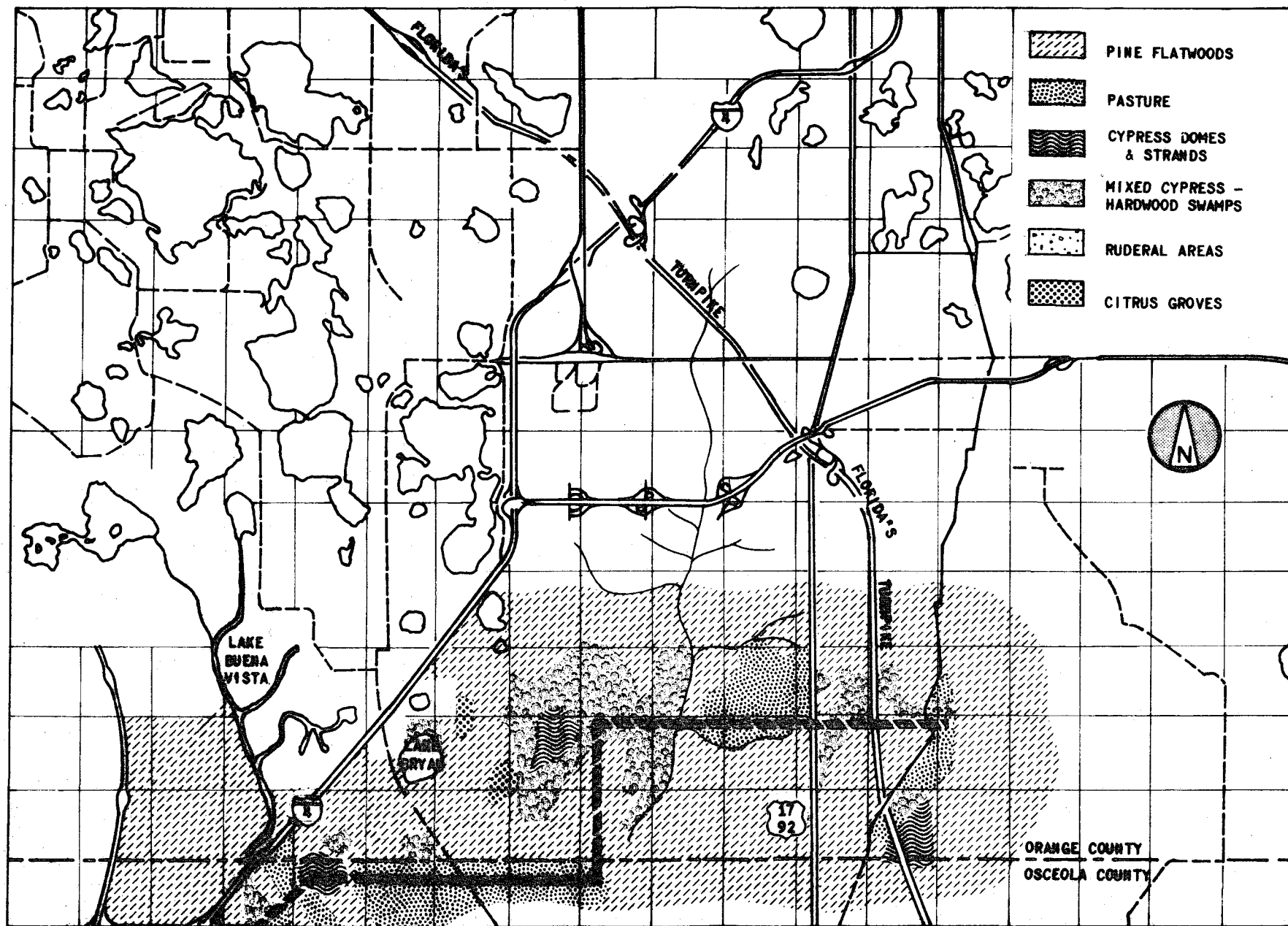


FIGURE 3.8-12
PRINCIPLE VEGETATION COMMUNITIES
ALONG THE TRANSMISSION LINE ROUTE (SHEET 2 of 3)

REVISED (8-1-78)



B

CONTINUED FROM
SHEET 2 OF 3

FIGURE 3.8-12
PRINCIPLE VEGETATION COMMUNITIES
ALONG THE TRANSMISSION LINE ROUTE (SHEET 3 of 3)

REVISED (8-1-78)

9. Continued

B. A total of approximately 590 acres of land within the transmission corridor will be maintained in subclimax vegetation. The 81 acres of existing right-of-way that will be utilized for the new transmission line will continue to be maintained. The periodic removal of vegetation as discussed hereinbefore will favor the development of grasses, other herbaceous plants, and wood shrubs. A subclimatic condition similar to an "old field" successional status will develop.

10. Subsection 4.3.2.1 GUIDELINES FOR CORRIDOR SELECTION, Item B should read as follows:

B. Existing transmission line and highway corridors will be utilized where feasible to minimize the environmental impact resulting from the development of new corridors.

11. Subsection 4.3.2.2 GUIDELINES FOR CORRIDOR CONSTRUCTION, Item B-1 should read as follows:

1. Initial clearing will be carried out using brush-cutting tractors or by hand cutting as necessary. All vegetation greater than 4 feet in height and within the area from the center of the transmission line to 10 feet outside the outer conductors will be removed. All vegetation outside this area but within the right-of-way and greater than 10 feet in height will be removed. Tall timber outside of the right-of-way which could fall into the transmission line as a result of high winds or storms will be trimmed or removed. No clearing of fruit trees in citrus groves will be required.

