TITANIUM RESOURCES - REPORT 2

Minerals Research Laboratory July 1971 Progress Report

RML Project No. 5, Report No. 2
Lab. Nos. (See Summary Table) - Book 282, pp. 33-115

by
Robert M. Lewis

INTRODUCTION

A program involving beneficiation of samples from titanium deposits throughout the State has been undertaken by the Minerals Research Laboratory. This is the second report of a series which will culminate in a final publication at a later date. A majority of the samples investigated for this report were from the Durham-Deep River-Wadesboro Triassic Basins and Dan River area. These samples, along with their descriptions, were submitted by Dr. Paul Thayer of the University of North Carolina at Wilmington.

OBJECT

The object of this report is to up-date the progress made in locating and evaluating titanium minerals in North Carolina.

PROCEDURE

No set procedure was used to beneficiate samples. Each sample was treated according to its inherent characteristics. The key processes involved grinding, scrubbing, desliming, and/or gravity, heavy liquid, electrostatic, magnetic procedures.

RESULTS AND CONCLUSIONS

The location, description, and results of each sample are presented in the Sample Data section and accompanying maps. Those samples which contained in excess of 2.0 percent heavy minerals were given additional

beneficiation to determine mineral distribution.

A summary of heavy mineral content is included as Table 1.

Happy Valley Picnic Area (Caldwell County)

A sample from a large flood plain area contained 3.0 percent heavy minerals. This area is located downstream from the Yadkin Valley ilmenite mine, which may have been the source ore. This area has possibilities as an ilmenite source.

Tuscarora Iron Mine (Guilford County)

A sample from this area is representative of material from abandoned mines and prospects in the locality. The sample contained 29.1 percent ilmenite and 70.9 percent magnetite. The general area has promise.

Piedmont Construction Company Sand Plant (Davie County)

The heavy minerals content (3.0 percent) is marginal; however, the mineral suite - magnetite, ilmenite, and zircon - is of interest. The plant is located on a large flood plain.

Shooting Creek (Clay County)

The Shooting Creek area is engulfed by a bowl-shaped topography crested by Vineyard, Chunky Gal, and Eagle mountains. The bowl is open on the west to the Chatuge Lake which is the general direction of flow for eroded material. Samples were obtained from the Cherry Cove Branch area. Stream samples gave indication of heavy minerals in the area. A channel sample from a logging road cut contained 5.3 percent heavy minerals. The need for additional prospecting in this area is indicated.

Morganton (Burke County)

Samples from the flood plain adjacent to Johns River contained

approximately 3.0 percent heavy minerals. Samples south of Catawba River and east of the mouth of Johns River contained 6.8-8.8 percent heavy minerals. A sample from the mouth of Hunting Creek contained 5.0 percent heavy minerals.

A. P. Causby Sand Company (Morganton, N. C.)

Samples averaged approximately 4.0 percent heavy minerals. The company is sponsoring a project involving beneficiating this material.

Durham-Deep River-Wadesboro Triassic Basins

Eleven of 25 samples investigated contained more than 2.0 percent heavy minerals.

Dan River Samples

Three of 23 samples investigated contained more than 2.0 percent heavy minerals.

Table 1

SUMMARY

A. Western Area Samples

Lab. No.	Location	% Heavy Minerals
3707	Happy Valley Picnic Area (Caldwell Co.)	2.6
3715	Tuscarora Iron Mine (Guilford Co.)	99.2
3747	Piedmont Construction Company (Davie Co.)	3.0
3748	" " " " "	3.0
3750	Shooting Creek (Clay Co.)	5.0
3751	" " " "	8.0
3752	" " " "	12.3
3753	" " " "	5.3
3754	" " " "	6.1
3755	" " " "	3.2
3818	Morganton (Burke Co.)	2.6
3819	" " "	3.0
3820	" " "	6.8
3821	" " "	8.8
3822	" " "	5.0
3823	" " "	2.8
3824	" " "	1.2
3825	" " "	1.6
3826	A. P. Causby Sand Company (Morganton,N.C.)	2.6
3827	" " " " "	4.0
3828	" " " " "	4.0
3829	" " " " "	4.8
3830	" " " " "	3.2
3831	" " " " "	6.3
3832	" " " " "	4.9

(Table 1 continued on page 5)

Table 1

SUMMARY

(continued)

B. Durham-Deep River-Wadesboro Triassic Basin Samples

Lab. No.	Location	% Heavy Minerals
3759	Chatham County	4.7
3760	Wake County	2.0
3761	Durham County	0.2
3762	Granville County	0.1
3763	Durham County	5.0
3764	" "	0.6
3765	" "	3.6
3766	Montgomery County	4.8
3767	Anson County	3.4
3768	" "	1.6
3769	" "	3.2
3770	" "	1.8
3771	Union County	0.8
3772	Anson County	1.1
3773	" "	trace
3774	" "	0.6
3775	Moore County	0.6
3776	" "	2.0
3777	" "	0.4
3778	" "	0.6
3779	" "	2.2
3780	Chatham County	0.6
3781	" "	0.6
3782	Lee County	5.9
3783	" "	6.6

(Table 1 continued on page 6)

Table 1

SUMMARY

(continued)

C. Dan River Samples

Lab. No.	Location	% Heavy Minerals
3757	Rockingham County	4.0
3758	" "	9.4
3844	" "	0.6
3845	" "	trace
3846	" "	0.6
3847	" "	0.6
3848	" "	0.6
3849	" "	1.8
3850	" "	0.8
3851	" "	0.6
3852	" "	0.2
3853	" "	0.8
3854	" "	1.2
3855-3856	" "	0.4-1.6
3857	" "	0.2
3858	" "	0.6
3784	" "	0.6
3789	" "	4.0
3785	Stokes County	trace
3786	" "	0.8
3787	" "	0.8
3788	" "	1.4

SAMPLE DATA

Happy Valley Picnic Area (Caldwell County)

Lab. No. 3707 Field No. 1

Location: Happy Valley picnic area, 0.3 miles north of intersection of U. S. 321 and County Road 1560.

Description: Hand auger samples from 100 ± acre field north of picnic area.

Results: Heavy minerals in sample (percent) 2.60

Tuscarora Iron Mine (Guilford County)

Lab. No. 3715 Field No. 1

Location: N. C. Grid - 860, 250 N., 1,718,300 E. Approximately 1¼ miles north of Friendship, 200 feet west of N. C. 68.

Description: Surface pieces from area around old Tuscarora Iron Mine.

Results: Heavy minerals in sample (percent) 99.2

Distribution of heavy minerals (percent) - magnetite 70.9, ilmenite 29.1. Analyses:

Mineral	% TiO_2	% Fe	% FeO
Magnetite	6.3	65.7	22.5
Ilmenite	39.9	33.7	27.0
Total	16.1	56.4	23.8

Piedmont Construction Co. Sand Plant (Davie County)

Lab. No. 3747 Field No. 1

Location: Piedmont Construction Sand Plant north of I-40 at junction of Yadkin River.

Description: Hand auger sample, 200 feet north of plant site on west bank of Yadkin River.

(continued on page 8)

SAMPLE DATA

Piedmont Construction Co. Sand Plant (Davie County)
(continued)

Results: Heavy minerals in sample (percent) 3.0

Distribution of heavy minerals (percent) - magnetite 0.7, ilmenite 13.8, zircon 5.9, miscellaneous 79.6.

Lab. No. 3748 Field No. 2

Location: Piedmont Construction Sand Plant north of I-40 at junction of Yadkin River.

Description: Random grab sample from area around stockpile.

Results: Heavy minerals in sample (percent) 3.0

Lab. No. 3750 (Shooting Creek (Clay County) Field No. 10

Location: On Hothouse Branch, 500 ft. south of junction of Cherry Cove Branch.

Description: Sample of creek sand

Results: Heavy minerals in sample (percent) 5.0

Distribution of heavy minerals (percent) - magnetite 2.2, ilmenite 31.0, garnet 31.7, zircon 1.5, muscovite 1.3, biotite 1.3, miscellaneous dark minerals 31.0.

Lab. No. 3751 Field No. 11

Location: Cherry Cove Branch, 200 ft. east of junction of Hothouse Branch.

Description: Sample of creek sand.

Results: Heavy minerals in sample (percent) 8.0

Distribution of heavy minerals (percent) - magnetite 1.7, ilmenite 25.7, garnet 39.3, zircon 2.5, muscovite 0.9, miscellaneous dark minerals 29.9.

SAMPLE DATA

Shooting Creek (Clay County)
(continued)

Lab. No. 3752 Field No. 12

Location: 700 ft. east of junction of Cherry Cove Branch and Hothouse Branch, 200 ft. south and up-hill from Cherry Cove Branch along logging road.

Description: Chip sample of hard rock.

Results: Heavy minerals in sample (percent) 12.3

Distribution of heavy minerals (percent) - magnetite 0.2, ilmenite 8.5, garnet 54.4, zircon 6.6, muscovite 7.6, biotite 1.8, miscellaneous dark minerals 20.9.

