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2 SITE AND ENVIRONMENT

2.1 GENERAL DESCRIPTION

Data are presented in this section as a basis for the selection of design criteria for the Oconee Nuclear Station, and to determine the adequacy of concepts for controlling routine and accidental release of radioactive effluents to the environment. A series of studies (geology, seismology, hydrology, meteorology, population and land use) have been conducted.

The site is located in Oconee County, South Carolina, approximately 8 miles northeast of Seneca, South Carolina. The area immediately north and west will be Duke Power Company's proposed Lake Keowee, and the Government's Hartwell Reservoir is south of the site.

Cooling water for Oconee will be drawn from and returned to Lake Keowee. Limnological and thermal analyses of the lake have established that the Oconee site may be used for nuclear capacity of 3000 mwe and be fully compatible with ecological and recreation aspects of the lake. These analyses have been approved by applicable State and Federal agencies, and Duke's license from the Federal Power Commission for the Keowee Development authorizes this use of cooling water for a 3000 mwe nuclear station at Oconee.

This Preliminary Safety Analysis Report covers Oconee Units 1 and 2 totaling 1748 mwe, and no analysis has been included of the contemplated additional generating unit because the characteristics of that unit are unknown. When Unit 3 should be proposed, Duke will file a separate application with supporting safety analysis.

The exclusion area around the site will have a radius of one mile. The boundary of the low population zone lies at a 6-mile radius around the site. There are only six population centers within a 100 mile radius of the site. Anderson, South Carolina, with a 1960 population of 41,316 is located 21 miles southeast of the site.

The structures will be founded on normal Piedmont granite gneiss rock, and a wealth of experience is available in designing and constructing heavy structures on similar foundations. The foundation materials present no special problems in design or construction. Foundations will be designed in accordance with the recommendations beginning on page 2A-10 of the report on Subsurface and Foundations Investigations attached as Appendix 2A.

2.2 SITE AND ADJACENT AREAS

2.2.1 LOCATION

The Oconee Nuclear Station site is located in eastern Oconee County, South Carolina, as shown in Figure 2-1, at latitude 34°-47'-39" N and longitude 82°-53'-57" W.

2.2.2 LAND OWNERSHIP

All property within a 1 mile radius of the nuclear station will be purchased

except for a small rural church plot, three small tracts of land, highway right-of-way and approximately 9.8 acres of United States of America Hartwell Project property. The Hartwell property is either a portion of the Hartwell Reservoir or subject to flooding and not suitable for other uses. The only commercial enterprises within the site boundary will be Duke's Keowee Hydroelectric Station and Oconee Nuclear Station. It is anticipated that three residences may remain in the outer portion (more than 1/2 mile) of the exclusion area. Arrangements will be made for the immediate evacuation of these areas in case of a major accident.

The 1 mile exclusion radius will form the site boundary which will be posted, and a fence will be erected around the immediate station area, as shown in Figure 2-2.

2.2.3 VICINITY

North and west of the site will be the 18,400 acre Lake Keowee to be formed by Duke's Keowee and Little River Dams, as shown in Figure 2-3. Lake Jocassee, with a surface area of 7,600 acres, will be located approximately 11 miles north of the site. Hartwell Reservoir, a United States Government-owned lake, is located south of the site, and the Blue Ridge Mountains of the Appalachian chain lie northwest of the site.

Figure 2-4 shows the general geographical and topographical features within 50 miles of the site.

Oconee Nuclear Station is a part of Duke's Keowee-Toxaway Project combining hydroelectric, pumped-storage and nuclear power generation. Duke now owns approximately 150,000 acres of land for this project, including the 18,400 acres for Lake Keowee and 7600 acres for Lake Jocassee to the north. The bulk of Duke property outside these lakes lies in the sectors between NNW and NE from the Oconee Nuclear Station. This property is under forestry management and will also be used for controlled public hunting, fishing, camping, tourism and recreation in cooperation with State agencies and conservation groups.

2.2.4 RESIDENT POPULATION

Figure 2-5 shows the population centers within a 100 mile radius of the site. The largest city, Knoxville, Tennessee, located 97 miles northwest of the site, had a 1960 population of 111,827. The nearest population center, Anderson, South Carolina, is 21 miles southeast of the site and had a 1960 population of 41,316.

Figures 2-6, 2-7 and 2-8 provide a detailed analysis of population distribution within a 50 mile radius of the site. Figure 2-6 shows the currently estimated (1965) and projected estimated (2010) population distribution in 16 directional sectors centered on the site and within 2, 3, 4 and 5 mile radii. Figures 2-7 and 2-8 show similar population distributions for 10 and 20 mile radii and for 30, 40 and 50 mile radii respectively.

The 1965 and 2010 projections are a linear extrapolation of the 1910-1960 long term trend. In the NNW and NE sectors within a 20 mile radius, the projections have not been reduced to reflect population removed from the lake

sites and from other lands acquired by Duke since 1960.

These population projections indicate that the low population boundary can be selected at a distance of 6 miles from the site, and would include only about 3000 population by the year 2010, which satisfies the requirements of a low population zone.

2.2.5 PART-TIME POPULATION

It is expected that the proposed Lake Keowee and Lake Jocassee, along with Hartwell Reservoir will be the major features contributing to the part-time population within a 50 mile radius of the site. The recreational opportunities offered by the lakes, such as boating and fishing, and the scenic beauty of the mountains will probably increase the population of the area during the summer months. Much of this temporary population will be on Duke-owned land and therefore subject to some planning and control.

2.2.6 LAND USE

Figure 2-9 shows the area of land in square miles that is pastured and cultivated within a 50 mile radius of the site. The land use is shown in 16 directional sectors centered on the site and within 5, 10, 20, 30, 40 and 50 mile radii.

The land use distribution was based on the 1964 United States Census of Agriculture Preliminary Report for Georgia, South Carolina and North Carolina.

Figure 2-10 shows the number of dairy animals, by counties, that will be grazing within a 50 mile radius of the site, except for four outlying counties (Hall, Greenwood, Swain and Buncombe). No figures are available at this time for these counties. The figures are from the 1966 census.

Figure 2-11 shows the location and distance from the site to reservoirs larger than 100 acres within a 50 mile radius. Each reservoir is numbered and tabulated on Figure 2-12, which lists the name and pertinent physical data, where available.

2.2.7 FUTURE POPULATION AND LAND USE

The future population for year 2010 is shown in Figures 2-6, 2-7 and 2-8. Section 2.2.4 describes the population distribution and projections.

Except for Duke's encouragement of recreation on its Keowee-Toxaway Project lands, there are no known future land use plans which have been developed for the area within a 50 mile radius of the site. However, portions of this area, particularly in the vicinity of Greenville and Spartanburg, South Carolina, have experienced substantial industrial growth over the past several years. There is no reason to believe that this growth will not continue.

2.2.8 ACTIVITIES WITHIN SITE BOUNDARY

The activities will be limited to the highways through the site boundary,

Duke's Visitors Center, recreation on the lakes, up to three residences and the Old Pickens Church and Cemetery which are historical landmarks and not currently used for weekly services. The United States Government-owned property along the Keowee River was acquired as part of Hartwell Reservoir.

2.3 METEOROLOGY

The meteorological features of the site are favorable for a nuclear station.

Several modifications to the local climatology will occur as site development progresses. The initial clearing and leveling of land at the specific site location will produce an increase in drainage potential of light winds within the site boundary.

The addition of the large bodies of water will have two effects on meteorology. First, it will lessen ground frictional effects and tend to increase the wind speeds; most noticeably under light wind conditions. Second, the large bodies of water will increase the humidity by about ten per cent in the area and tend to decrease the frequency of Pasquill F and to increase the frequency of Pasquill E conditions.

Documentation of on-site meteorological parameters will demonstrate the validity of the recommended diffusion model values tabulated below and shown in the complete Meteorology Report in Appendix 2B.

Values for Various Diffusion Models (The values are for use with the standard Gifford equation as in 14.2.2.3.6 of this report.)

The 2-Hour Model (For modifications, see Answer 2.5, Supplement 2.)

- $\bar{u} = 1.9$ mps unidirectional wind
- $C = 1.0$
- $A = 5180\text{m}^2$ (minimum building cross section)
- $\sigma_y = 60\text{m}$ (at site boundary)
- $\sigma_z = 20\text{m}$ (at site boundary)

The 24-Hour Model

- 12 hours Pasquill F, $\bar{u} = 1.0$ mps; 40 per cent from a single wind direction
- 12 hours Pasquill E, $\bar{u} = 2.0$ mps; 60 per cent from a single wind direction

The Long-Term Model

- 25 per cent Pasquill F, $\bar{u} = 2.0$ mps
- 10 per cent Pasquill E, $\bar{u} = 3.0$ mps
- 20 per cent Pasquill D, $\bar{u} = 4.0$ mps
- 45 per cent Pasquill C, $\bar{u} = 5.0$ mps

Maximum single wind directional frequency for 30 days up to one year - 30 per cent.

2.4 HYDROLOGY AND GROUNDWATER

2.4.1 CHARACTERISTICS OF STREAMS IN VICINITY

The major streams which drain the site are the Keowee River and the Little River. These join near Newry, South Carolina, to form the Seneca River which is a major tributary to the Savannah River.

When Hartwell Reservoir was filled to elevation 660 in 1961, its backwater extended up the entire length of the Seneca, up the Little River to the mill dam at Newry and up the Keowee to the vicinity of South Carolina Highway 183 bridge at Old Pickens.

When Lake Keowee is constructed, the main stems of both the Keowee and Little Rivers will be inundated to elevation 800, and the parallel lakes joined by a canal to form Lake Keowee.

Both the Keowee and Little Rivers are typical streams of the Piedmont Physiographic Province, having irregular courses with numerous right angle bends. The gradients are moderate with few rapids and falls. In some areas the flood plain is well developed with wide, flat bottom lands on one or both sides of the rivers.

The following is a summary of recorded flow characteristics of the Keowee and Little River Basins:

USGS Gage Station	Location	Drainage Area Sq. Mi.	Period of Record	Discharge Cfs (Period or Date)		
				Average	Minimum	Maximum
2-1850 Keowee ¹ River near Jocassee, S.C.	15 miles up- stream from Nuclear Site	148	December 1949 to September 1965 (Con- tinuing)	468 (15 yrs.)	57 (10-7-54)	21,000 (10-4-64)
2-1855 Seneca ² River near Newry, S.C.	8 Miles down- stream from Nuclear Site; 1 mile down- stream from confluence Keowee and Little Rivers	455	October 1939 to June 1961 (Discon- tinued)	1,140 (21 yrs.)	120 (10-8-54)	25,200 (8-13-40)

Source: 1) Water Resources Data for South Carolina 1965, Part I.
2) Surface Water Records of South Carolina 1961.

An active quality-of-water data collection site is maintained at Gage 2-1850 near Jocassee, South Carolina. Water temperature is recorded continuously, and chemical analyses are made at infrequent intervals.

The present uses of the free flowing streams are relatively limited. The Town of Seneca takes its raw water supply from the Little River and one of its minor tributaries. A part of the Town's treated sewage effluent is

discharged into the same tributary at a point further downstream. Facilities are now being designed to permit the Town of Seneca to take its raw water supply from Lake Keowee at a point 6 miles from Oconee Nuclear Station and to discharge its treated waste into another tributary to the Seneca River watershed.

Several industrial plants, Clemson University, the Town of Clemson and the Town of Pendleton, South Carolina, take their raw water supplies from Hartwell Reservoir. The City of Anderson, South Carolina, is planning to take its future raw water requirements from Hartwell.

Lake Keowee, with an average volume of 810,000 acre-ft and an average discharge of 1100 cfs, will have an average retention time of 372 days. The effective retention time of cooling water effluent from Oconee Nuclear Station will be less because its point of discharge is oriented horizontally and vertically in proximity to the hydro station intake. Oconee's cooling water discharges about 3700 ft from the hydro station intake. A submerged weir with a crest at elevation 765, which is only 35 ft below full pond level, limits the hydro station water supply to the near-surface waters which include the warmed discharge from Oconee. The downstream Hartwell Reservoir has, at average pond level, a volume of 2,000,000 acre-ft, and average discharge of 4400 cfs, and an average retention time of 229 days.