12. The second paragraph of Section 4.3.3 POTENTIALLY SENSITIVE AREAS should read as follows: The length of transmission lines through different categories of visually sensitive land is summarized as follows.

<u>Category</u>	<u>Length of New Lines</u> <u>(miles)</u>
Parks	None
National or State Monuments	None
Scenic Areas	None
Recreation Areas	None
Historic Areas	None
National or State Forests	None
Marshland	12.4--New Lines
	0.8--Along Parallel Lines
	<u>1.6--Along Existing Lines</u>
	<u>14.8--Total</u>

Utilizing onsite inspections and briefings, the Orlando Utilities Commission will alert clearing and grading contractors about problems associated with working in sensitive areas.

13. Article 4.3.3.1.1 HORSE CREEK, Article 4.3.3.1.2 DAVENPORT CREEK, and Article 4.3.3.1.4 BONNET CREEK should read as follows:

4.3.3.1.1 HORSE CREEK. As shown in Figure 4.3-1, Sheet 1 of 2, the new transmission corridor will cross Horse Creek about one mile east of Highway 27. Guidelines for stream crossings (Section 4.3.2.2, C) will be followed.

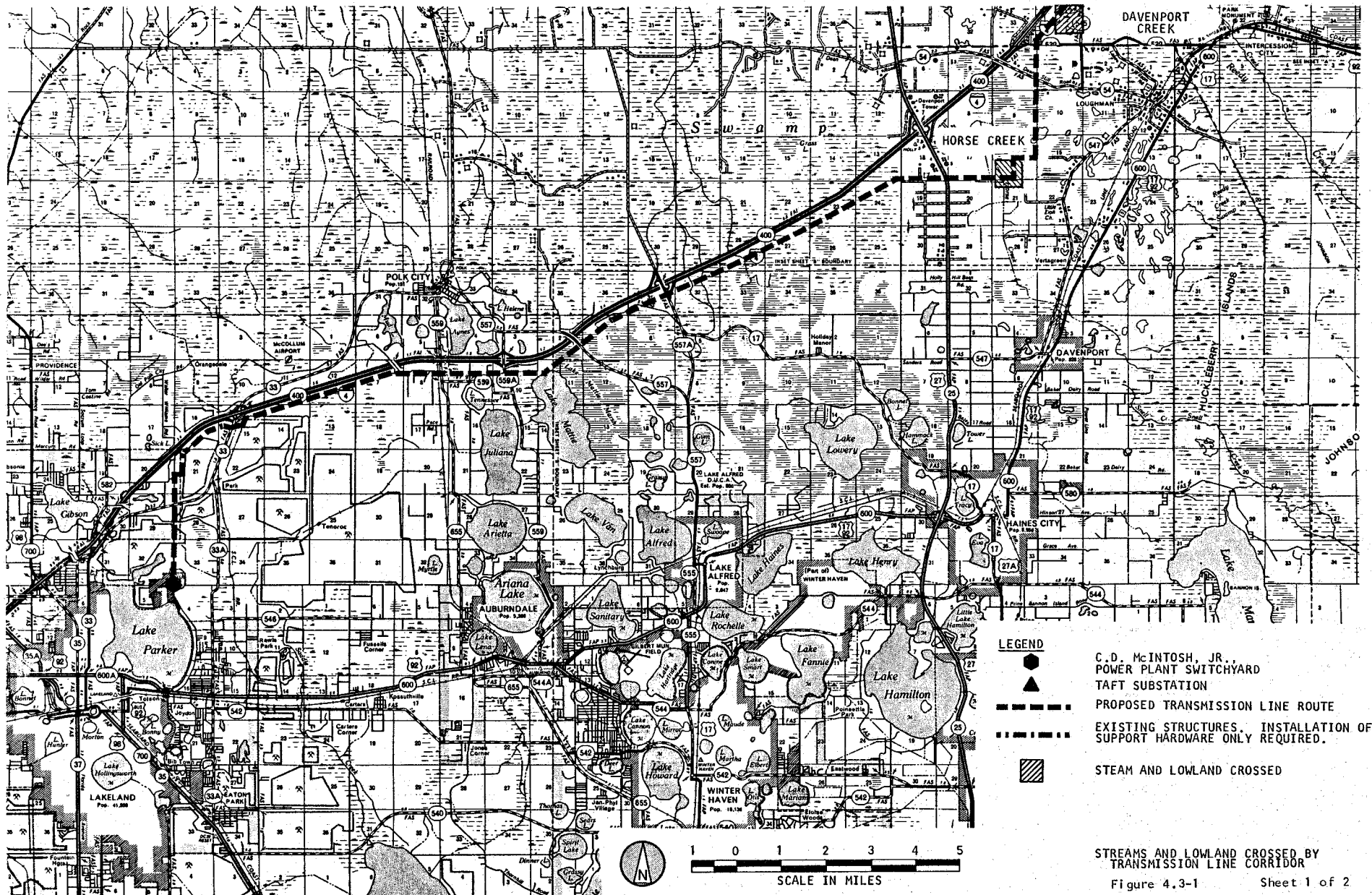
4.3.3.1.2 DAVENPORT CREEK. Davenport Creek will be crossed just south of Interstate Highway 4 at a point about three-quarters of a mile southwest of Reedy Creek. Stream crossing guidelines will be followed.