Lab. No. 3753 Field No. 13

Location: 2000 ft. east of junction of Cherry Cove Branch and Hothouse Branch, 100 ft. south of Cherry Cove Branch near junction of logging roads.

Description: Channel sample from logging road cut.

Results: Heavy minerals in sample (percent) 5.3

Distribution of heavy minerals (percent) - magnetite 0.4, ilmenite 22.6, garnet 41.1, zircon 2.2, miscellaneous light minerals 3.2, miscellaneous dark minerals 30.5.

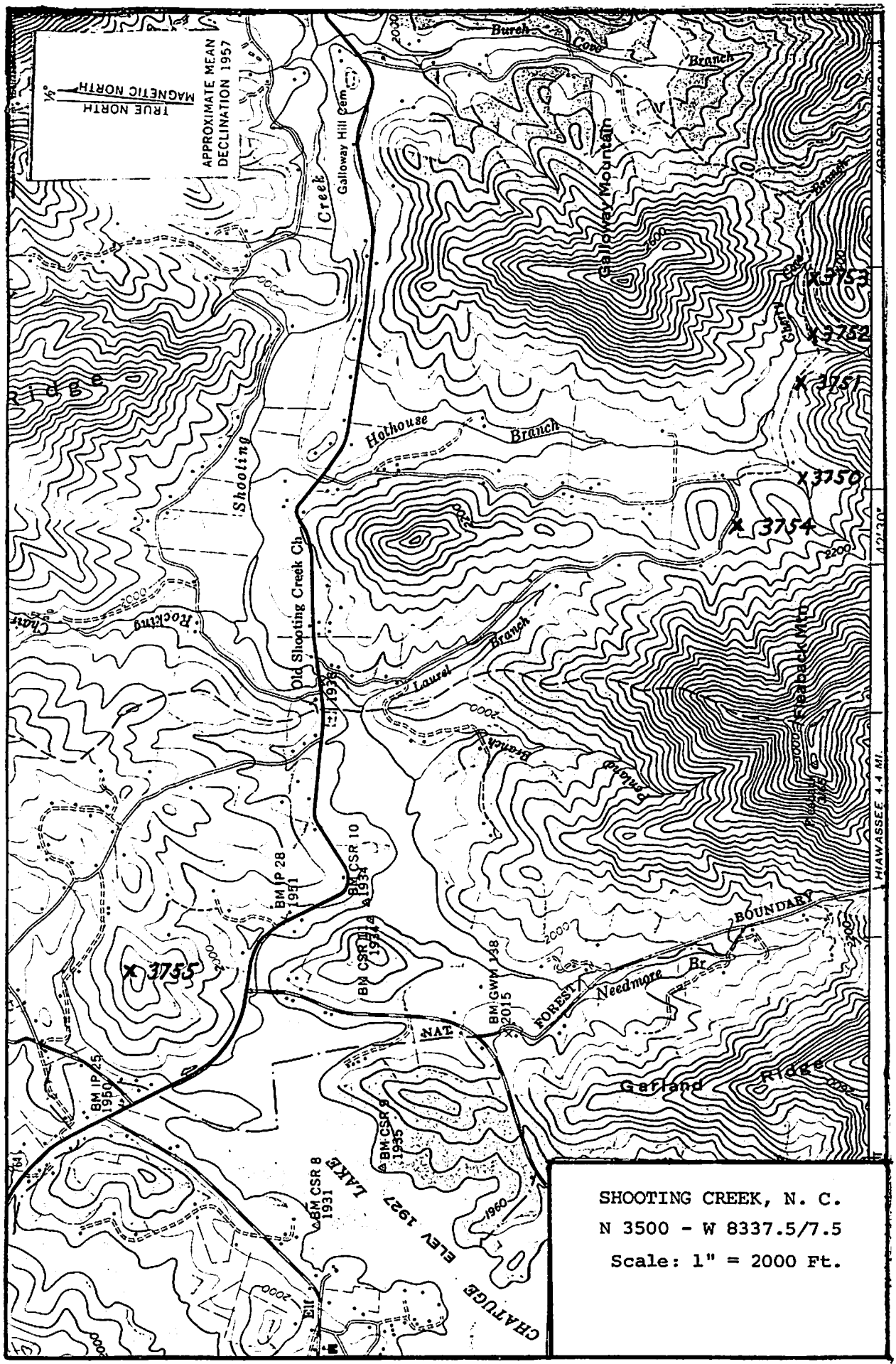
Lab. No. 3754 Field No. 14

Location: Southernmost loop of Hothouse Branch Road where creek crosses under road.

Description: Sample of creek sand.

Results: Heavy minerals in sample (percent) 6.1

Distribution of heavy minerals (percent) - magnetite 0.9, ilmenite 33.3, garnet 26.4, zircon 1.7, muscovite 0.7, biotite 0.5, miscellaneous dark minerals 36.5.



SHOOTING CREEK, N. C.
N 3500 - W 8337.5/7.5
Scale: 1" = 2000 Ft.

SAMPLE DATA

Shooting Creek (Clay County)

Lab. No. 3755 Field No. 15

Location: 0.37 miles S. 85° W. of Union Chapel Church, ½ mile east of creek.

Description: Grab sample from 100 ft. of an 800 ft. road cut.

Results: Heavy minerals in sample (percent) 3.2

Distribution of heavy minerals (percent) - magnetite 0.5, ilmenite 26.4, garnet 38.5, zircon 3.2, muscovite 5.0, miscellaneous dark minerals 26.4.

Morganton (Burke County)

Lab. No. 3818 Field No. 1

Location: One mile southeast of junction of N. C. 18 and Johns River, on bank of Johns River.

Description: Hand auger sample.

Results: Heavy minerals in sample (percent) 2.6

Distribution of heavy minerals (percent) - magnetite 2.9, ilmenite 10.9, zircon 4.4, miscellaneous 81.8.

Lab. No. 3819 Field No. 2

Location: ½ mile southeast of junction of N. C. 18 and Johns River on bank of Johns River.

Description: Hand auger sample from 100 ± acre field near river.

Results: Heavy minerals in sample (percent) 3.0

Distribution of heavy minerals (percent) - magnetite 5.2, ilmenite 5.2, zircon 3.0, miscellaneous 86.6.

SAMPLE DATA

Morganton (Burke County)

Lab. No. 3820 Field No. 3

Location: ½ mile east of junction of Johns River and Catawba River on south side of river.

Description: Hand auger sample from field.

Results: Heavy minerals in sample (percent) 6.8

Distribution of heavy minerals (percent) - magnetite 1.3, ilmenite 7.9, zircon 2.9, miscellaneous 87.9.

Lab. No. 3821 Field No. 4

Location: ½ mile east of junction of Johns River and Catawba River on south side of river.

Description: Hand auger sample along river bank.

Results: Heavy minerals in sample (percent) 8.8

Distribution of heavy minerals (percent) - magnetite 0.7, ilmenite 7.8, zircon 2.4, miscellaneous 89.1.

Lab. No. 3822 Field No. 5

Location: South bank of Catawba River at mouth of Hunting Creek.

Description: Hand auger sample along river tank.

Results: Heavy minerals in sample (percent) 5.0

Distribution of heavy minerals (percent) - magnetite 2.1, ilmenite 2.1, zircon 4.8, miscellaneous 91.0.

Lab. No. 3823 Field No. 6

Location: One mile east of junction of N. C. 18 and Catawba River on north side of river.

Description: Hand auger sample along river bank.

SAMPLE DATA

Morganton (Burke County)

Lab. No. 3823 - continued from page 12

Results: Heavy minerals in sample (percent) 2.8

Distribution of heavy minerals (percent) - magnetite 2.5, ilmenite 16.4, zircon 3.3, miscellaneous 77.8.

Lab. No. 3824 Field No. 7

Location: Along Warrior Creek, 500 ft. up stream from junction of Warrior Creek and Catawba River.

Description: Hand auger sample from 200 ± acre field north of Warrior Creek.

Results: Heavy minerals in sample (percent) 1.2

Distribution of heavy minerals (percent) - magnetite 2.6, ilmenite 20.5, zircon 5.1, miscellaneous 71.8.

Lab. No. 3825 Field No. 8

Location: Along Warrior Creek, 1000 ft. up stream from junction of Warrior Creek and Catawba River.

Description: Grab sample from sand bar in Warrior Creek.