Liquid effluent from Oconee's waste treatment facilities (Section 11) will be discharged to the tailrace of the Keowee Hydroelectric Station. Although not required by the design of Oconee, dilution can be increased by operation of the hydro units if necessary.

Agricultural use of the waters of the Keowee and Little Rivers as well as those of Hartwell Reservoir is very limited. Irrigation is not widely used in this area. Tributary streams are more often used for livestock watering than are the main stem rivers.

Sport fishing is done on all streams in this area. No commercial fishing is practiced except for small scale trapping of catfish and other rough fish varieties. Hartwell Reservoir is used for sport fishing and general recreation as will be Lakes Keowee and Jocassee.

2.4.2 FLOOD STUDIES

Since the proposed site of the Oconee Nuclear Station is located near the ridgeline between the Keowee and Little River valleys, or more than 100 ft above the maximum known flood in either valley, the records of past floods are not directly applicable to siting considerations.

In accordance with sound engineering practice, records of past floods as well as meteorological records and statistical procedures have been applied in studies of floods through the proposed Keowee and Jocassee Reservoirs as a basis of spillway and freeboard design.

The spillway capacities for Lakes Keowee and Jocassee were selected in

accordance with the empirical expression for design discharge:

$$Q = C \sqrt{D A}$$

Where Q = peak discharge in cfs

D A = drainage area in square miles

C = 5000, a runoff constant judged to be characteristic of the drainage area

The following tabulation gives pertinent data on this design flood flow:

<u>Lake Keowee</u> ⁽¹⁾	<u>Lake Jocassee</u>	
439	148	Drainage area at damsite, sq. mi.
25,200	21,000	Maximum recorded flow at nearby USGS gages, cfs
(Newry Gage D A 455 sq. mi.)	(Jocassee Gage D A 148 sq. mi.)	Date of maximum flow
8-13-40	10-4-64	Period of record
1939-1961	1950-1965	
105,000	61,000	Spillway design discharge, cfs
800	1,110	Full pond elevation
815	1,125	Crest of dam elevation
0	0	Surcharge on full pond for design discharge
4	2	Number of spillway gates
38 ft x 35 ft	40 ft x 32 ft	Size of spillway gates
		Discharge capacity, cfs
107,200	45,700	Spillway
-	16,500 (2 units of 4)	Dependable flood flow through units
<u>107,200</u>	<u>62,200</u>	Total discharge capacity, cfs

(1) Little River and Keowee River Arms

The above discharge capacities assume no surcharge above normal full pond level. Statistical analyses have shown design reservoir inflows for both Lake Keowee and Lake Jocassee equal to respective design discharge capacities outlined above to have recurrence intervals less frequent than once in 10,000 years.

The maximum wave height and wave run-up have been calculated for Lake Keowee and Lake Jocassee by the Sverdrup-Munk formulae. The results of these calculations are as follows:

<u>Wave Height</u>	<u>Wave Run-Up</u>	<u>Maximum Fetch</u>	<u>Lake</u>
3.70 ft	7.85 ft	8 miles	Keowee (Keowee River Arm)
3.02 ft	6.42 ft	4 miles	Jocassee
3.02 ft	6.42 ft	4 miles	Keowee (Little River Arm)

The wave height and wave run-up figures are vertical measurements above full pond elevations as tabulated above.

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Studies were also made to evaluate effects on reservoirs and spillways of maximum hypothetical precipitation occurring over the entire respective drainage areas. This rainfall was estimated to be 26.6 inches within a 48 hour period. Unit hydrographs were prepared based on a distribution in time of the storms of October 4-6, 1964, for Jocassee and August 13-15, 1940, for Keowee. Results are summarized as follows:

<u>Keowee</u>	<u>Jocassee</u>	
147,800	70,500	Maximum spillway discharge, cfs
808.0	1114.6	Maximum reservoir elevation
7.0 ft	10.4 ft	Freeboard below top of dam

While spillway capacities at Keowee and Jocassee have been designed to pass the design flood with no surcharge on full pond, the dams and other hydraulic structures have been designed with adequate freeboard and structural safety factors to safely accommodate the effects of maximum hypothetical precipitation. Because of the time-lag characteristics of the runoff hydrograph after a storm, it is not considered credible that the maximum reservoir elevation due to maximum hypothetical precipitation would occur simultaneously with winds causing maximum wave heights and run-ups.

The maximum Keowee tailwater level during hydro operation has been calculated to be elevation 672.0, which is 124 ft below the nuclear station yard elevation (796.0).

After construction of Lake Keowee, the maximum discharge due to hydro operation is expected to be 19,800 cfs. The minimum discharge with no units operating is expected to be 30 cfs.

In summary, the above results of flood studies show that Lakes Keowee and Jocassee are designed with adequate margins to contain and control floods which pose no risk to the nuclear site.

2.4.3 DESIGN OF PROPOSED KEOWEE AND JOCASSEE DAMS

Duke Power Company is preparing designs for these dams which are conservative and are based on sound Civil Engineering methods and criteria. The strength properties of foundations and of materials that are being used in the design of the dams are based on values obtained from extensive field and laboratory tests. These designs will be reviewed by a board of consultants and reviewed and approved by the Federal Power Commission in accordance with the license issued by that agency. Keowee Dam will be designed to have an adequate factor of safety under the same conditions of seismic loading as are proposed in the design of the Oconee Nuclear Station.

The dams are being designed using the circular arc (and wedge at Jocassee) method of slice analysis. The ratio of the sum of all resisting forces divided by the sum of all forces tending to cause displacement under different loading conditions will be not less than the following:

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<u>Ratio</u>	<u>Dam Loading Condition</u>
1.50	Full pond and steady state of seepage
1.25	Sudden drawdown of 25 ft at Keowee and 30 ft at Jocassee
1.25	Construction (reservoir empty)
1.05	Full pond, steady state of seepage, and seismic loadings

The dams will be constructed, maintained and inspected consistent with their function as major hydro projects. The safety of such structures is the major objective of Duke's designers and builders, with or without the presence of the nuclear station.

2.4.4 GROUNDWATER

The site lies within the drainage area of the Little and Keowee Rivers which flow southerly into the Seneca River and subsequently discharge into the Savannah River.

Groundwater in the general area occurs as free groundwater within the saprolite soil and migrates slowly at a gradient approaching the topographic slopes.

Water discharged on the surface at the site will percolate downward and mix with groundwater moving southeasterly toward the Keowee River and its tributary creeks. The soils at the site should act as an effective barrier to the migration of radionuclides. Soil samples have been tested to establish predictable quantitative rates of migration.

The construction of Lake Keowee will not adversely affect groundwater conditions at the site, and the infiltration of domestic wells should not be possible under the existing or future groundwater conditions. Drainage facilities will be provided to intercept groundwater at northern side of the site yard.

Refer to Appendix 2C for a detail report on Groundwater Hydrology and to Appendix 2D for Field Permeability Tests.

2.5 GEOLOGY

The 21 borings completed at the Oconee Nuclear Site, supplemented by information from the nearby Keowee Hydro Site borings, have been sufficient for a determination of the geologic structure and petrography, and their relationship to the proposed construction. The exploration is sufficient to permit continuing design and construction.

The structures will be founded on normal Piedmont granite gneisses. The construction characteristics of the residual soils overlying the rock are well known and should present no problems in design or construction. The rock underlying the site, below surface weathering, is hard and structurally sound and contains no defects which would influence the design of heavy structures.

The southeastern Piedmont rocks are highly stable seismologically, and the Oconee Nuclear Site should be one of the nation's most inactive areas with respect to earthquake activity.

A detailed Geology Study of the site is included in Appendix 2E.

2.6 SEISMOLOGY

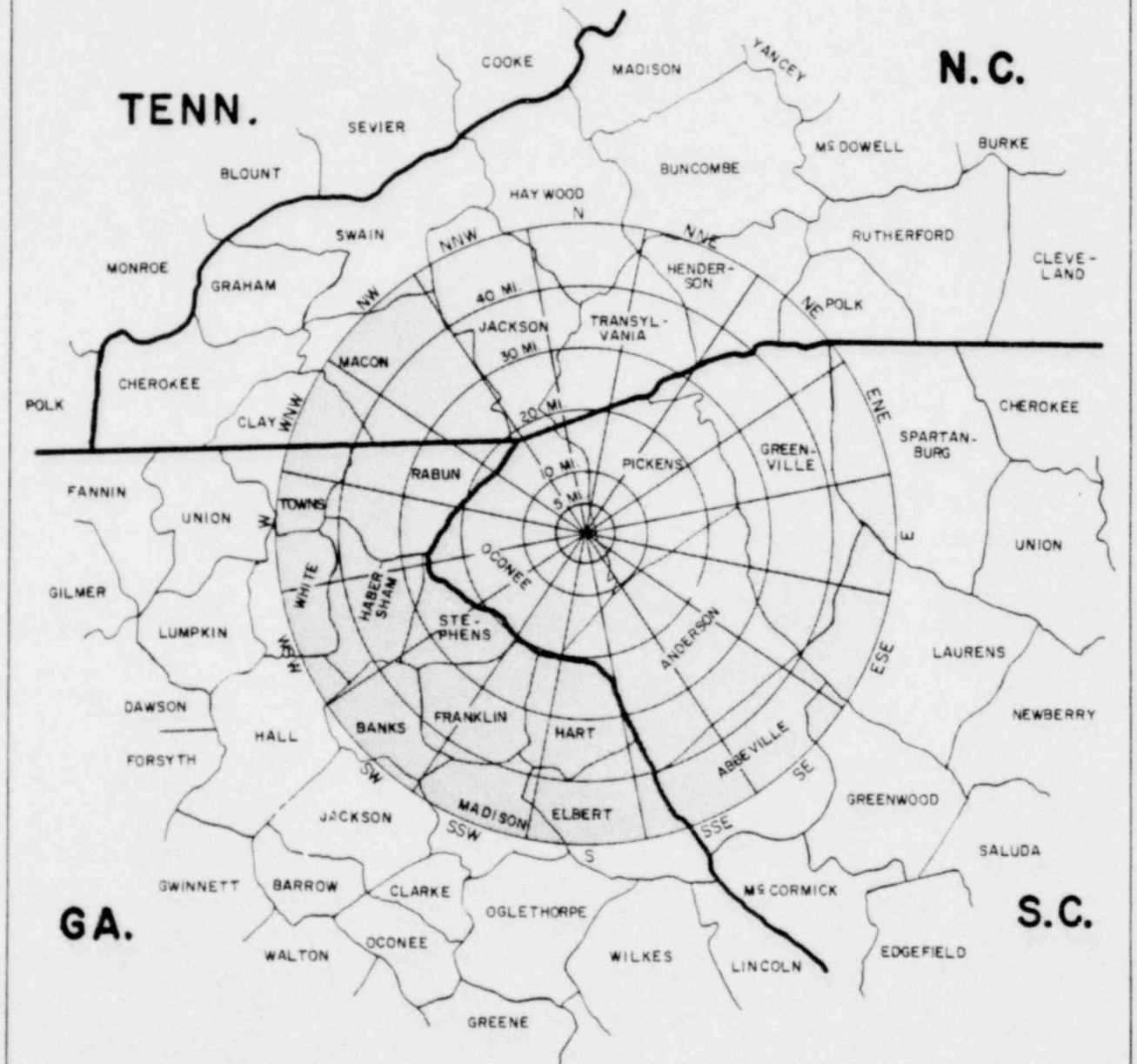
No active or recent faulting has been recognized in the area of the proposed site. The closest known fault is the Brevard Zone, approximately 11 miles northwest of the site.

The foundations of the proposed Reactor Buildings will be located on rock. This rock has excellent strength properties and relatively small amplification of ground motion resulting from an earthquake.