4.3.3.1.4 BONNET CREEK. The stream will be crossed at a location about four miles northeast of Reedy Creek (see Figure 4.3-1, Sheet 2 of 2). Guidelines for crossing streams will be followed.

14. Figure 4.3-1, STREAMS AND LOWLAND CROSSED BY TRANSMISSION LINE CORRIDOR, SHEETS 1 and 2 were revised and are attached.

15. Section 5.5 EFFECTS OF THE OPERATION AND MAINTENANCE OF THE ASSOCIATED TRANSMISSION SYSTEM, Item C should read as follows:

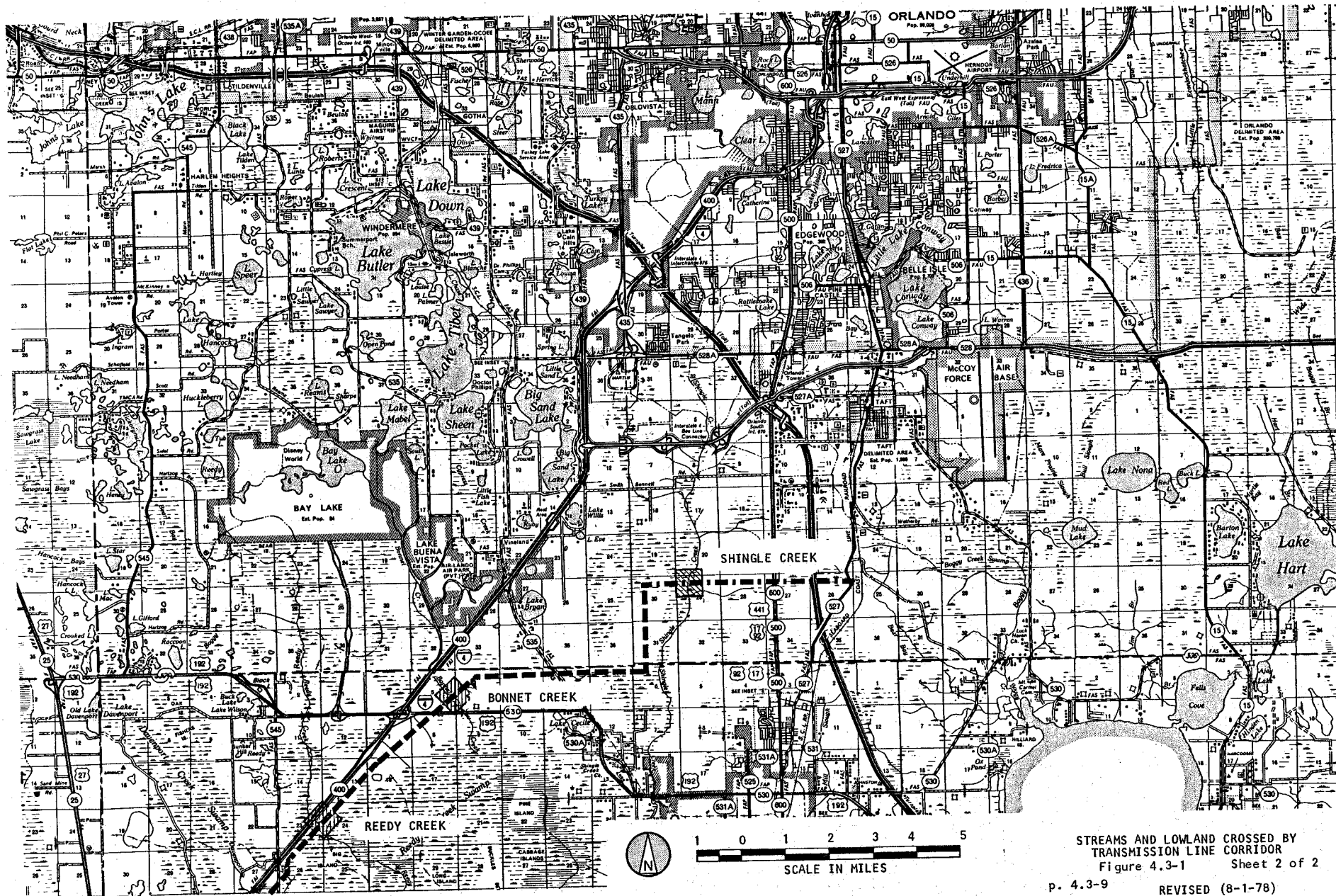
C. Use of farm type tractors with brush-cutting attachments and/or by hand as required to maintain the initial tree trimming and clearing of vegetation to maintain initial transmission line access routes.



STREAMS AND LOWLAND CROSSED BY TRANSMISSION LINE CORRIDOR

Figure 4.3-1

Sheet 1 of 2



STREAMS AND LOWLAND CROSSED BY
TRANSMISSION LINE CORRIDOR
Figure 4.3-1 Sheet 2 of 2
p. 4.3-9 REVISED (8-1-78)

1.0 FACILITIES

The Orlando Utilities Commission plans to construct a 230,000 volt [230 Kilovolt (kV)] transmission line from the City of Lakeland's McIntosh Power Plant to the Orlando Utilities Commission's (OUC) Taft Substation.