Results: Heavy minerals in sample (percent) 1.6

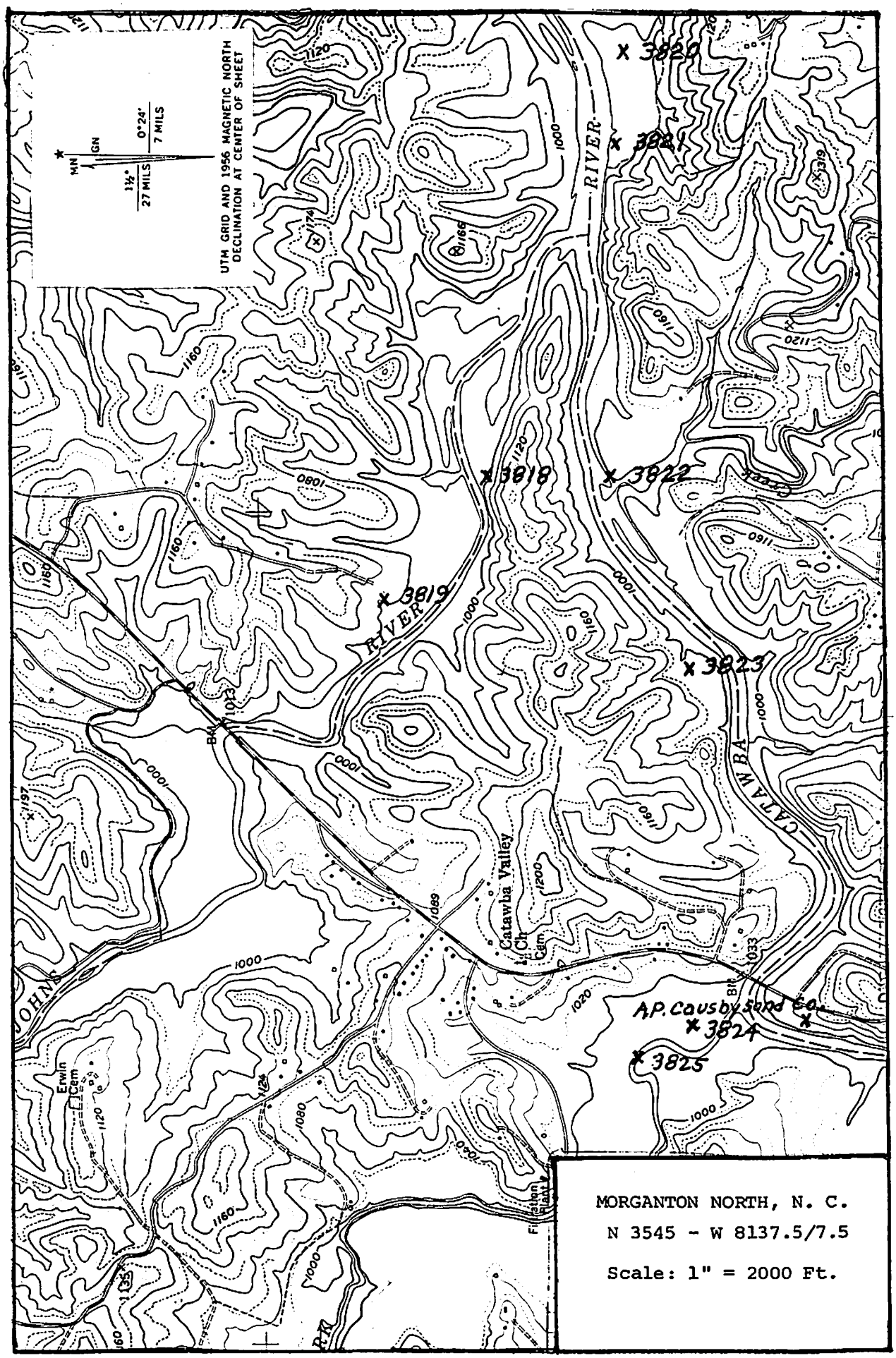
Distribution of heavy minerals (percent) - magnetite 5.3, ilmenite 10.5, zircon 1.8, miscellaneous 82.4.

A. P. Causby Sand Co. (Morganton, N. C.)

Lab. No. 3826 Field No. 9

Location: Sand bar in Catawba River at plant site.

Description: Hand auger sample from sand bar created by plant discharge into Catawba River.


UTM GRID AND 1956 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET
MN
GN
1½°
27 MILS
0°24'
7 MILS
X 3820
X 3821
X 3818
X 3822
X 3819
X 3823
X 3824
X 3825
A.P. Causby Sand Co.
RIVER
CATAWBA
JOHNS
Catawba Valley Ch
Erwin Cem
Filtration Plant
MORGANTON NORTH, N. C.
N 3545 - W 8137.5/7.5
Scale: 1" = 2000 Ft.

SAMPLE DATA

A. P. Causby Sand Co. (Morganton, N. C.)

Lab. No. 3826 - Results - continued from page 13

Results: Heavy minerals in sample (percent) 2.6

Distribution of heavy minerals (percent) - magnetite 0.9, ilmenite 14.5, zircon 0.9, miscellaneous 85.5.

Lab. No. 3827 Field No. 10

Location: Plant heavy mineral storage pit.

Description: Four hand auger samples on 10-ft. centers and each five feet deep. This material came from spiral classifier clean-out.

Results: Heavy minerals in sample (percent) 4.0

Distribution of heavy minerals (percent) - magnetite 3.1, ilmenite 24.7, garnet 8.7, zircon 9.8, miscellaneous 53.7.

Lab. No. 3828 Field No. 11

Location: Sand bar in Catawba River under N. C. 18 bridge at plant site.

Description: Hand auger sample from sand bar.

Results: Heavy minerals in sample (percent) 4.0

Distribution of heavy minerals (percent) - magnetite 1.2, ilmenite 23.4, zircon 2.9, miscellaneous 72.5.

Lab. No. 3829 Field No. 12

Location: Plant site.

Description: Screw classifier clean-out material trapped by filter bag.

Results: Heavy minerals in sample (percent) 4.8

Distribution of heavy minerals (percent) - magnetite 2.6, ilmenite 3.1, zircon 5.7, miscellaneous 88.6.

SAMPLE DATA

A. P. Causby Sand Co. (Morganton, N. C.)
(continued)

Lab. No. 3830 Field No. 13

Location: Plant site, fine sand stockpile.

Description: Random grab sample from fine sand stockpile.

Results: Heavy minerals in sample (percent) 3.2

Distribution of heavy minerals (percent) - magnetite 1.3, ilmenite 19.6, zircon 2.6, miscellaneous 76.5.

Lab. No. 3831 Field No. 14

Location: Plant site.

Description: Sample taken from bottom of large spiral classifier tank.

Results: Heavy minerals in sample (percent) 6.3

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3832 Field No. 15

Location: Plant site.

Description: Sample taken from bottom of small spiral classifier tank.

Results: Heavy minerals in sample (percent) 4.9

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Durham-Deep River-Wadesboro Triassic Basins

Lab. No. 3759 Field No. TR-25

Location: Along railroad cut 100 ft. west of U. S. 1 along Chatham County Road 1011.

Description: Medium-grained, poorly sorted, texturally immature schist arenite.

Results: Heavy minerals in sample (percent) 4.70

Distribution of heavy minerals (percent) - magnetite 0.5, black opaques 9.1, zircon 2.0, miscellaneous 88.4.

Lab. No. 3760 Field No. TR-46

Location: Along N. C. 55 (Wake County), 1.8 miles north of intersection with Wake County Road 1630.

Description: Medium- to coarse-grained, poorly sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 2.00

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3761 Field No. TR-75

Location: Along Durham County Road 1631, 0.6 mile north of intersection with Durham County Road 1639.

Description: Coarse-grained, very poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 0.20

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3762 Field No. TR-80

Location: Along Granville County Road 1127, 0.1 mile southeast of intersection with Granville County Road 1104.

SAMPLE DATA

Durham-Deep River-Wadesboro Triassic Basins

Lab. No. 3762 - continued from page 17.

Description: Very coarse-grained, very poorly sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 0.10

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3763 Field No. TR-100

Location: Along N. C. 751, 0.6 mile south of Durham County Road 1103.

Description: Medium-grained, poorly sorted, texturally immature subarkose.

Results: Heavy minerals in sample (percent) 5.00

Distribution of heavy minerals (percent) - magnetite 0.5, black opaques 12.2, zircon 2.3, miscellaneous 85.0.

Lab. No. 3764 Field No. TR-111

Location: Along Interstate 85, 0.1 mile east of intersection with U. S. 70 (Durham County).

Description: Medium-grained, poorly sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3765 Field No. TR-113

Location: Along U. S. 15-501 Bus., 1.3 mile east of intersection with N. C. 751 (Durham County).

Description: Fine- to medium-grained, poorly sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 3.60

Distribution of heavy minerals (percent) - magnetite 0.6, black opaques 9.7, zircon 2.5, miscellaneous 87.2.

SAMPLE DATA

Durham-Deep River-Wadesboro Triassic Basins

Lab. No. 3766 Field No. TR-136

Location: Along County Line Road (Montgomery Co.), 1.8 mile west of Montgomery County Road 1324.

Description: Fine-grained, moderately sorted, texturally submature subarkose.

Results: Heavy minerals in sample (percent) 4.80

Distribution of heavy minerals (percent) - magnetite 0.5, black opaques 42.7, zircon 9.7, miscellaneous 47.1.

Lab. No. 3767 Field No. TR-149

Location: Along Anson County Road 1706, 0.7 mile east of intersection with Anson County Road 1703.

Description: Very fine-grained, moderately sorted, texturally immature subarkose.

Results: Heavy minerals in sample 3.40

Distribution of heavy minerals (percent) - magnetite 5.4, black opaques 40.2, zircon 0.5, miscellaneous 53.9.