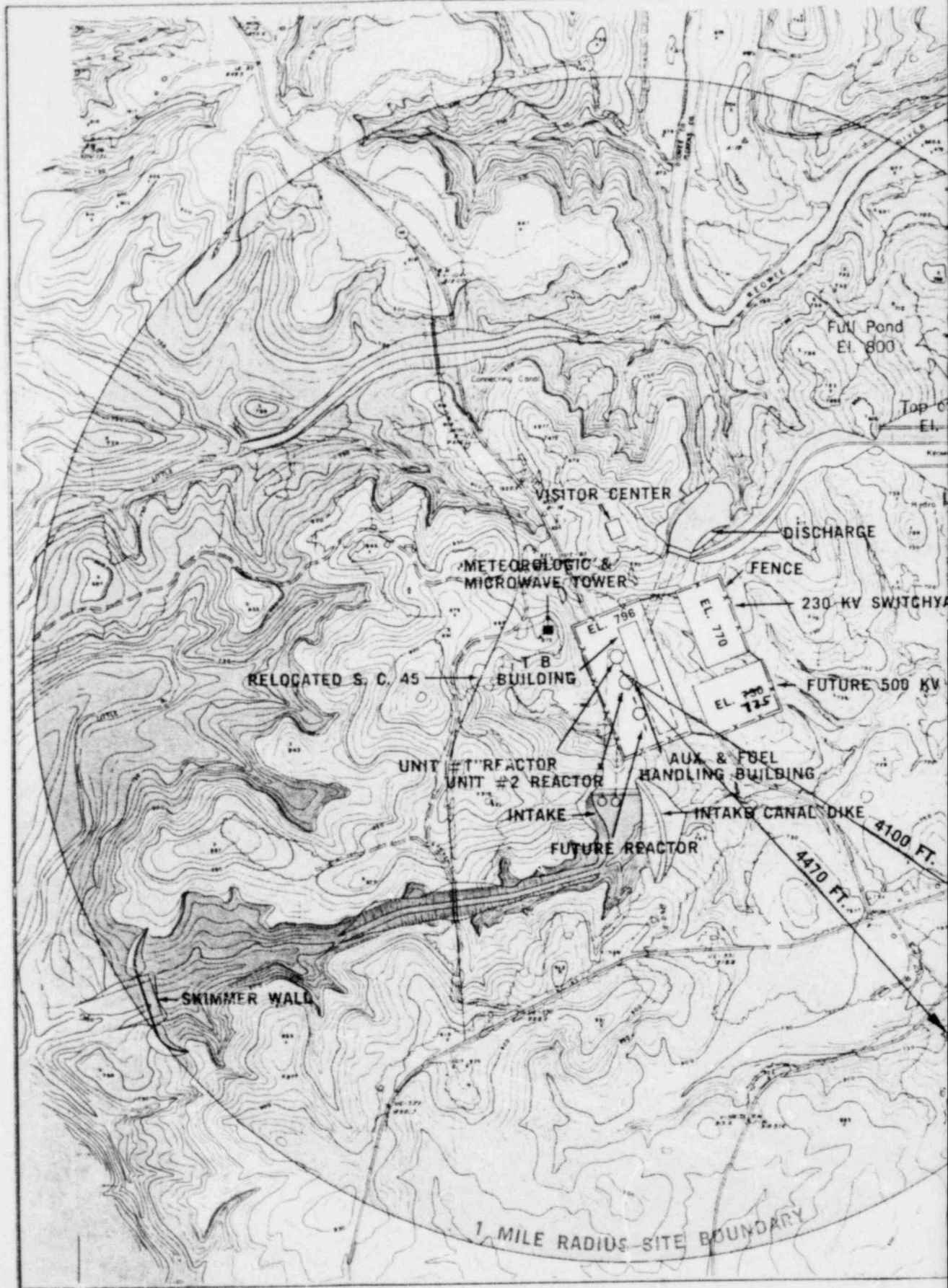
Conservatively, it is estimated that the maximum vertical and horizontal ground acceleration that might be experienced at the site is on the order of five per cent of gravity. This maximum ground acceleration is predicted on an earthquake of a Richter Magnitude less than five located in the Brevard Zone at its closest location to the site. *The structural design criteria for the maximum hypothetical earthquake are 0.10g and 0.15g for class I structures founded on bedrock and overburden, respectively.* Seismologically the site is eminently suitable for a nuclear station.

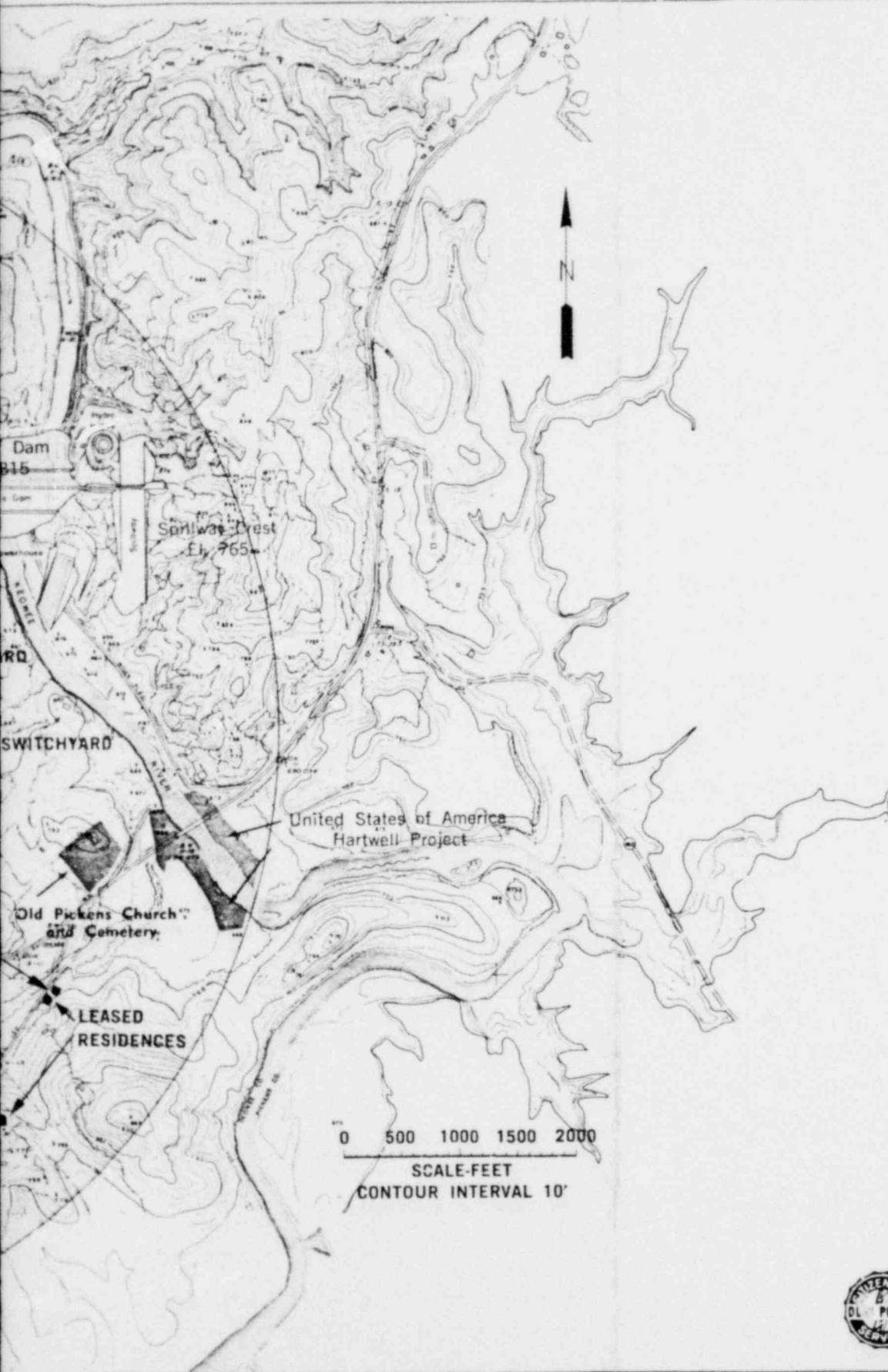
A detailed Seismology Study is included as a part of Appendix 2B.

COUNTIES WITHIN
A 50 MILE RADIUS



OCONEE NUCLEAR STATION
FIGURE 2-1





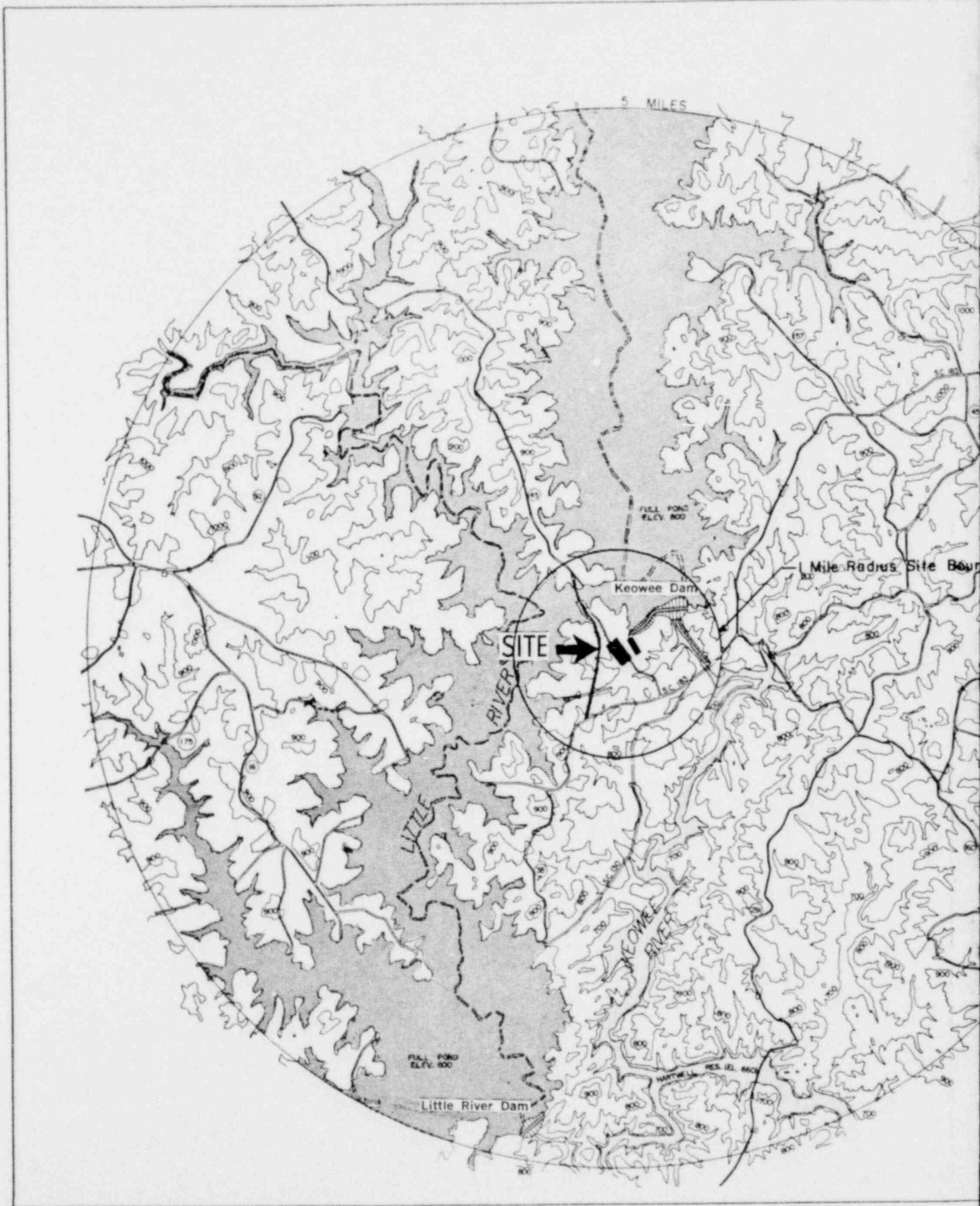
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 CONTOUR INTERVAL 10'