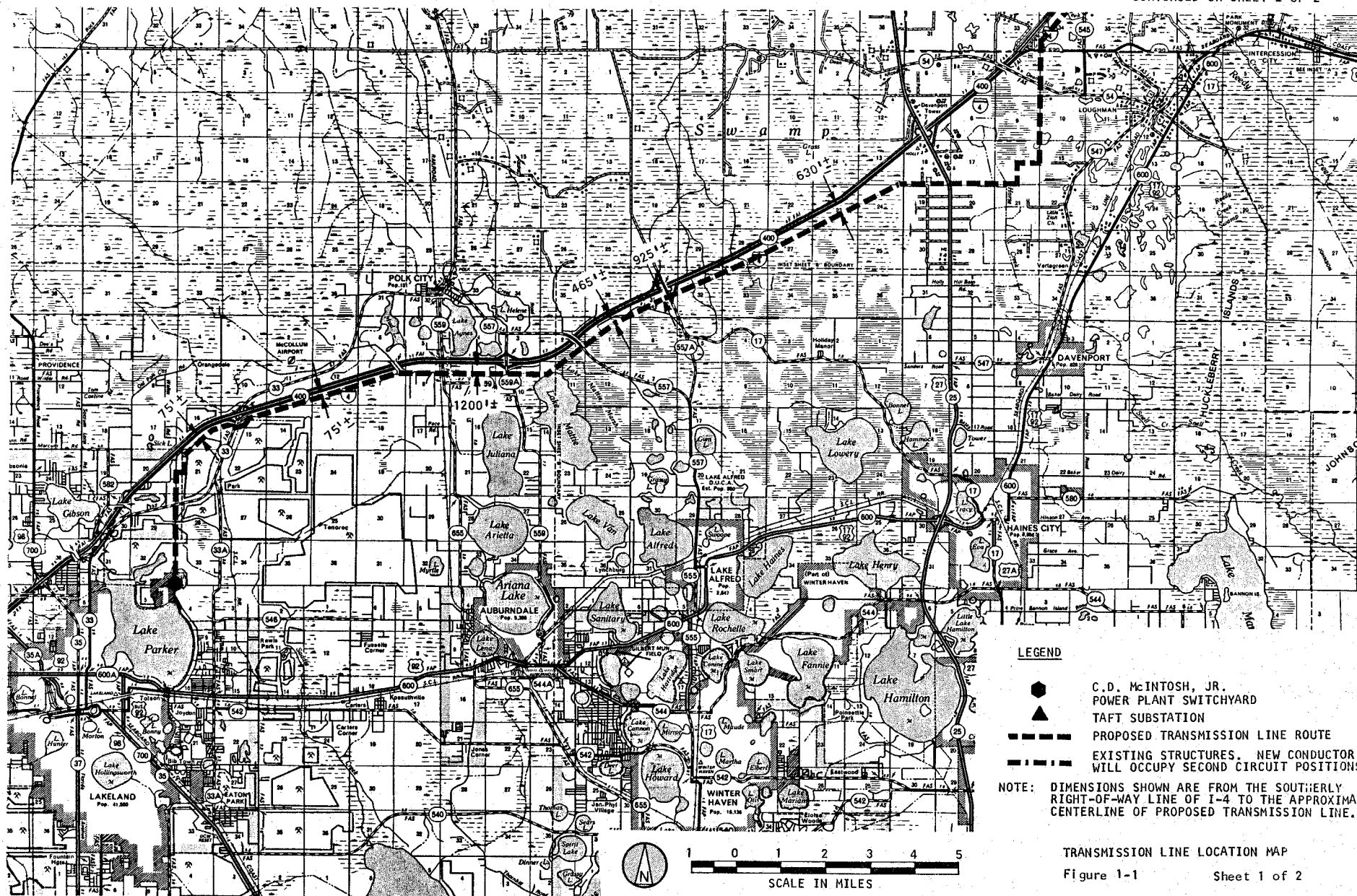
Figure 1-1 shows the proposed location of the transmission line. The transmission line route generally parallels Interstate 4 from north of the McIntosh Power Plant northeasterly to State Road 530. There is one major deviation from Interstate 4, at State Road 25, to bypass the area near Circus World.