Lab. No. 3768 Field No. TR-156

Location: Along Anson County Road 1627, 1.1 mile northeast of intersection with Anson County Road 1645.

Description: Fine-grained, moderately sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample 1.60

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Durham-Deep River-Wadesboro Triassic Basins

Lab. No. 3769 Field No. TR-162

Location: Along Anson County Road 1003, 0.7 mile east of intersection with Anson County Road 1219.

Description: Fine- to medium-grained, moderately sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 3.20

Distribution of heavy minerals (percent) - magnetite 0.5, black opaques 27.2, zircon 1.0, miscellaneous 71.3.

Lab. No. 3770 Field No. TR-164

Location: Along Anson County Road 1225, 0.6 mile north of intersection with Anson County Road 1220.

Description: Fine-grained, moderately sorted, texturally immature subarkose.

Results: Heavy minerals in sample (percent) 1.80

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3771 Field No. TR-167

Location: Along Union County Road 1919, 0.6 mile northwest of Union County Road 1916.

Description: Medium-grained, poorly sorted, texturally immature litharenite.

Results: Heavy minerals in sample (percent) 0.80

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Durham-Deep River-Wadesboro Triassic Basins

Lab. No. 3772 Field No. TR-170

Location: Along Anson County Road 1251, 0.3 mile south of intersection with U. S. 74.

Description: Coarse-grained, poorly sorted, texturally immature feldspathic litharenite.

Results: Heavy minerals in sample (percent) 1.10

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3773 Field No. TR-173-1

Location: Along Seaboard Coast Line railroad cut, 0.1 mile west of intersection with Anson County Road 1422.

Description: Coarse-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) - trace.

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3774 Field No. TR-182

Location: Along N. C. 109 (Anson County), 0.1 mile north of intersection with Anson County Road 1713.

Description: Medium-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Durham-Deep River-Wadesboro Triassic Basins

Lab. No. 3775 Field No. TR-184

Location: Along Moore County Road 1624, 0.5 mile north of intersection with Moore County Road 1261.

Description: Medium-grained, very poorly sorted, texturally immature feldspathic litharenite.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3776 Field No. TR-193

Location: Along Moore County Road 1493, 0.1 mile west of N. C. 22 (Moore County).

Description: Fine-grained, moderately sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 2.00

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3777 Field No. TR-205

Location: Along Moore County Road 1006, 1.4 mile south of Glendon.

Description: Fine-grained, poorly sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 0.40

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3778 Field No. TR-216

Location: Along Moore County Road 1659, 0.4 mile west of Moore Co. Rd. 1658.

Description: Very fine-grained, moderately sorted, texturally immature subarkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Durham-Deep River-Wadesboro Triassic Basins

Lab. No. 3779 Field No. TR-221

Location: Along Moore County Road 1625, 0.15 mile southwest of intersection with Moore County Road 1626.

Description: Medium-grained, poorly sorted, texturally immature feldspathic litharenite.

Results: Heavy minerals in sample (percent) 2.20

Distribution of heavy minerals (percent) - magnetite 1.6, black opaques 56.4, zircon 8.1, miscellaneous 33.9.

Lab. No. 3780 Field No. TR-229

Location: Along Chatham County Road 2153, 0.2 mile south of intersection with Chatham County Road 2142.

Description: Very fine-grained, moderately sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3781 Field No. TR-236

Location: In Chatham Brick Company Quarry, Gulf, N. C.

Description: Fine-grained, moderately sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Durham-Deep River-Wadesboro Triassic Basins

Lab. No. 3782 Field No. TR-241

Location: Along Lee County Road 1537, 2.8 mile northeast of Lee County Road 1508.

Description: Very coarse-grained, very poorly sorted, texturally immature feldspathic litharenite.

Results: Heavy minerals in sample (percent) 5.90

Distribution of heavy minerals (percent) - magnetite 0.0, black opaques 1.3, zircon 0.0, miscellaneous 98.7.

Lab. No. 3783 Field No. TR-242-1

Location: At Sanford Brick and Tile Company plant quarry, Colon, Lee County.

Description: Coarse-grained, very poorly sorted, texturally immature feldspathic litharenite.

Results: Heavy minerals in sample (percent) 6.60

Distribution of heavy minerals (percent) - magnetite 0.4, black opaques 9.1, zircon 0.7, miscellaneous 89.8.

Dan River

Lab. No. 3757 Field No. STOP 1

Location: See location 3 in Field Trip Guidebook.* Sample taken along Rockingham County Road 1756, 0.6 mile north of intersection with N. C. 700 W. Pine Hall Formation.

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* Carolina Geological Society, Oct. 24-25, 1970, Field Trip Guidebook, Stratigraphy, Sedimentology and Economic Geology of Dan River Basin, North Carolina, by Paul A. Thayer, Dewey S. Kirstein, Roy L. Ingram.

SAMPLE DATA

Dan River

Lab. No. 3757 - continued from page 24

Description: Coarse-grained, moderately sorted, texturally immature plagioclase lithic arkose.

Results: Heavy minerals in sample (percent) 4.00

Distribution of heavy minerals (percent) - magnetite 0.4, black opaques 2.7, zircon 1.9, miscellaneous 95.0.

Lab. No. 3758 Field No. STOP 9

Location: See location 9 in Field Trip Guidebook. Sample taken from large boulder at southwest corner of Rockingham County road 1516 and Rockingham County road 1522. Conglomerate facies, Stoneville Formation.

Description: Very coarse-grained, very poorly sorted, texturally immature feldspathic litharenite.

Results: Heavy minerals in sample (percent) 9.40

Distribution of heavy minerals (percent) - magnetite 1.7, black opaques 17.9, zircon 0.8, miscellaneous 79.6.

Lab. No. 3844 Field No. R17-2

Location: Along Rockingham County Road 1735, 0.1 mile north of intersection with Carolina and Northwestern Railroad crossing. Cow Branch Formation.

Description: Medium-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Dan River

Lab. No. 3845 Field No. R34-1

Location: Along Buffalo Creek, 0.3 mile south of N. C. 135 (Rockingham County). Sandstone facies, Stoneville Formation.

Description: Medium-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) - trace.

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3846 Field No. R52-1

Location: Along Rockingham County Road 2153, 0.7 mile west of intersection with Rockingham County Road 2151. Siltstone facies, Stoneville Formation.

Description: Medium-grained, moderately sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3847 Field No. R57-2

Location: In Stoneville, along Rockingham County Road 1369, 0.1 mile west of intersection with Rockingham County Road 1371. Conglomerate facies, Stoneville Formation.

Description: Very fine-grained, moderately sorted, texturally immature, lithic arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Dan River

Lab. No. 3848 Field No. R59-3

Location: Along N. C. 135, 0.6 mile southwest of intersection with Rockingham County Road 2154. Sandstone facies, Stoneville Formation.

Description: Medium-grained, very poorly sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3849 Field No. R65-1

Location: At intersection of Rockingham County Road 2208 and 2210. Sandstone facies, Stoneville Formation.

Description: Medium-grained, moderately sorted, texturally immature arkose.

Results: Heavy minerals in sample (percent) 1.80

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3850 Field No. R65-3-2

Location: Along U. S. 200 Bypass, 1400 ft. north of its intersection with Rockingham County Road 2208. Sandstone facies, Stoneville Formation.

Description: Medium-to coarse-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 0.80

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Dan River

Lab. No. 3851 Field No. R65-3-20

Location: Along U. S. 220 Bypass, 1550 ft. north of its intersection with Rockingham County Road 2208. Sandstone facies, Stoneville Formation.

Description: Coarse-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 9.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3852 Field No. R67-1

Location: Along U. S. 220 Business (in Mayodan), 0.35 mile south of its intersection with Rockingham County Road 1313. Sandstone facies, Stoneville Formation.

Description: Very fine-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 0.20

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3853 Field No. R67-2

Location: Along N. C. 135, 0.05 mile east of intersection with Rockingham County Road 2168. Sandstone facies, Stoneville Formation.

Description: Very fine-grained, moderately sorted, texturally submature plagioclase arkose.

Results: Heavy minerals in sample (percent) 0.80

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Dan River

Lab. No. 3854 Field No. R68-1

Location: Along Norfolk and Western Railroad, 0.4 mile south of crossing with N. C. 135. Sandstone facies, Stoneville Formation.

Description: Very fine-grained, moderately sorted, texturally immature plagioclase arkose.

Results: Heavy minerals in sample (percent) 1.20

Distribution of heavy minerals (percent) - not determined.

Lab. Nos. 3855 and 3856 Field No. R73-1

Location: Along N. C. 704, 0.1 mile east of intersection with Rockingham County Road 1168. Sandstone facies, Stoneville Formation.

Description: Very coarse-grained, very poorly sorted, texturally immature feldspathic litharenite.

Results: Heavy minerals in sample (percent) 0.40-1.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3857 Field No. R73-3-1

Location: Along Rockingham County Road 1300, 0.1 mile south of intersection with Rockingham County Road 1316. Sandstone facies, Stoneville Formation.

Description: Very fine-grained, moderately sorted, texturally submature arkose.