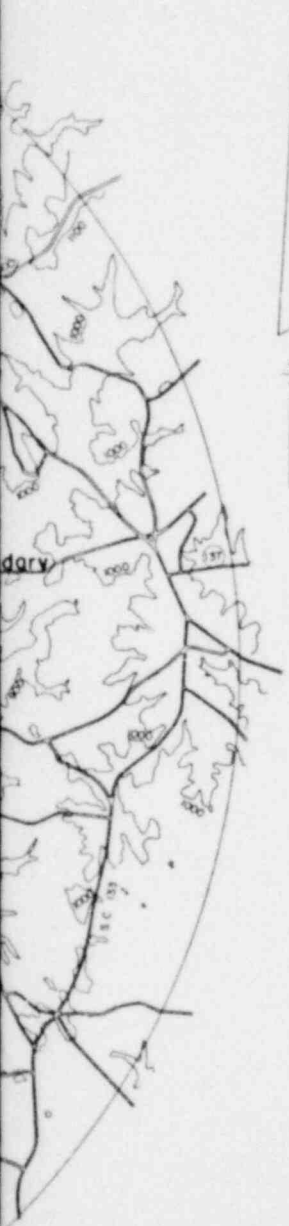
PLOT PLAN AND
 SITE BOUNDARY
 REVISED 4-1-67



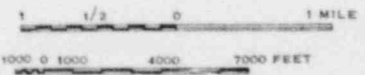
OCCONEE NUCLEAR STATION
 FIGURE 2-2

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CONTOUR INTERVAL 100 FEET



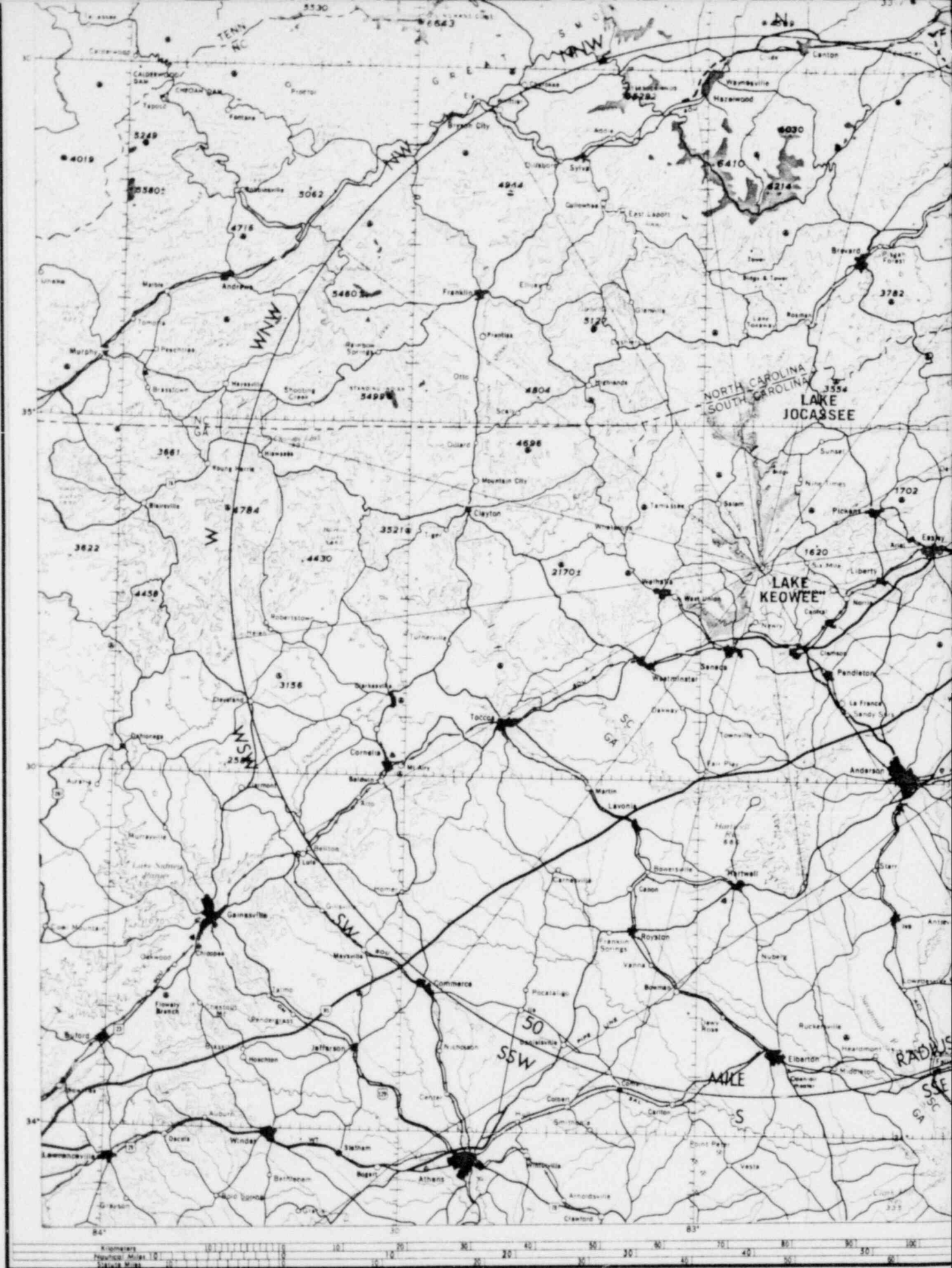
SCALE 1 INCH = 6,600 FEET

SITE TOPOGRAPHY 5 MILE RADIUS



OCONEE NUCLEAR STATION
FIGURE 2-3

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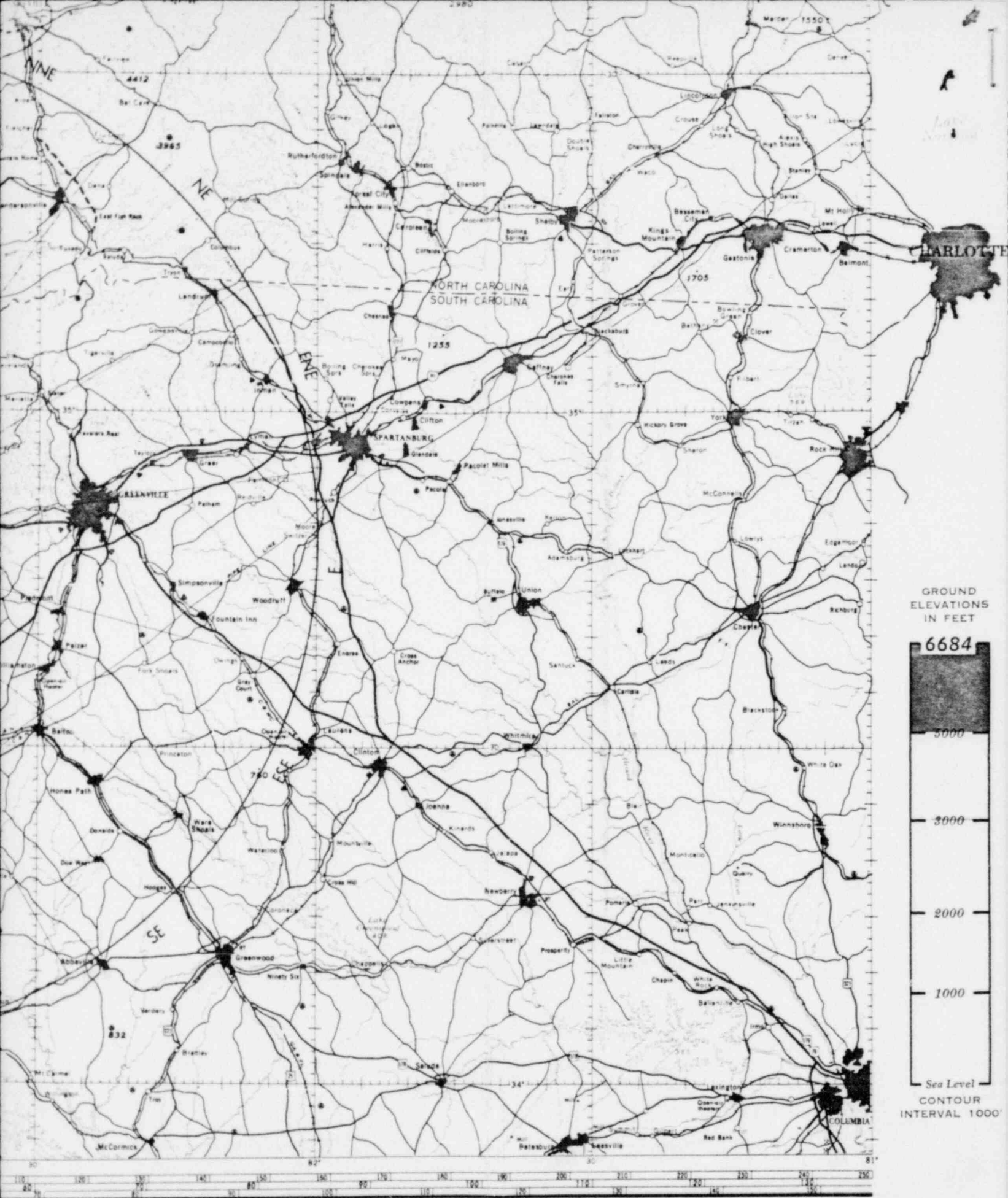


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ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
 COAST AND GEODETIC SURVEY
 Date: Edition of Jan. 1961. Revised July 1964