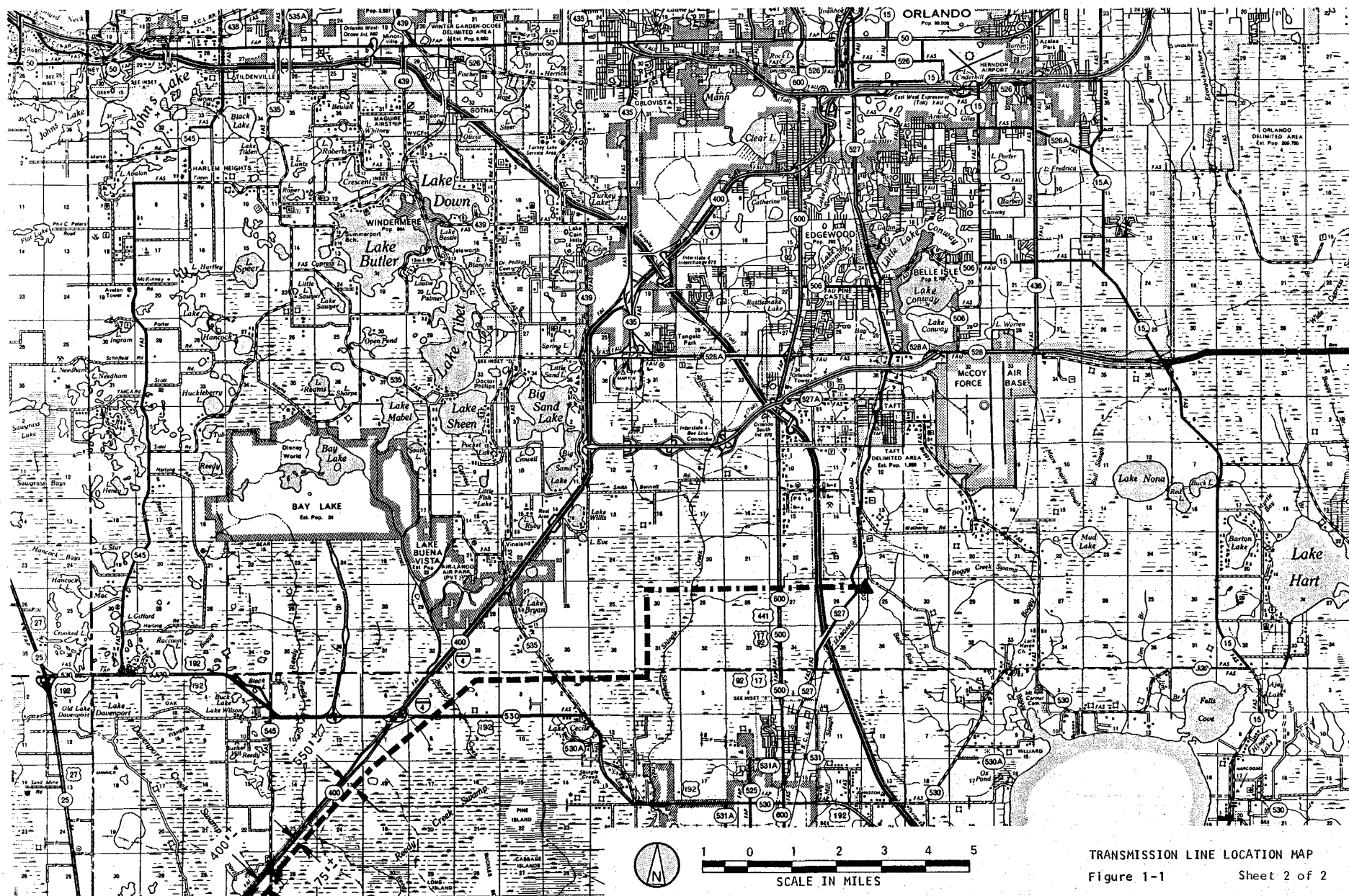
The transmission line will be approximately 46 miles in length utilizing approximately 4.6 miles of existing structures. Approximately 20 miles of the line is within the Green Swamp area. The new supporting structures will be of the double pole wood H - frame type and will be spaced approximately 800 feet apart. The existing structures near the Taft Substation are of the lattice steel type.

The proposed in-service date for the transmission line is 1981 with an anticipated 15 month construction time required.

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CONTINUED FROM SHEET 1 OF 2

TRANSMISSION LINE LOCATION MAP
Figure 1-1 Sheet 2 of 2

2.0 FACILITY USE

The new 230 kV transmission line will be used to transmit and integrate a portion of the power output from Unit 3 of the McIntosh Power Plant into the electric system of the Orlando Utilities Commission. Also this line will provide mutual support of the City of Lakeland electric system and the Orlando Utilities Commission electric system during abnormal and normal conditions. Load flow studies indicate that this transmission line will also contribute significant benefits to the interconnected electric system in this region of Florida.

8. SOIL ANALYSIS

A general soil map of the land along the proposed transmission route through the Green Swamp area is shown in Figure 8-1. These data were taken from the GENERAL SOIL MAP, POLK COUNTY FLORIDA, U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, dated 1975.

Approximately 5.1 miles (90 acres) of the transmission corridor will be situated on Astatula-Tavares-Basinger association soil. This association is characterized by sandy, droughty soils which are not subject to flooding. The area generally is upland.

Fresh Water Swamp accounts for approximately 7.3 miles (128 acres) of the transmission route in the Green Swamp Area. These wetland areas are poorly drained soils which are often flooded.

Myakka-Pomello-Basinger soil association will be traversed by about 6.4 miles (113 acres) of the transmission corridor. This area is classified as pine flatwood.