Results: Heavy minerals in sample (percent) 0.20

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Dan River

Lab. No. 3858 Field No. R82-3

Location: Along Rockingham County Road 1139, 0.4 mile west of intersection with Rockingham County Road 1138. Sandstone facies, Pine Hall Formation.

Description: Fine- to medium-grained, moderately sorted, texturally submature arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3784 Field No. DR-102

Location: Solite Corporation Quarry in Rockingham County along N. C.-Virginia border. Sandstone lens in Cow Branch Formation.

Description: Medium-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 0.60

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3789 Field No. DR-120

Location: Along N. C. 770 (new 770 not shown on map), 0.3 mile east of Rockingham County Road 2140. Sandstone facies, Stoneville Formation.

Description: Coarse-grained, poorly sorted, texturally immature lithic arkose.

Results: Heavy minerals in sample (percent) 4.00

Distribution of heavy minerals (percent) - magnetite 0.7, black opaques 33.1, zircon 0.7, miscellaneous 65.5.

SAMPLE DATA

Dan River

Lab. No. 3785 Field No. S15-3

Location: Along N. C. 65, 0.4 mile north of intersection with Stokes County Road 1932. Sandstone facies, Pine Hall Formation.

Description: Very fine-grained, very poorly sorted, texturally immature sublitharenite.

Results: Heavy minerals in sample (percent) - trace.

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3786 Field No. S27-1-1a

Location: Along Dan River in Stokes County approximately 0.2 mile north of Stokes County Road 1915. Siltstone facies, Stoneville Formation.

Description: Fine- to very fine-grained, poorly sorted, submature lithic arkose.

Results: Heavy minerals in sample (percent) 0.80

Distribution of heavy minerals (percent) - not determined.

Lab. No. 3787 Field No. S27-1-1b

Location: Same location as S27-1-1a (above).

Description: Fine-grained, poorly sorted, texturally submature lithic arkose.

Results: Heavy minerals in sample (percent) 0.80

Distribution of heavy minerals (percent) - not determined.

SAMPLE DATA

Dan River

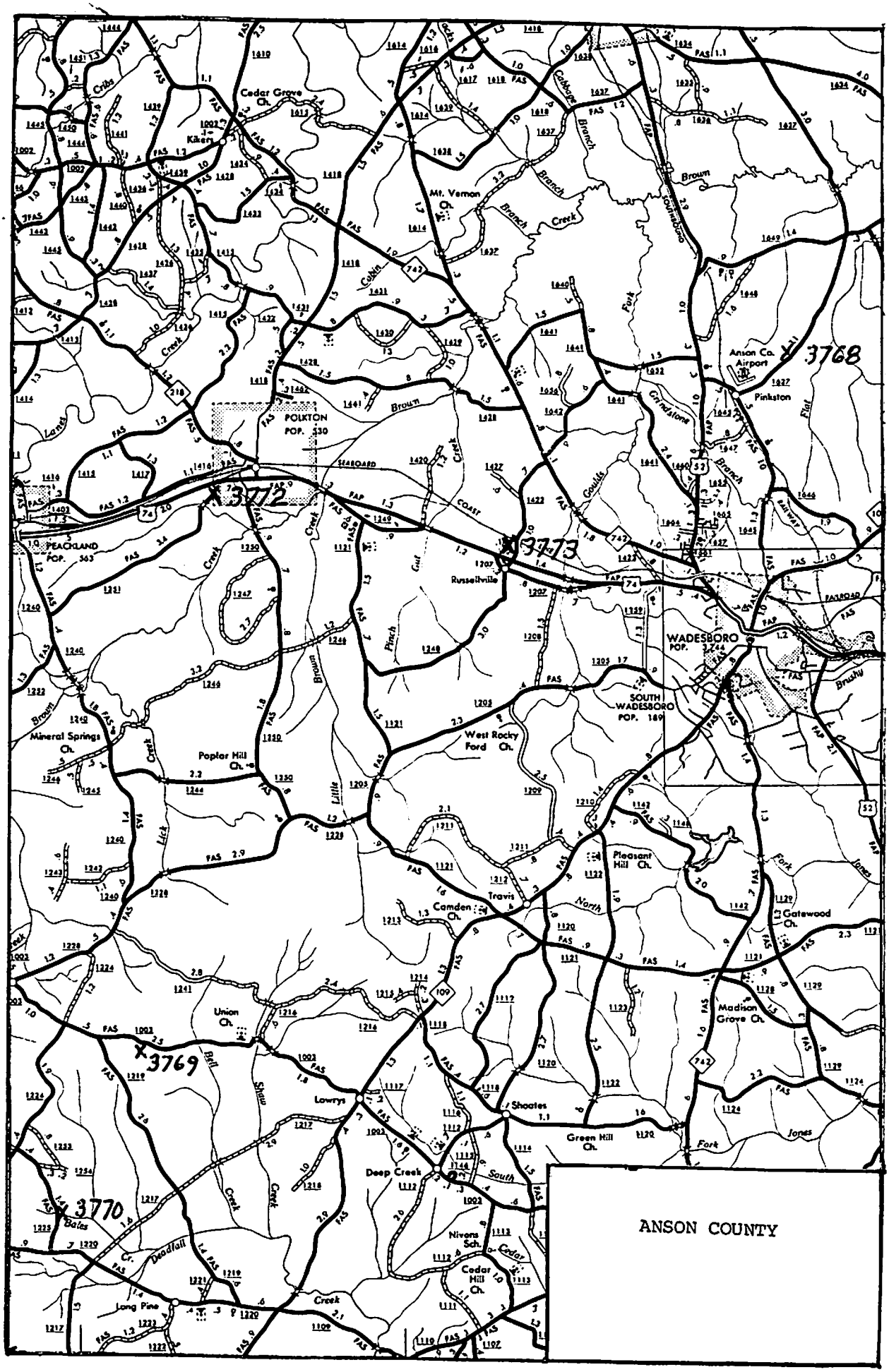
Lab. No. 3788 Field No. S35-2

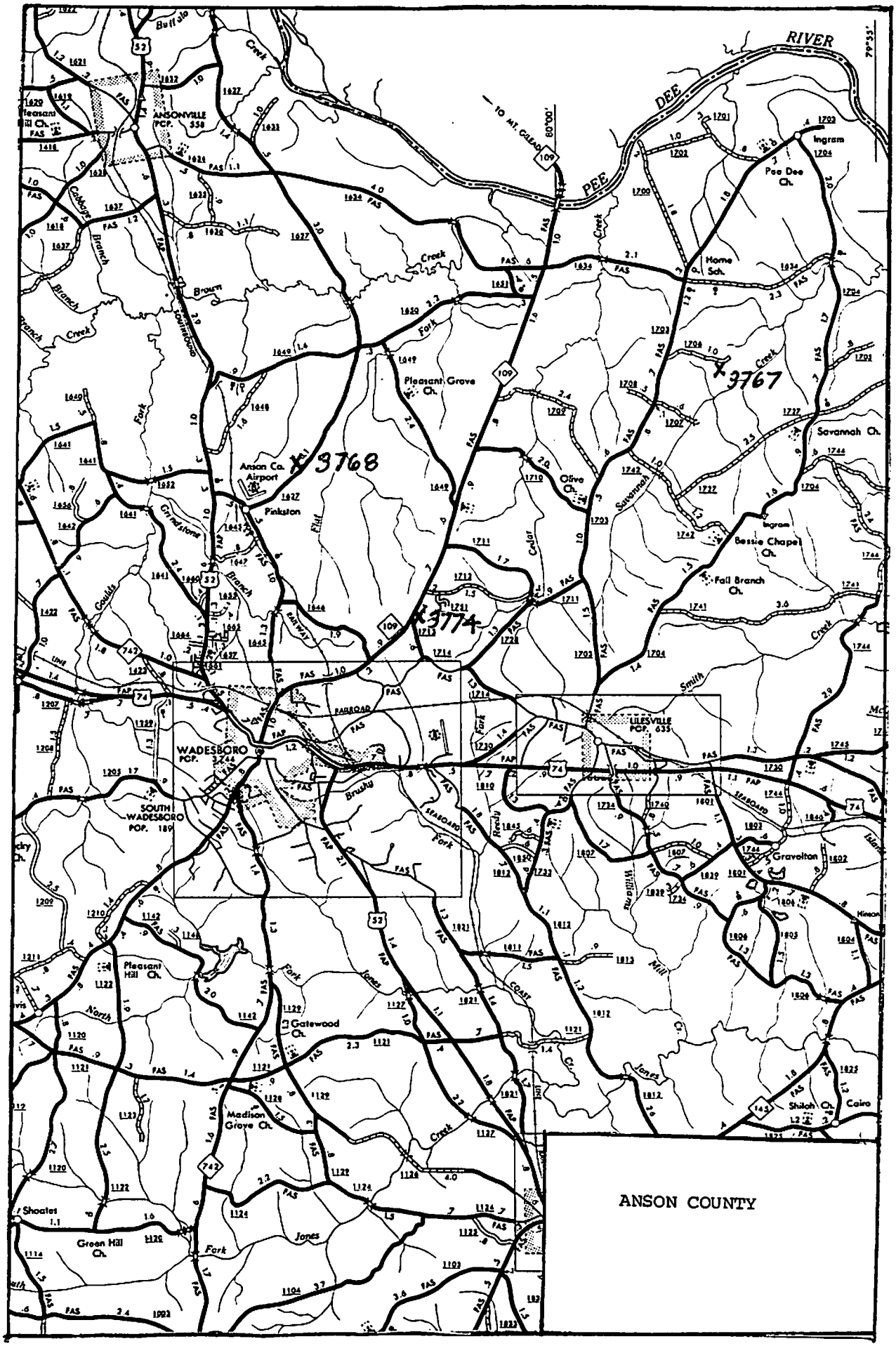
Location: Along cut bank of stream next to N. C. 772, 0.2 mile north of Stokes County Road 1901. Sandstone facies, Stoneville Formation.