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GROUND ELEVATIONS IN FEET

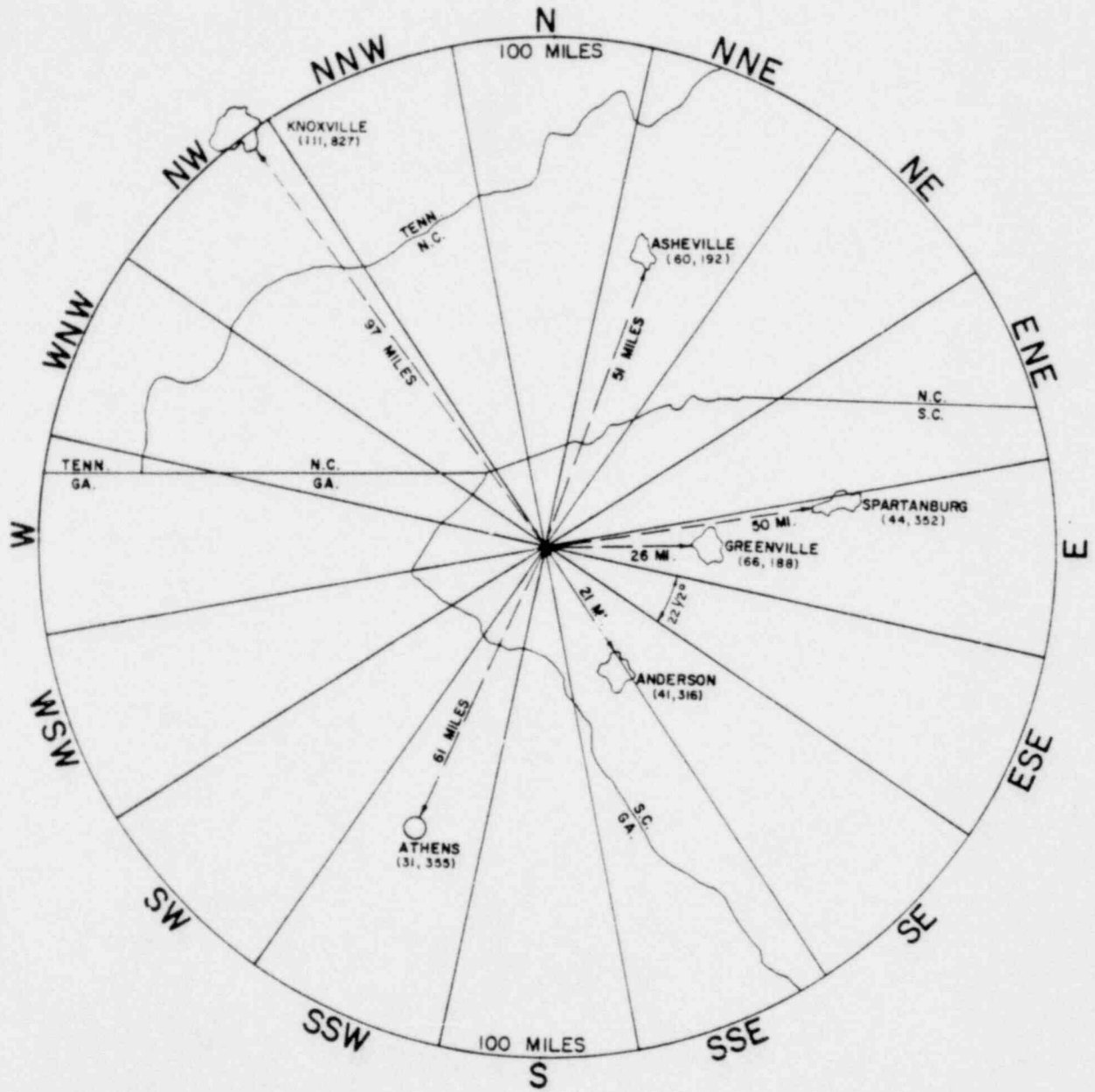


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GENERAL AREA MAP
OCONEE NUCLEAR STATION
FIGURE 2-4

POPULATION CENTER DISTANCES
WITHIN
A 100 MILE RADIUS



Source: U. S. Census 1960.

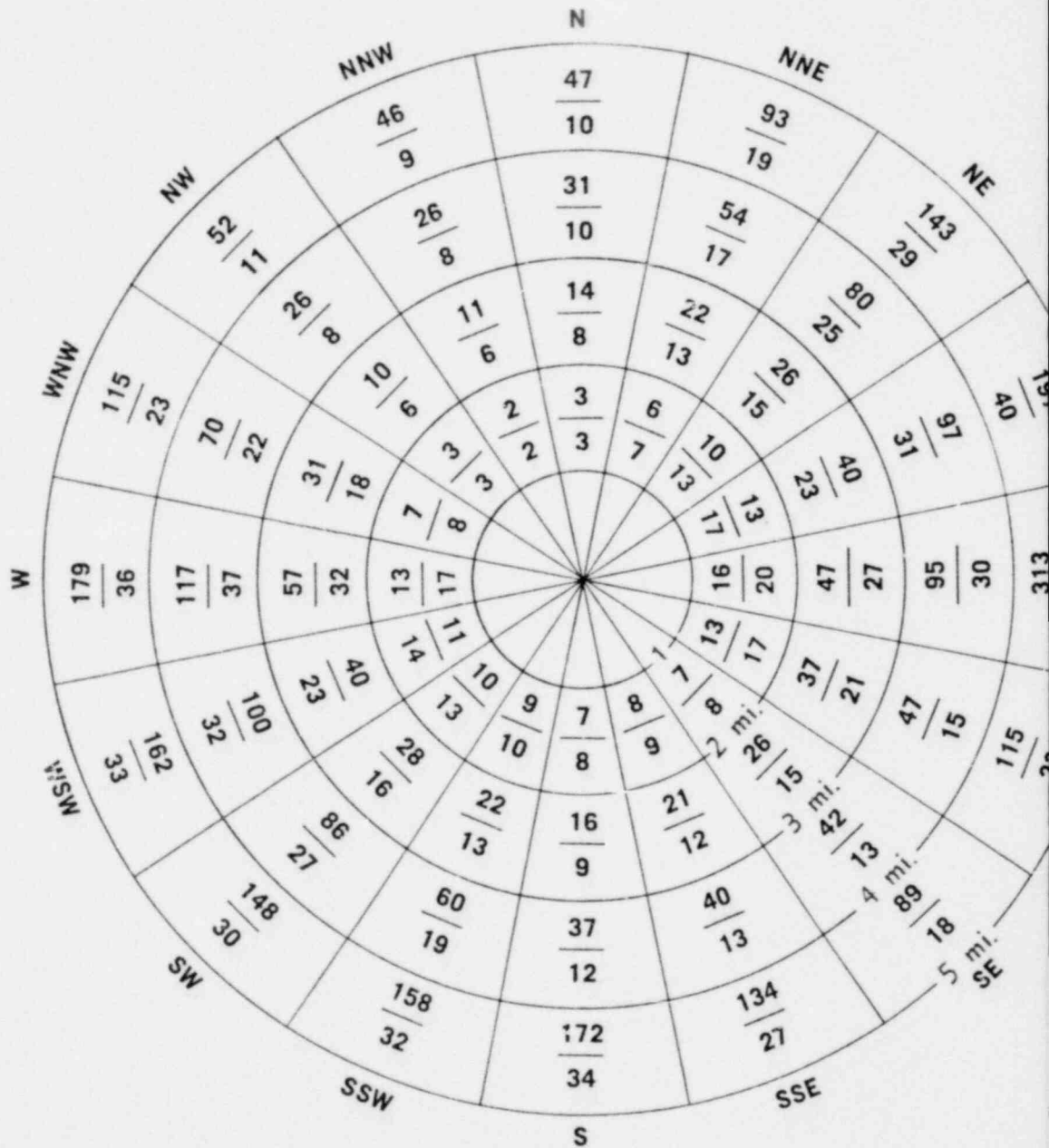


OCCNEE NUCLEAR STATION

FIGURE 2-5

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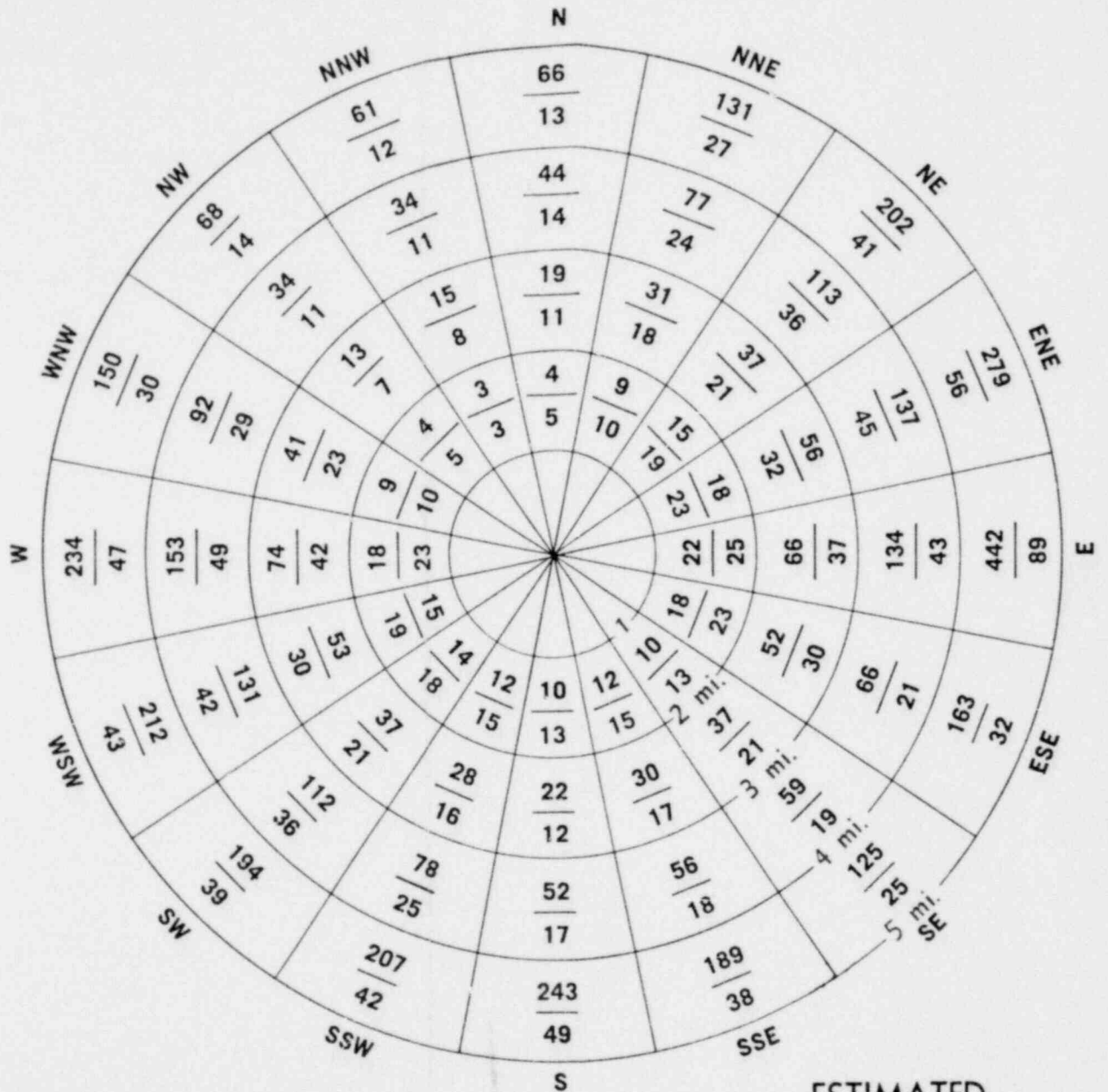
1965
0 - 5 MILES



Source: U. S. Census Department

TOTAL POPULATION IS CUMULATIVE FROM THE CENTER.

2010
0 - 5 MILES



TOTAL POPULATION
PERSONS/SQ. MILE

ESTIMATED
POPULATION
DISTRIBUTION
(1965 - 2010)

1910-1960. Extrapolations (1965-2010) by Dr. C. Horace Hamilton,
Department of Rural Sociology, North Carolina State University, Raleigh, N. C.