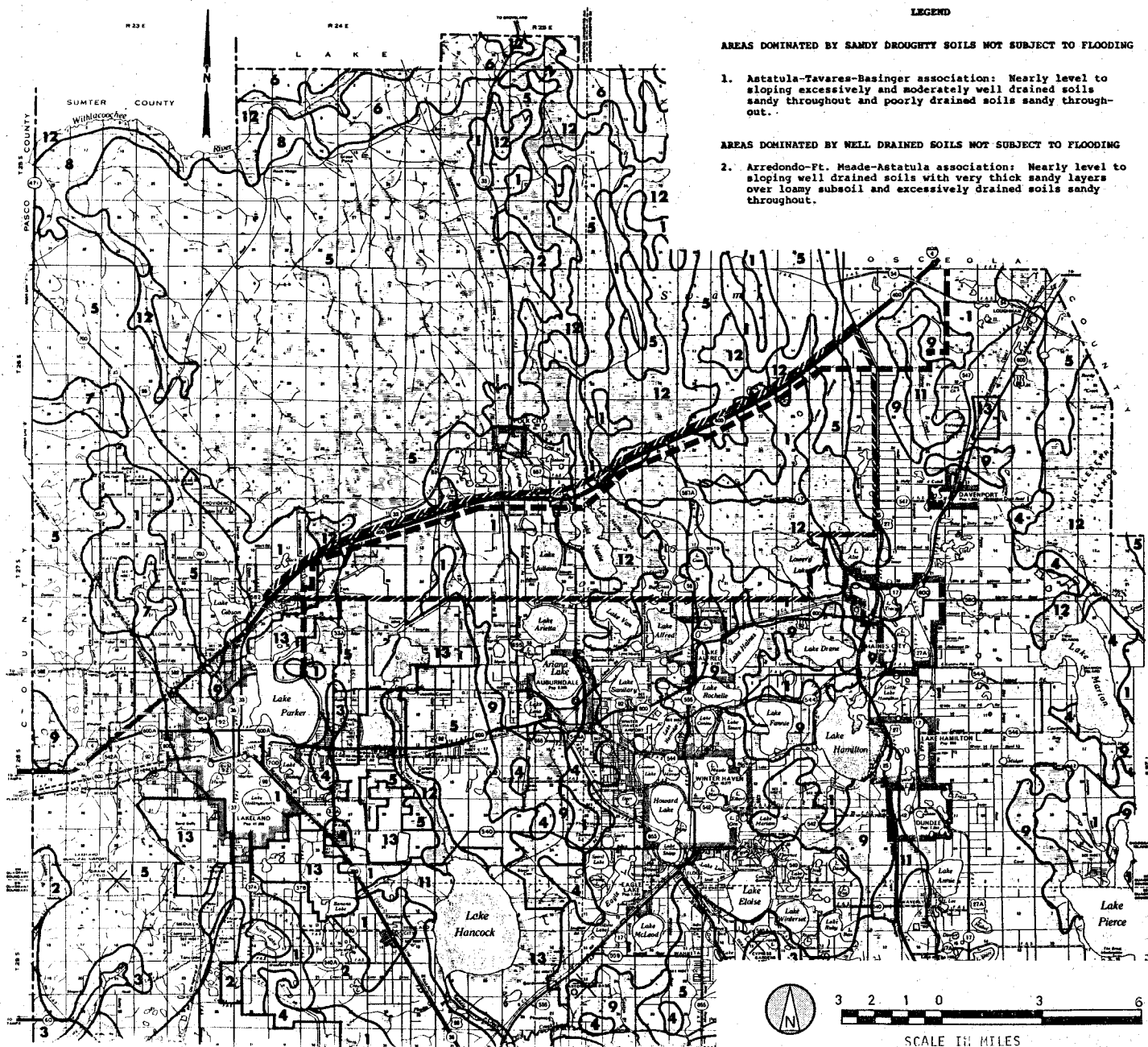
Approximately 0.5 miles (9 acres) of the transmission route will be on land comprised of the Basinger-Pompano-Swamp soil association. This area is classified as wetland.

Another 0.4 miles (7 acres) of transmission route will traverse wetland composed of Brighton-Pompano-Swamp association soil.

8. Continued

Another 0.3 miles (5 acres) of the route will be constructed on land comprised of mine pits and dumps.

Data concerning the soils that will be involved with the transmission route are summarized in Table 8-1.



LEGEND

AREAS DOMINATED BY SANDY DROUGHTY SOILS NOT SUBJECT TO FLOODING

1. Astatula-Tavares-Basinger association: Nearly level to sloping excessively and moderately well drained soils sandy throughout and poorly drained soils sandy throughout.

AREAS DOMINATED BY WELL DRAINED SOILS NOT SUBJECT TO FLOODING

2. Arredondo-Ft. Meade-Astatula association: Nearly level to sloping well drained soils with very thick sandy layers over loamy subsoil and excessively drained soils sandy throughout.

AREAS DOMINATED BY MODERATELY WELL TO POORLY DRAINED SOILS NOT SUBJECT TO FLOODING

3. Tavares-Myakka-Pomello association: Nearly level to sloping moderately well drained soils sandy throughout and poorly and moderately well drained sandy soils with weakly cemented sandy subsoil.
4. Pomello-Basinger-St. Lucie association: Nearly level to gently sloping moderately well drained sandy soils with weakly cemented sandy subsoil; poorly drained soils sandy throughout; and excessively drained soils sandy throughout.
5. Myakka-Pomello-Basinger association: Nearly level to gently sloping poorly and moderately well drained sandy soils with weakly cemented sandy subsoil and poorly drained soils sandy throughout.
6. Myakka-Placid-Swamp association: Nearly level poorly drained sandy soils with weakly cemented sandy subsoil; very poorly drained soils sandy throughout; and very poorly drained soils subject to prolonged flooding.
7. Felda-Pompano-Wabasso association: Nearly level poorly drained sandy soils with loamy subsoil; poorly drained soils sandy throughout; and poorly drained sandy soils with a weakly cemented sandy subsoil layer over loamy subsoil.
8. Paisley-Bushnell association: Nearly level to gently sloping poorly and somewhat poorly drained soils with thin sandy layers over clayey subsoil.

AREAS DOMINATED BY POORLY AND VERY POORLY DRAINED SOILS SUBJECT TO FLOODING

9. Basinger-Pompano-Swamp association: Nearly level poorly drained soils sandy throughout and very poorly drained soils subject to prolonged flooding.
10. Chobee-Delray association: Nearly level very poorly drained soils loamy throughout and very poorly drained soils with thick sandy layers over loamy subsoil.
11. Brighton-Placid association: Nearly level very poorly drained poorly decomposed organic soils 51 to 80 inches or more thick, and very poorly drained soils sandy throughout.
12. Fresh Water Swamp association: Nearly level very poorly drained soils subject to prolonged flooding.