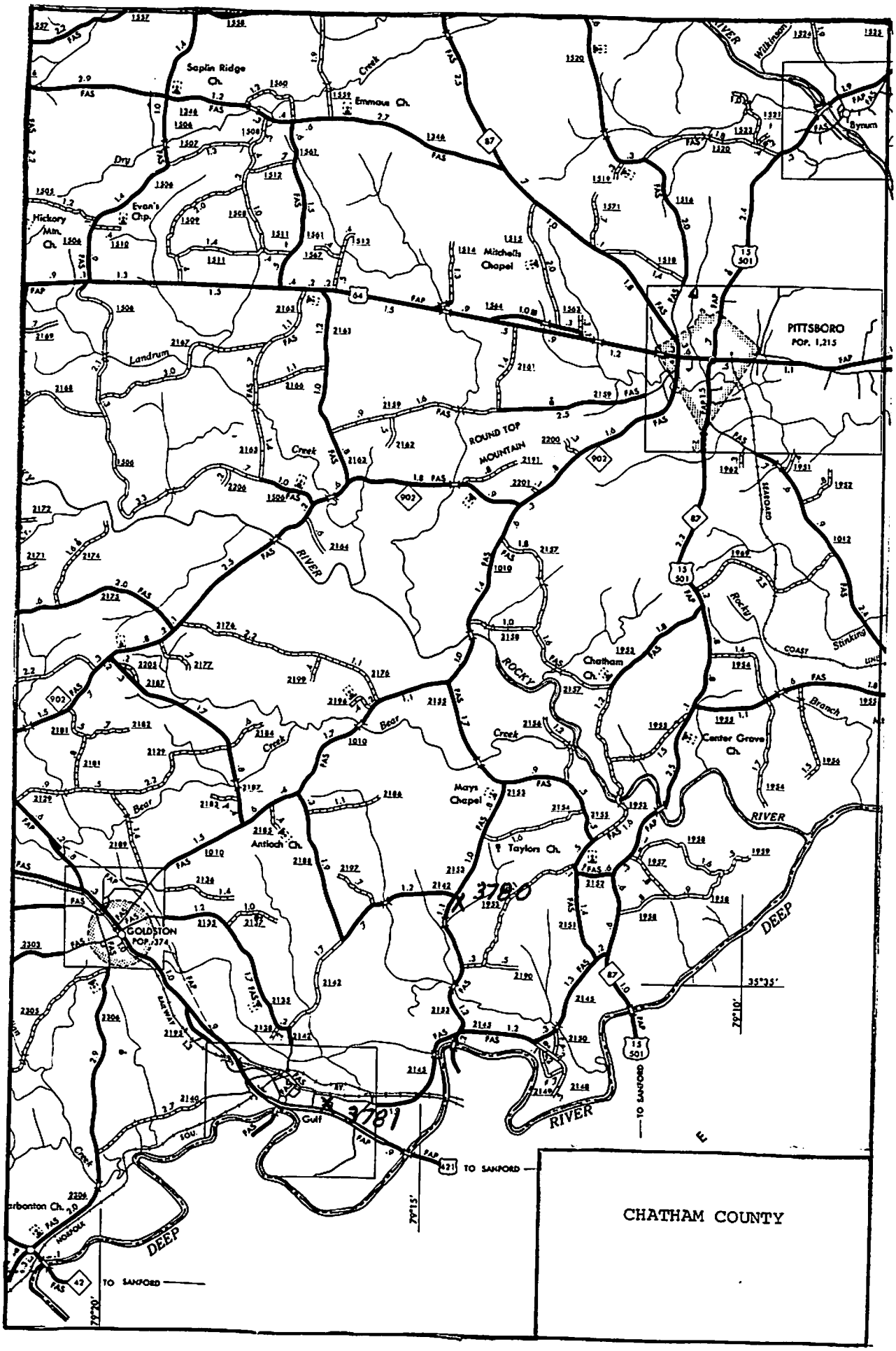
Description: Fine-grained, moderately sorted, texturally submature feldspathic litharenite.