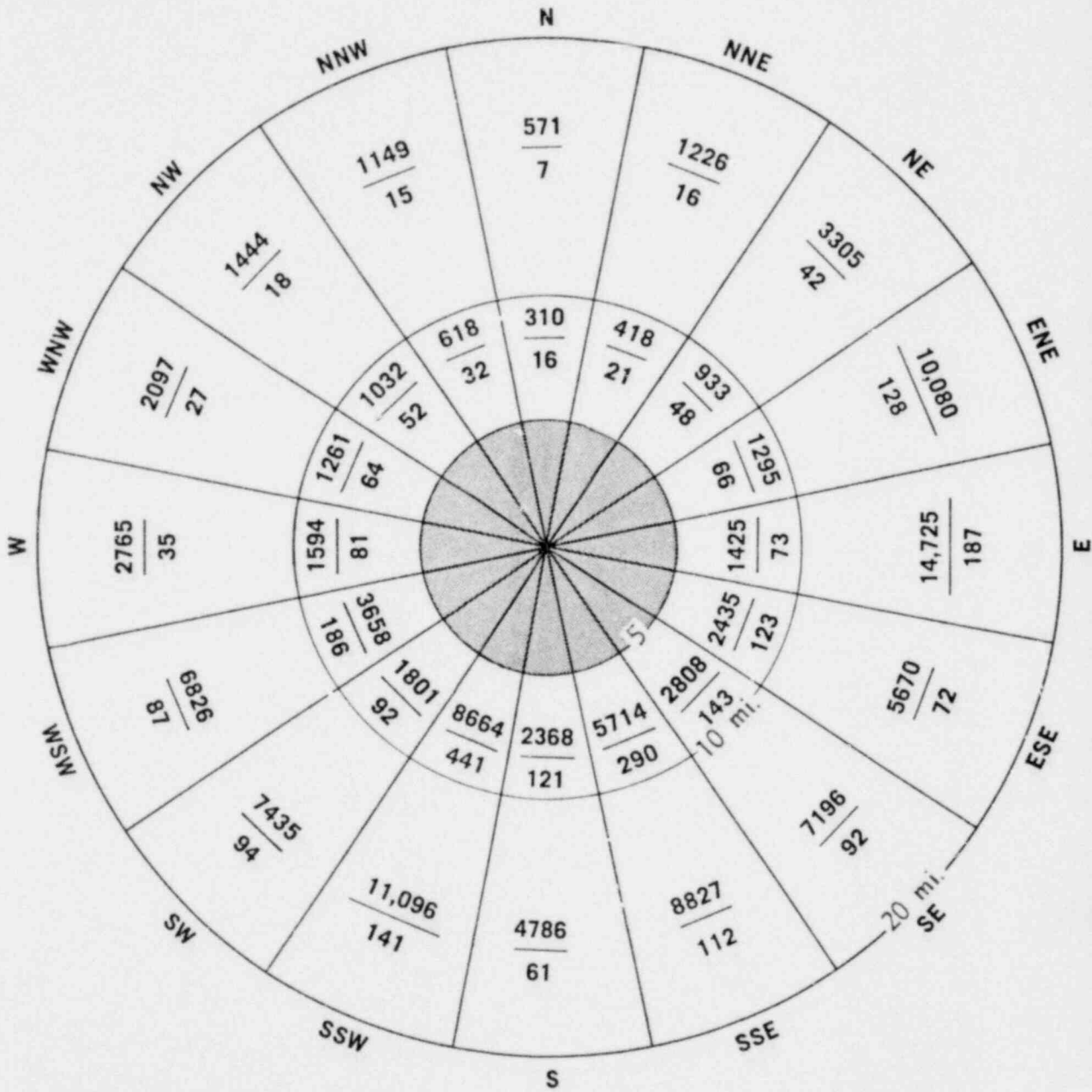
OCONEE NUCLEAR STATION

FIGURE 2-6

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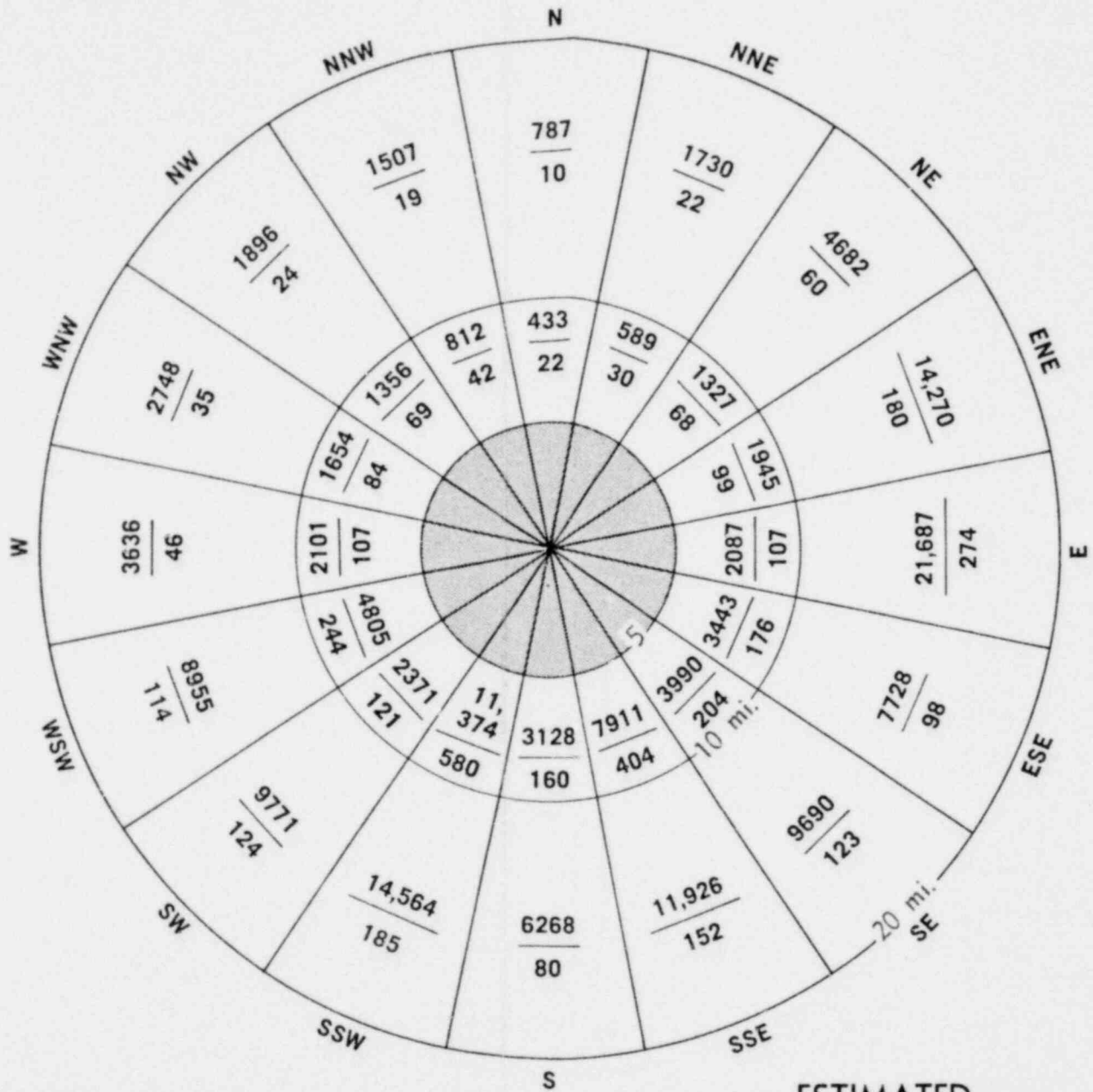
1965
5 - 20 MILES



TOTAL POPULATION IS CUMULATIVE FROM THE CENTER.

Source: U. S. Census 1910-19
Department of Rural S

2010
5 - 20 MILES



TOTAL POPULATION
PERSONS/SQ. MILE

ESTIMATED
POPULATION
DISTRIBUTION
(1965 - 2010)

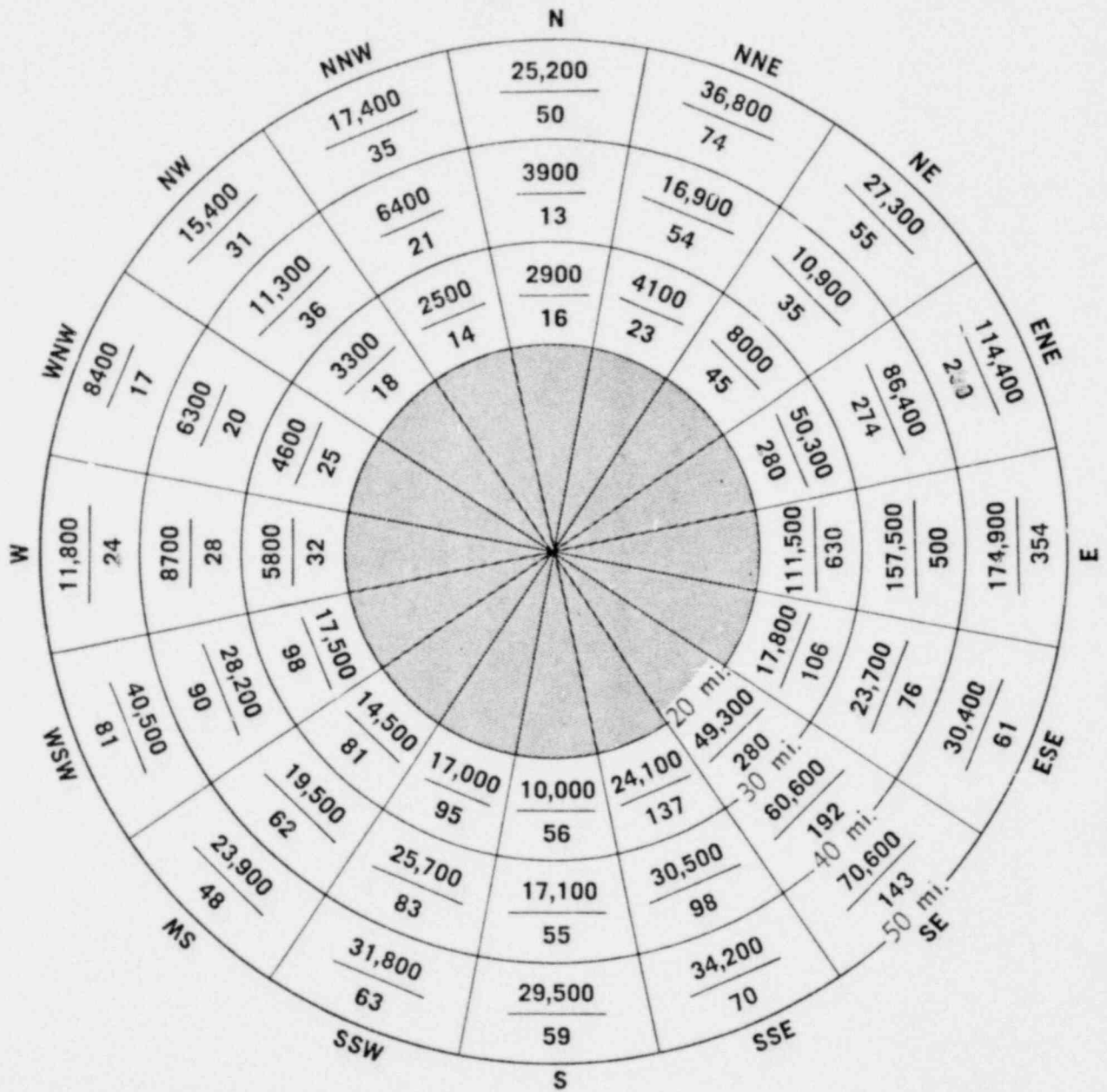
60. Extrapolations (1965-2010) by Dr. C. Horace Hamilton,
Sociology, North Carolina State University, Raleigh, N. C.