MISCELLANEOUS LAND TYPES

13. Mine Pits and Dumps

AREA OF GREEN SWAMP UNDER CONSIDERATION

C.D. MCINTOSH, JR.
POWER PLANT SWITCHYARD

PROPOSED TRANSMISSION LINE ROUTE

ORLANDO - LAKELAND 230KV TRANSMISSION LINE
GENERAL SOIL MAP - GREEN SWAMP AREA

Figure 8-1

TABLE 8-1

SUMMARY OF SOIL DATA ALONG PROPOSED
TRANSMISSION ROUTE THROUGH THE GREEN SWAMP AREA

<u>LENGTH OF ROUTE</u> (miles)	<u>AREA</u> (acres)	<u>SOIL ASSOCIATION</u>	<u>CLASSIFICATION</u>
5.1	90	Astatula-Tavares-Basinger	upland
7.3	128	Fresh Water Swamp	wetland
6.4	113	Myakka-Pomello-Basinger	pine flatwood
0.5	9	Basinger-Pompano-Swamp	wetland
0.4	7	Brighton-Placid	wetland
<u>0.3</u>	<u>5</u>	Mine Pits and Dumps	miscellaneous
TOTAL 20.0	352		

9.0 EXPECTED CHANGES IN SURFACE AND GROUND WATERS

9.1 INTRODUCTION

Approximately 2,600 feet or 0.5 miles of new access road will be required to be constructed within the Green Swamp area. This segment of road will extend through a wetland area just south of Interstate 4 and east of Highway 644. Without the road, the transmission corridor in that vicinity will be inaccessible.

Along about 11,800 feet or 2.2 miles of other segments of the transmission route, it will be necessary to fill isolated areas to provide access to individual structure locations.

9.2 IMPACT ON WATER QUALITY

During the construction of the new road segments and fill operations, there will be an increase in turbidity of adjacent surface waters. This increased turbidity will be temporary, and the condition will end with the completion of the construction activities. There should be no effect on the ground water in the area.

9.3 EFFECT ON WATER FLOW

Major disruption of the flow between swamp areas has already occurred as a result of the construction of Interstate 4 Highway. The transmission route essentially parallels Interstate 4, and the effect of the transmission line should be insignificant. Where appropriate, corrugated metal culverts will be utilized to permit the flow of water from either side of the access areas.

9.4 IMPACT ON AQUIFER RECHARGE

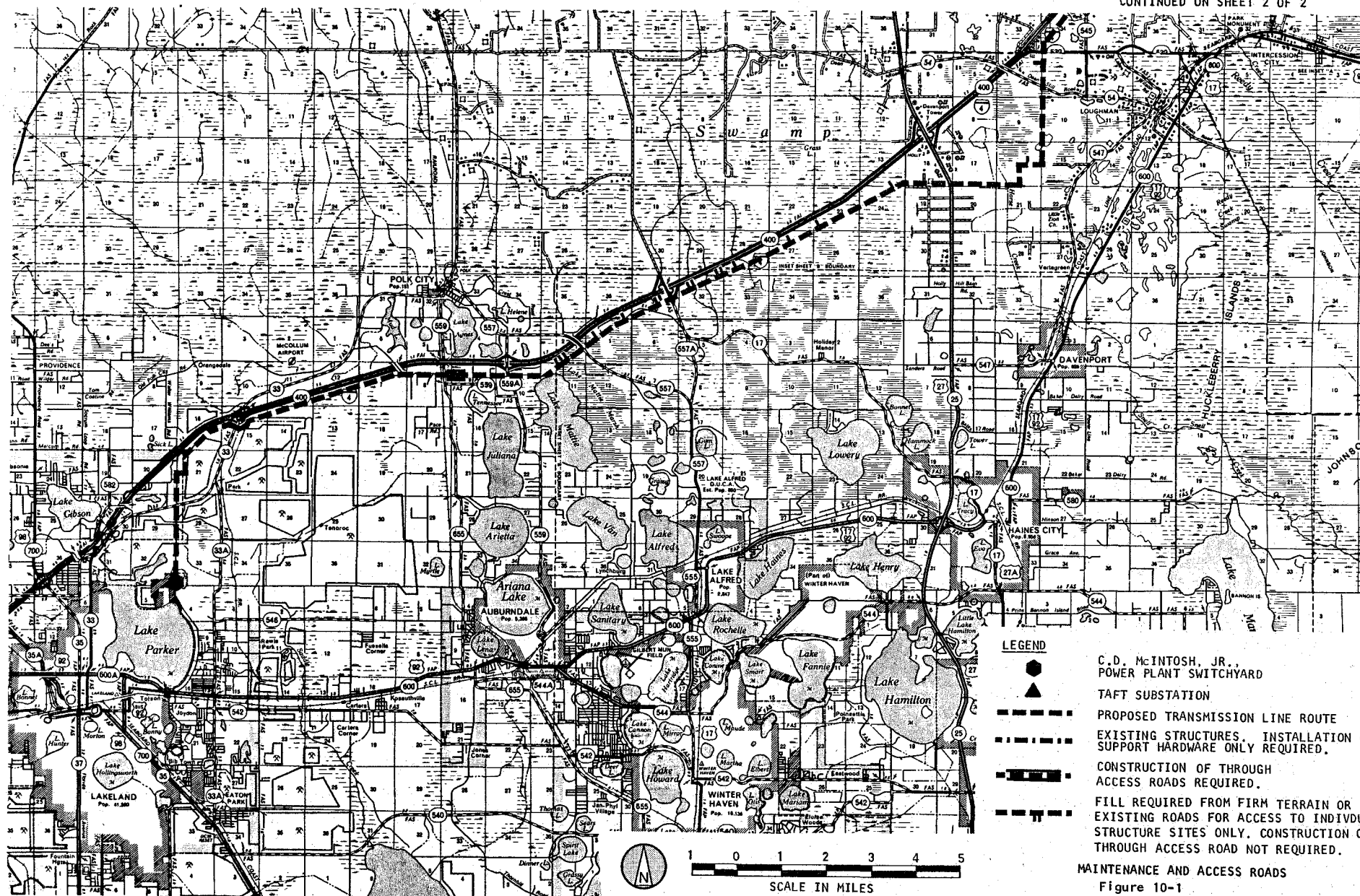
It is estimated that based on the amount and degree of vegetation clearing that the effect on the aquifer recharge would be negligible.