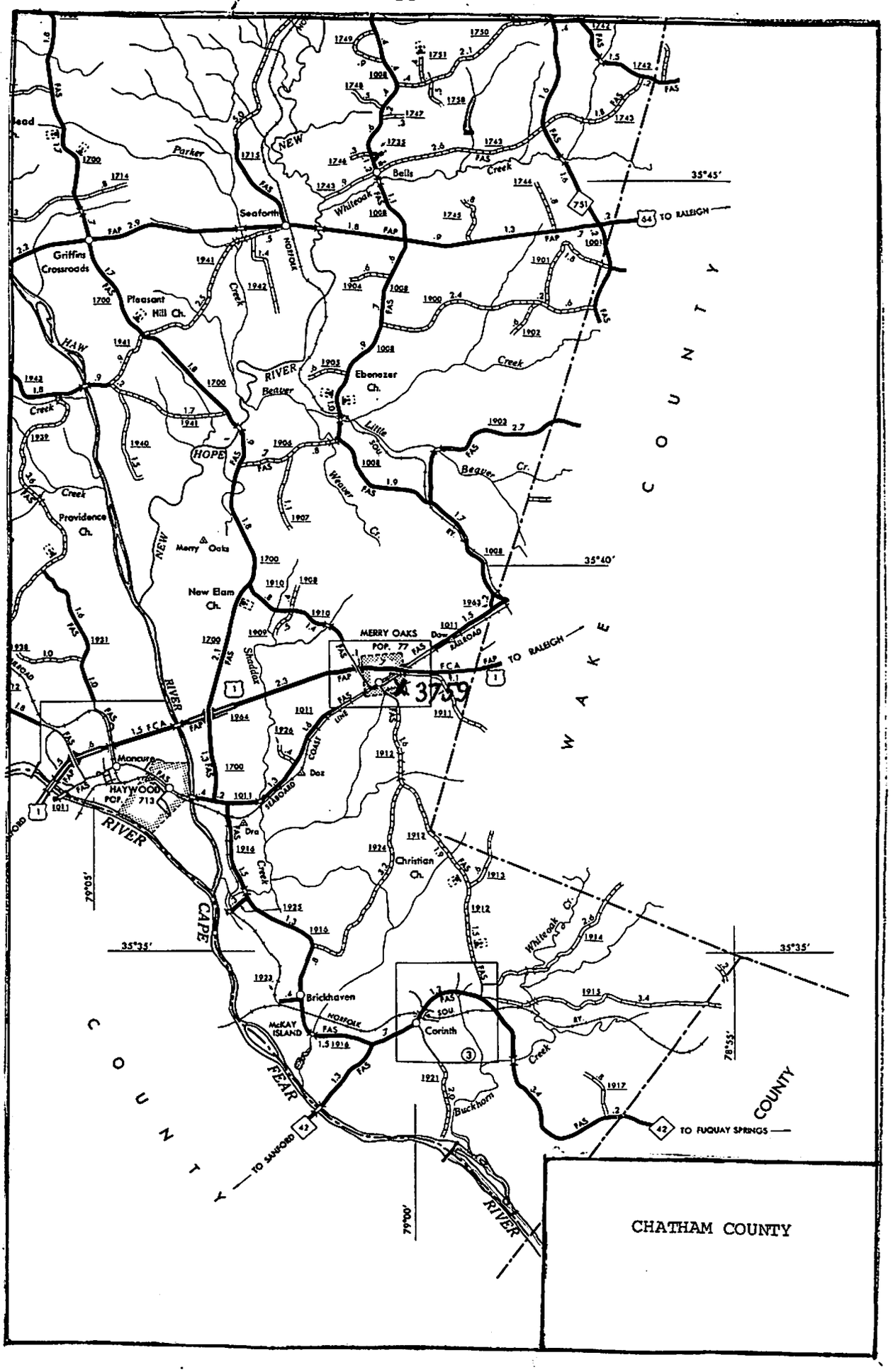
Results: Heavy minerals (percent) 1.40

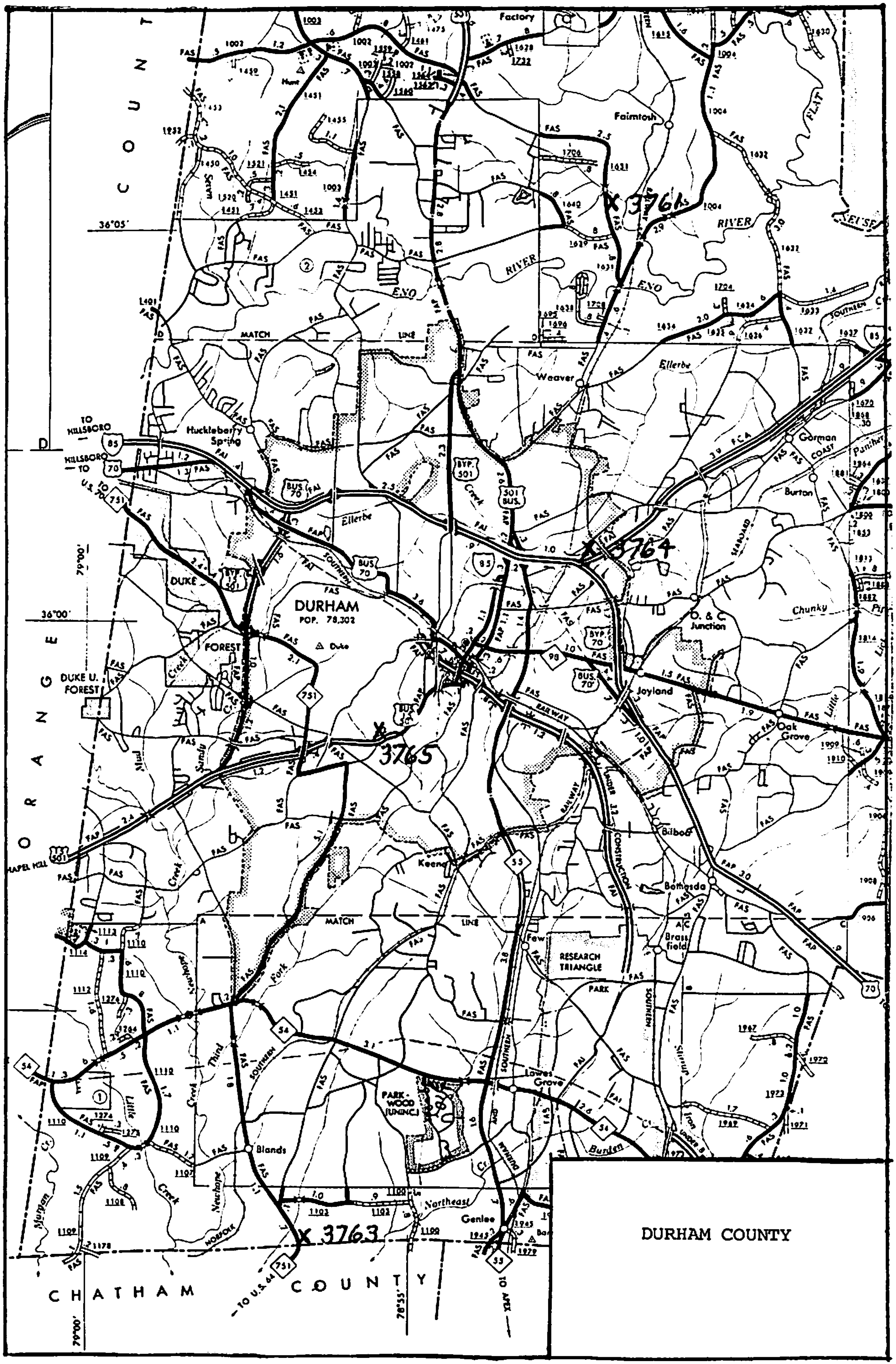
Distribution of heavy minerals (percent) - not determined.


ANSON COUNTY
X 3768
X 3772
X 3773
X 3769
X 3770
POLKTON POP. 530
PEACHLAND POP. 363
WADESBORO POP. 3744
SOUTH WADESBORO POP. 189
Russellville
Anson Co. Airport
Pinkston
Cedar Grove Ch.
Mt. Vernon Ch.
Mineral Springs Ch.
Poplar Hill Ch.
West Rocky Ford Ch.
Pleasant Hill Ch.
Camden Ch.
Gatewood Ch.
Union Ch.
Madison Grove Ch.
Lowrys
Shoates
Green Hill Ch.
Deep Creek
Nivens Sch.
Cedar Hill Ch.
Long Pine
Travis
SEABOARD COAST LINE RAILWAY

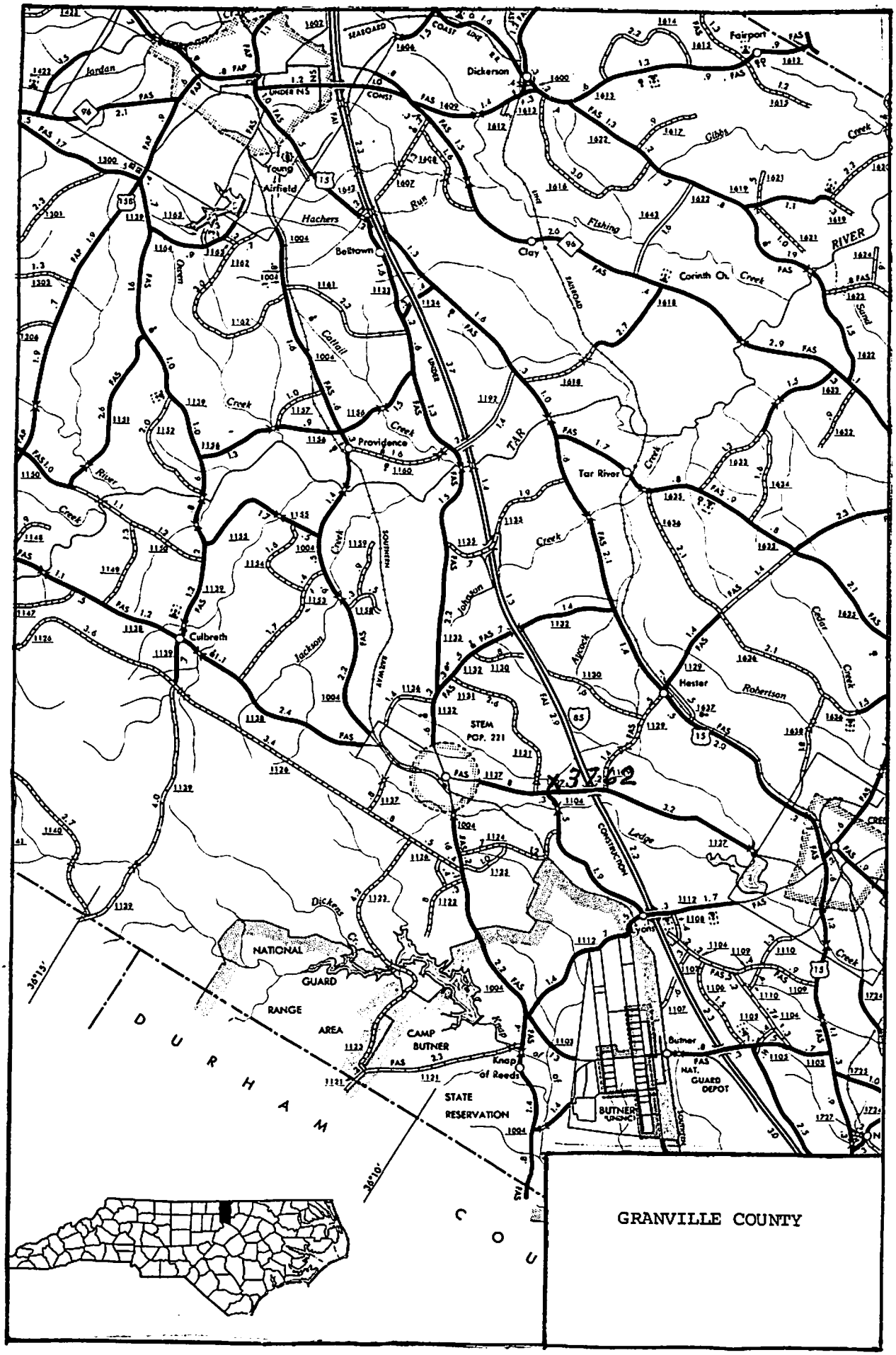

RIVER
PEE DEE
ANSONVILLE POP. 550
WADESBORO POP. 3744
SOUTH WADESBORO POP. 189
LILESVILLE POP. 635
ANSON COUNTY
Ansonville
Wadesboro
Lilesville
Pleasant Hill Ch.
Gatewood Ch.
Madison Grove Ch.
Green Hill Ch.
Pleasant Grove Ch.
Olive Ch.
Savannah Ch.
Bessie Chapel Ch.
Fall Branch Ch.
Pee Dee Ch.
Home Sch.
Ingram
Gravelton
Shiloh Ch.
Cairo
Shoaties
Anson Co. Airport
Pinkston
X 3768
X 3767
X 3774