OCONEE NUCLEAR STATION
FIGURE 2-7

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1965
20 - 50 MILES

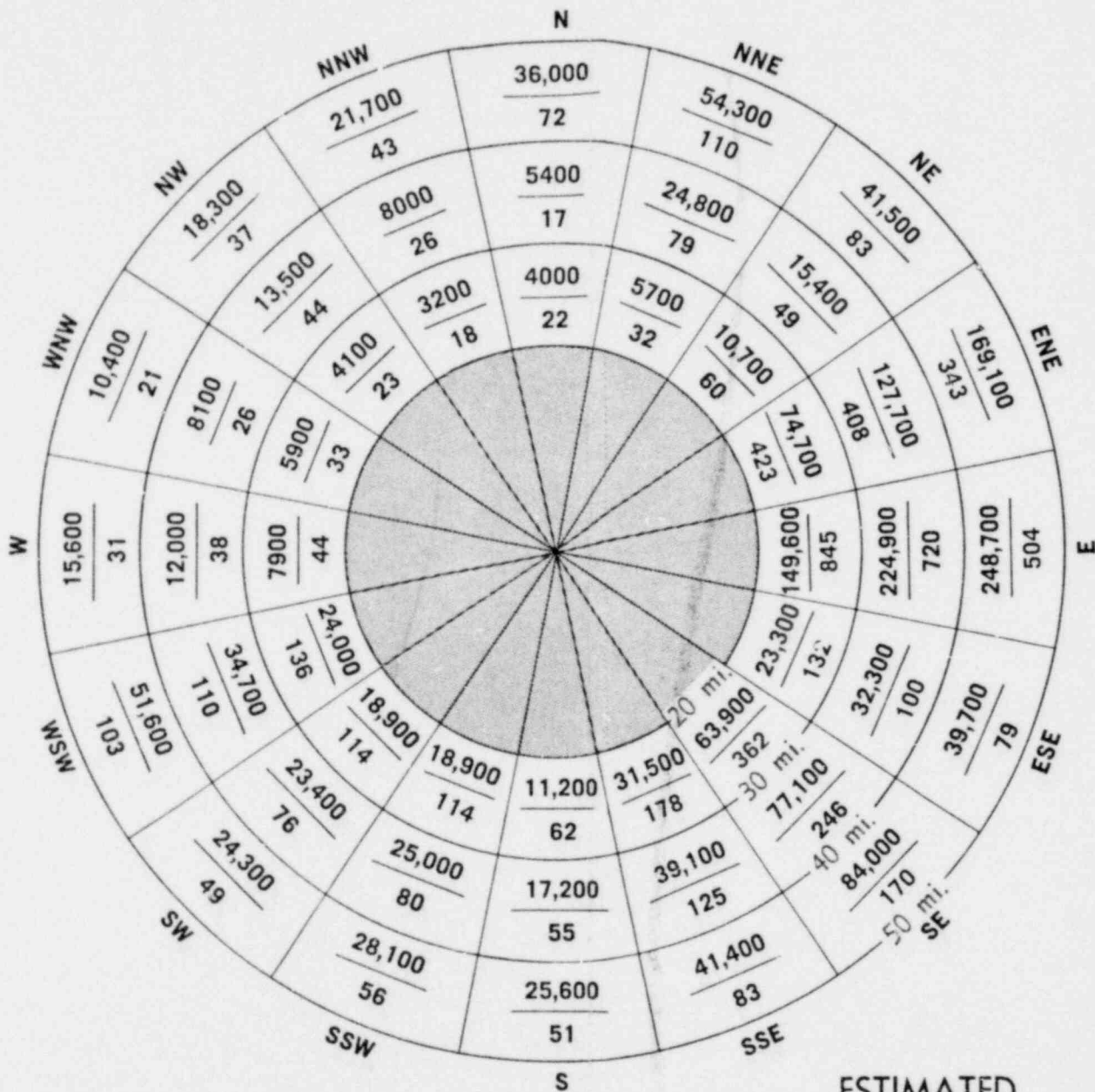


TOTAL
PERSON

Source: U. S. Census 1910-1960. Extra
Department of Rural Sociology.

TOTAL POPULATION IS CUMULATIVE FROM THE CENTER.

2010
20 - 50 MILES



POPULATION
P/SQ. MILE

Populations (1965-2010) by Dr. C. Horace Hamilton,
North Carolina State University, Raleigh, N. C.

**ESTIMATED
POPULATION
DISTRIBUTION
(1965 2010)**



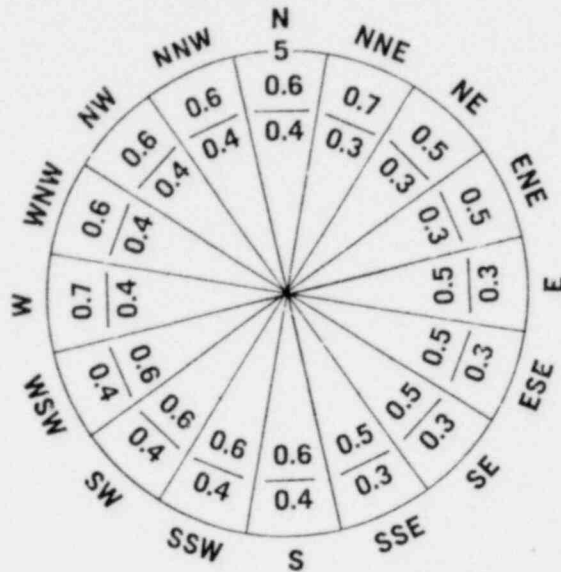
OCONEE NUCLEAR STATION

FIGURE 2-8

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0 - 5 MILES

LAND USE $\left(\frac{\text{PASTURED}}{\text{CULTIVATED}} \frac{P}{C} \right)$ IN SQUARE
 WITHIN A 50 MILE RADIUS



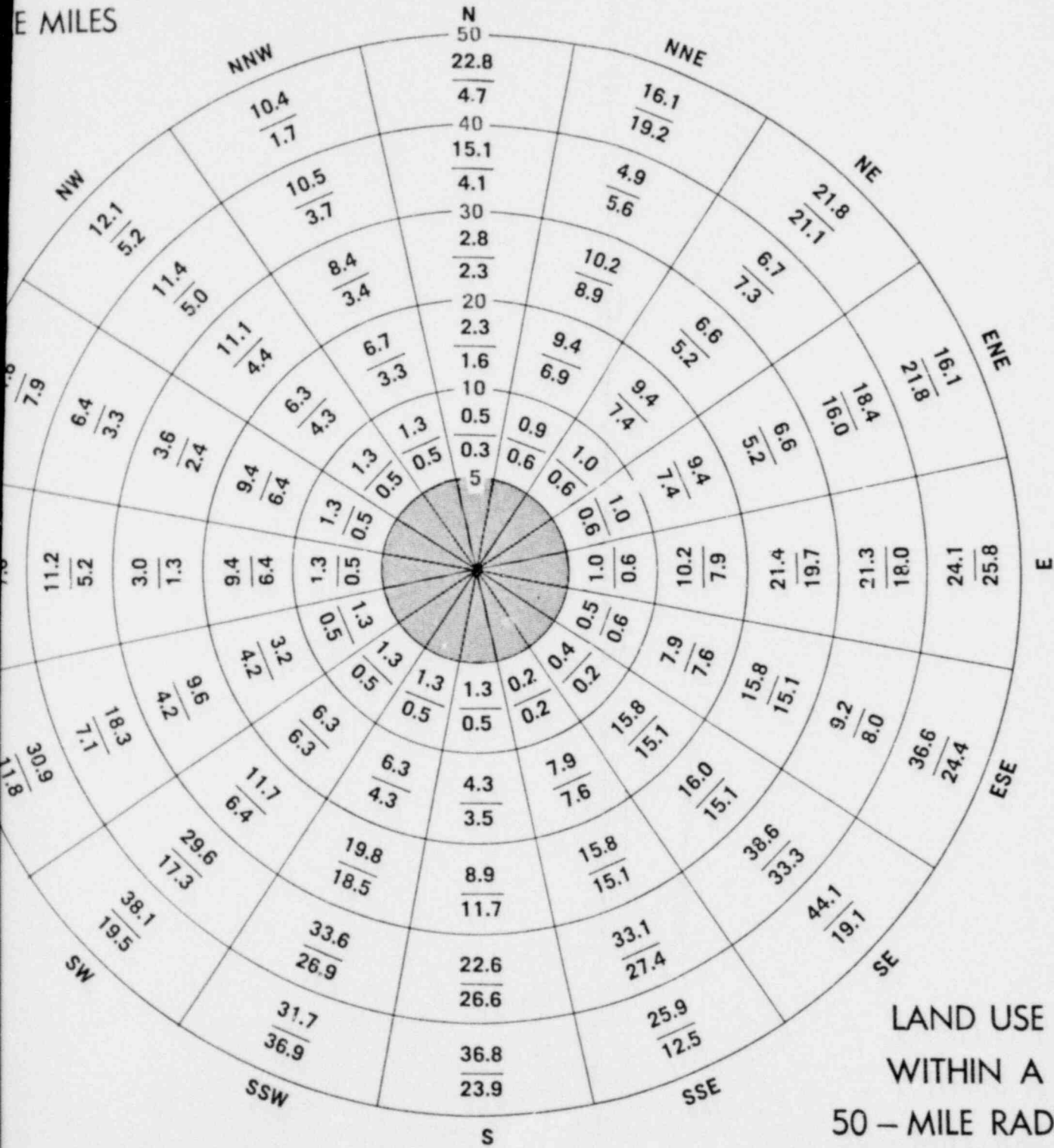
CUMULATIVE TOTALS BY SECTORS

SECTOR	RADIUS IN MILES									
	10		20		30		40		50	
	P	C	P	C	P	C	P	C	P	C
	(Sq. Mi.)		(Sq. Mi.)		(Sq. Mi.)		(Sq. Mi.)		(Sq. Mi.)	
N	1.1	0.7	3.4	2.3	6.2	4.6	21.3	8.7	44.1	13.4
NNE	1.5	0.9	11.0	7.8	21.2	16.7	26.1	22.3	42.2	41.5
NE	1.5	0.9	10.9	8.3	17.5	13.5	24.2	20.8	46.0	41.9
ENE	1.5	0.9	10.9	8.3	17.5	13.5	35.9	29.5	52.0	51.3
E	1.5	0.9	11.7	8.8	33.1	28.5	54.4	46.5	78.5	72.3
ESE	1.0	0.9	8.9	8.5	24.7	23.6	33.9	31.6	70.5	56.0
SE	0.9	0.5	16.7	15.6	32.7	30.7	71.3	64.0	115.4	83.1
SSE	0.7	0.5	8.6	8.1	24.4	23.2	57.5	50.6	83.4	63.1
S	1.9	0.9	6.2	4.4	15.1	16.1	37.7	42.7	74.5	66.6
SSW	1.9	0.9	8.2	5.2	28.0	23.7	61.6	50.6	93.3	87.5
SW	1.9	0.9	8.2	7.2	19.9	13.6	49.5	30.9	87.6	50.4
WSW	1.9	0.9	5.1	5.1	14.7	9.3	33.0	16.4	63.9	28.2
W	2.0	0.9	11.4	7.3	14.4	8.6	25.6	13.8	39.0	21.4
WNW	1.9	0.9	11.3	7.3	14.9	9.7	21.3	13.0	32.9	20.9
NW	1.9	0.9	8.2	5.2	19.3	9.6	30.7	14.6	42.8	19.8
NNW	1.9	0.9	8.6	4.2	17.0	7.6	27.5	11.3	37.9	13.0