10. SITE ALTERATION

The site alteration along the proposed transmission line will consist of the construction of access roads by filling and the removal of vegetation as described in the paragraphs which follow.

Access to the transmission line right-of-way will be from county roads, highways, existing pasture and farm roads where possible. Creation of through access roads along the transmission route will be required only in corridor segments presently inaccessible. Through access roads are roads which traverse wetlands. In areas where through access roads are not necessary, isolated areas of fill may be required to permit construction access to individual structure locations from existing roads or firm terrain. The vehicles used for maintenance and inspection will be capable of traversing the transmission line right-of-way in its natural state without the need for road improvements with the exception of inundated marshes and swamps. Figure 10-1 shows where construction of access roads on the right-of-way will be required in the Green Swamp area.

Where access roads to individual structure sites and through access roads are necessary through wetlands, corrugated metal pipe (CMP) culverts will be constructed at regular intervals to maintain equal water level between the sides of the road. The number and placement of these culverts will be determined by the Orlando Utilities Commission's field inspectors during construction. Bridges will not be required at any creek crossings.



LEGEND

- C.D. McINTOSH, JR., POWER PLANT SWITCHYARD
- TAFT SUBSTATION
- PROPOSED TRANSMISSION LINE ROUTE
- EXISTING STRUCTURES, INSTALLATION OF SUPPORT HARDWARE ONLY REQUIRED.
- CONSTRUCTION OF THROUGH ACCESS ROADS REQUIRED.
- FILL REQUIRED FROM FIRM TERRAIN OR EXISTING ROADS FOR ACCESS TO INDIVIDUAL STRUCTURE SITES ONLY, CONSTRUCTION OF THROUGH ACCESS ROAD NOT REQUIRED.

MAINTENANCE AND ACCESS ROADS
Figure 10-1

10. Continued

A total of approximately 14,400 feet or 2.7 miles of access roads and isolated fill areas will be required. Approximately 19,000 cubic yards of fill material will be used.

The transmission line right-of-way clearing will be carried out using brush-cutting tractors or by hand cutting as necessary.

All vegetation greater than 4 feet in height and within the area from the center of the transmission line to 10 feet outside the outer conductors (Area A) will be removed. All vegetation outside this area but within the right-of-way (Area B) and greater than 10 feet in height will be removed. Tall timber outside of the right-of-way (Area C) which could fall into the transmission line as a result of high winds or storms will be trimmed or removed. No clearing of fruit trees in citrus groves will be required.

In marshes and swamps, the stumps of felled trees will be left in place to retain the integrity of the bottom soils and to maintain the hydraulic characteristics of the areas.

Table 10-1 lists the total acreages of different vegetation community types expected to be cleared from the transmission line right-of-way within the Green Swamp area.

TABLE 10-1

SITE ALTERATION CAUSED BY REMOVAL OF VEGETATION

SOIL CLASSIFICATION	AREA A	AREA B	AREA C	TOTAL ACRES
	Vegetation Removed To 4 Feet in Height (Acres)	Vegetation Removed To 10 Feet In Height (Acres)	Danger Timber	
Pine Flatwoods	56	57	ONLY	113
Uplands	45	45	AS	90
Wetlands	72	72	REQUIRED	144
TOTAL ACRES	173	174		347

REVISIONS TO THE C. D. McINTOSH, JR. POWER PLANT

UNIT NO. 3 RECERTIFICATION APPLICATION

MAY 1978

<u>SECTION</u>	<u>TITLE</u>	<u>INSTRUCTIONS</u>
2.4	Geology	Add pages 2.4-1a and 2.4-1b.
2.5	Hydrology	Remove existing pg. 2.5-1 and insert pgs. 2.5-1 to 2.5-5.
3.1	External Appearance	Add pg. 3.1-1a.
3.5.1	Coal Pile Runoff	Add pg. 3.5-2a.
4.1.4	Noise	Add pgs. 4.1-3a thru 4.1-3f.
4.3.4	Herbicides	Add pg. 4.3-10.
5.5.3	Herbicides	Add pg. 5.5-2.
5.6.2	Scrubber Sludge Disposal	Add pgs. 5.6-3a and 5.6-3b.
6.4.1	Shallow Groundwater Monitoring	Add pgs. 6.4-2 thru 6.4-4.
	Revisions to Unit 3 Recertification Application	Insert after Index