Source: U. S. South

5 - 50 MILES

E MILES



LAND USE WITHIN A 50 - MILE RADIUS



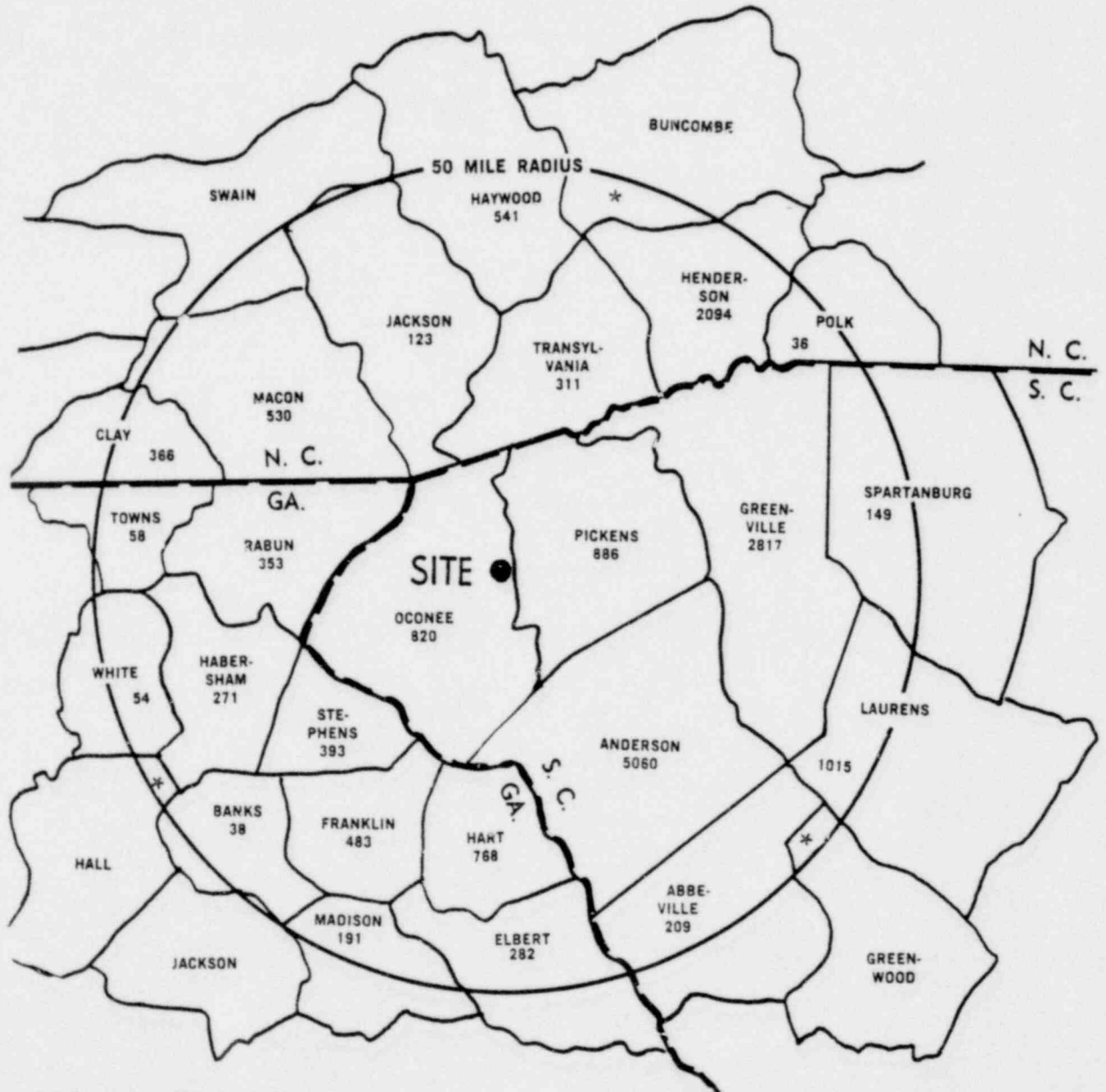
OCONEE NUCLEAR STATION
FIGURE 2-9

U.S. Census of Agriculture (1964). From preliminary report, selected counties in North Carolina, Georgia, and North Carolina, issued June 1966.

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DAIRY ANIMALS WITHIN A 50 MILE RADIUS



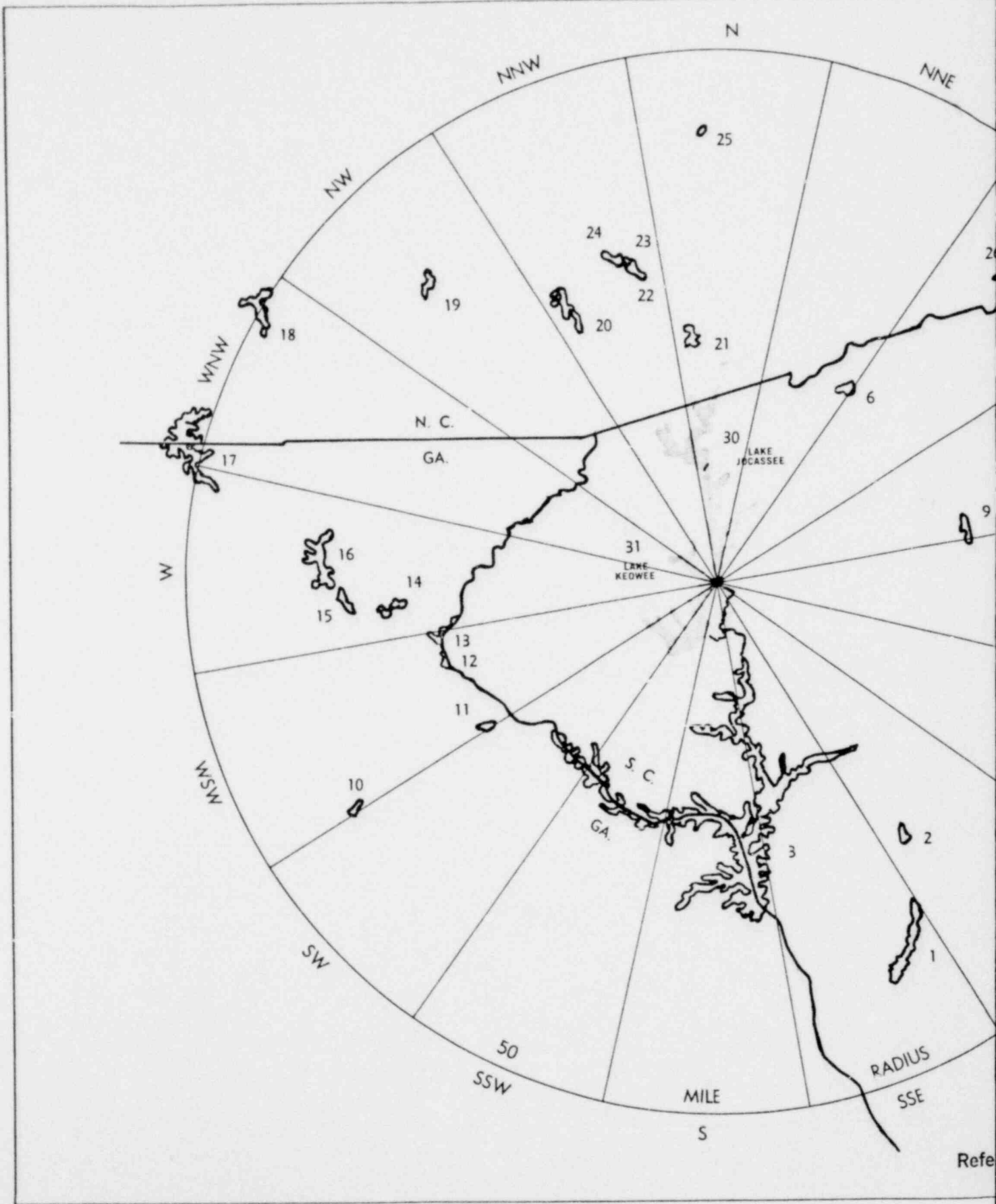
* Information Not Available

Source: Tally made October 1966, by Dr. J. T. Lazar, Jr.,
Department of Dairy Science,
Clemson Univ., Clemson, S. C.



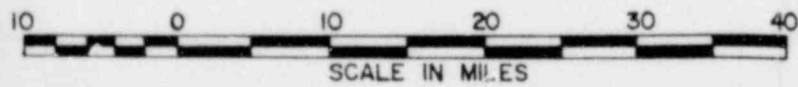
OCONEE NUCLEAR STATION
FIGURE 2-10

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RESERVOIRS (LAKES)
 WITHIN A
 50 - MILE RADIUS



OCONEE NUCLEAR STATION
 FIGURE 2-11

Refer to Figure 2-12 for identification of Reservoir and other pertinent data.

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NUCLEAR STATION
 LAKES WITHIN A 50-MILE RADIUS
 (SURFACE AREA - 100 ACRES)

Dead Storage (Acre/Feet)	Surface Area (Acres)	Dead Storage (Acre/Feet)	Surface Area (Acres)	Average Flow (CFS)	Distance (Miles)	Direction
90,000(a)	3,000(a)	50,000(a)	*	230(a)	38(12)	SSE
*	500	*	*	*	30	SE
42,700(2)	61,350	1,134,100	27,900	4,245(3)	25	S
1,013	250	*	*	18.6	42	ENE
4,605	500(a)	0	-	70(a)	43	ENE
29,233	500	18,420	*	*	22	NE
76,102(4)	1,080	0	-	21.7(5)	38	NE
24,560	1,600	0	-	156(a)	54	ENE
7,228	556	5,684	*	*	24	ENE
*	130(a)	*	*	*	40	WSW
*	260(a)	*	*	*	26	WSW
11,700	325	*	*	*	26	WSW
43,000	597(a)	31,500(6)	*	*	20	W
31,000	834	8,000(6)	*	*	31	W
8,100	240	*	*	*	35	W
08,000	2,775	2,000	910	195(7)	38	W
47,800(1)	7,150	18,500(8)	970	435(9)	52	WNW
14,000						
37,300	1,605	11,900(8)	*	484(9)	50	WNW
	200(a)				40	NW
70,800	1,293(4)	3,720	*	123	30	NNW
*	1,462(10)					
	640(a)	-	-	*	24	N
10,055	176	2,410	*	*	31	NNW
34,711	431(4)	30,165	*	225	32	NNW
	476(10)					
6,336	87(4)	5,533	*	240	33	NNW
	121(10)					
2,068	120(a)	0	-	156(9)	44	N
*	324	*	*	90	40	NE
*	241	*	*	320	44	ESE
*	246	*	*	340	46	ESE
*	465	*	*	*	35	ESE
160,298	7,565	944,600	6,815	480	15	N
955,586	18,372	563,907	13,032	900	4	N

(10)Top of Gates.

Refer to Figure 2-11 for related map.

(11)Construction Proposed.

(12)Distance is to the Estimated
Center of Reservoir.

(13)Only Part of Reservoir Within
50-Mile Radius.

(14)Municipal Water Supply.

**RESERVOIR & LAKE DATA
 WITHIN A
 50 MILE RADIUS**



OCONEE NUCLEAR STATION

FIGURE 2-12

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OCONEE N
DATA ON RESERVOIRS AND
(MINIMUM SURFA

<u>No.</u>	<u>Reservoir (River)</u>	<u>Owner</u>	<u>Tot</u> (
1	Lake Secession (Rocky River)	Town of Abbeville, S. C.	
2	Broadway Lake (Broadway Creek)	County of Anderson, S. C.	
3	Hartwell (Savannah River)	U. S. Army Corps of Engineers	2,8
4	Lake Cunningham (S. Tyger River)	*	
5	Lyman Lake (Middle Tyger River)	*	
6	Table Rock (S. Saluda River)	City of Greenville, S. C.(14)	
7	Poinsett Reservoir (N. Saluda River)	City of Greenville, S. C.(14)	
8	Wm. C. Bowen (13) (S. Pacolet River)	City of Spartanburg, S. C.(14)	
9	Saluda Hydro (Saluda River)	Duke Power Company	
10	Russell Lake (Tributary to Middle Broad)	*	
11	Lake Louise (Walton Creek)	*	
12	Yonah Lake (Tugaloo River)	Georgia Power Company	
13	Tugaloo Lake (Tugaloo River)	Georgia Power Company	
14	Lake Kabun (Tallulah River)	Georgia Power Company	
15	Nacoachee Lake (Tallulah River)	*	
16	Lake Burton (Tallulah River)	Georgia Power Company	
17	Chatuge Lake (13) (Hiwassee River)	Tennessee Valley Authority	
18	Nantahala Lake (13) (Nantahala River)	Nantahala Power & Light Company	
19	Lake (Little Tennessee River)	*	
20	Thorpe (W. Fork Tuckasegee River)	Nantahala Power & Light Company	
21	Lake Toxaway (Toxaway River)	Lake Toxaway Company	
		Columbia, S. C.	
22	Wolf Creek Lake (Wolf Creek)	*	
23	Bear Creek Lake (Tuckasegee River)	*	
24	Cedar Cliff Lake (Tuckasegee River)	*	
25	Lake Logan (W. Fork Pigeon River)	*	
26	Lake Summit (Green River)	Duke Power Company	
27	Tumbling Shoals (Reedy River)	Duke Power Company	
28	Boyds Mill (Reedy River)	Duke Power Company	
?	Hollidays Bridge (Saluda River)	Duke Power Company	
...	Lake Jocassee (11) (Keowee River)	Duke Power Company	
31	Lake Keowee (11) (Keowee River)	Duke Power Company	1,

Remarks:

Information for the most part furnished by Mr A E Johnson, USGS, Retired, Columbia, S. C.

*Information not available.

(a)About

(1)With Flashboards.

(2)At elevation 665 (Flood Pool); Full Pond 660.

(3)October 1949 - September 1965.

(4)Top of Spillway.

(5)Minimum Daily.

(6)Minimum Usable Storage.

(7)Average Water Year at Clayto

(8)Normal Operating Conditions.

(9)Adjusted for Storage.