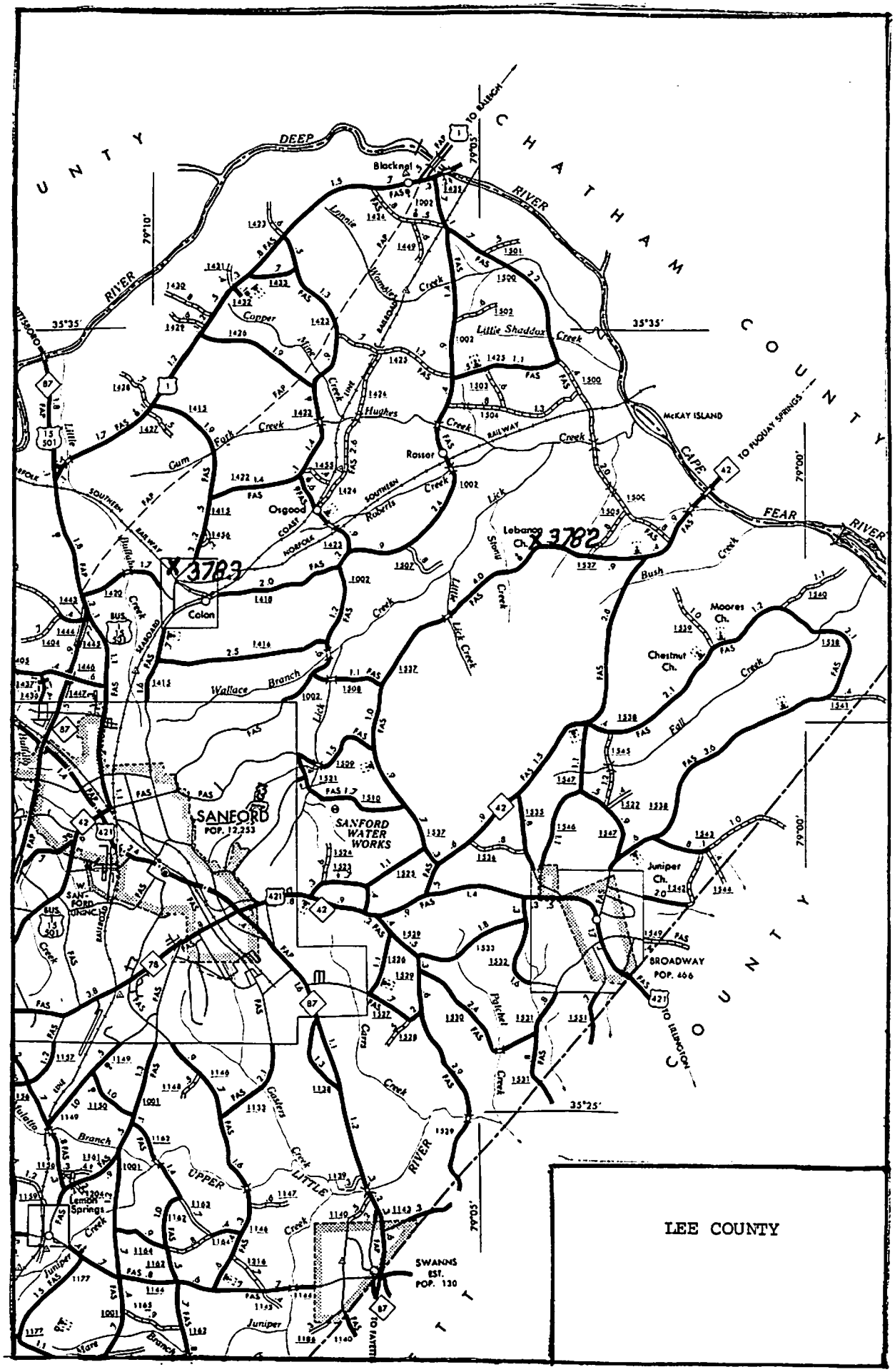

Saplin Ridge Ch.
Emmaus Ch.
Evan's Chp.
Hickory Mtn. Ch.
Mitchells Chapel
PITTSBORO
POP. 1,215
Landrum
ROUND TOP MOUNTAIN
Creek
RIVER
Chatham Ch.
Center Grove Ch.
Mays Chapel
Antioch Ch.
Taylors Ch.
GOLDSTON
POP. 374
Gulf
Carbonton Ch.
Byrum
Dry
Bear
ROCKY
DEEP
Rocky
Stinking
Branch
COAST
SEABOARD
TO SANFORD
35°35'
79°10'
79°15'
CHATHAM COUNTY

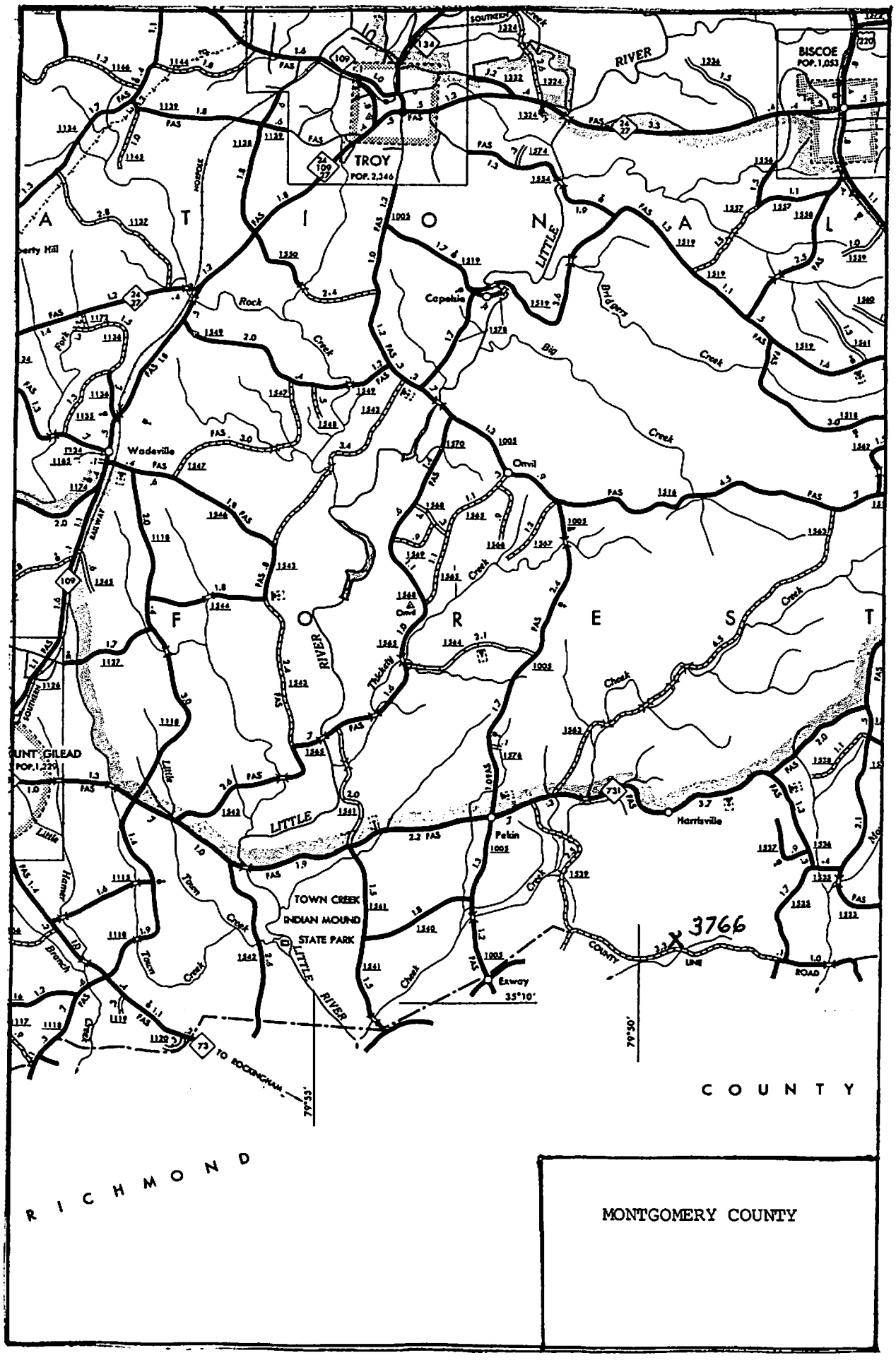

WAKE COUNTY
CHATHAM COUNTY
LEE COUNTY
35°45'
35°40'
35°35'
79°00'
78°55'
TO RALEIGH
TO SANFORD
TO FUQUAY SPRINGS
Griffins Crossroads
Pleasant Hill Ch.
Seaforth
Bells
Ebenezer Ch.
Providence Ch.
Merry Oaks
New Elam Ch.
MERRY OAKS
POP. 77
HAYWOOD
POP. 713
Manuare
Christian Ch.
Brickhaven
McKAY ISLAND
Corinth
Buckhorn
Parker Creek
Whiteoak Creek
Beaver Cr.
Little Sou Creek
Shaddox Creek
Dra Creek
HAW RIVER
CAPE FEAR RIVER
NEW HOPE
SEABOARD
NORFOLK SOU.
FAS
FAP
FCA
3759

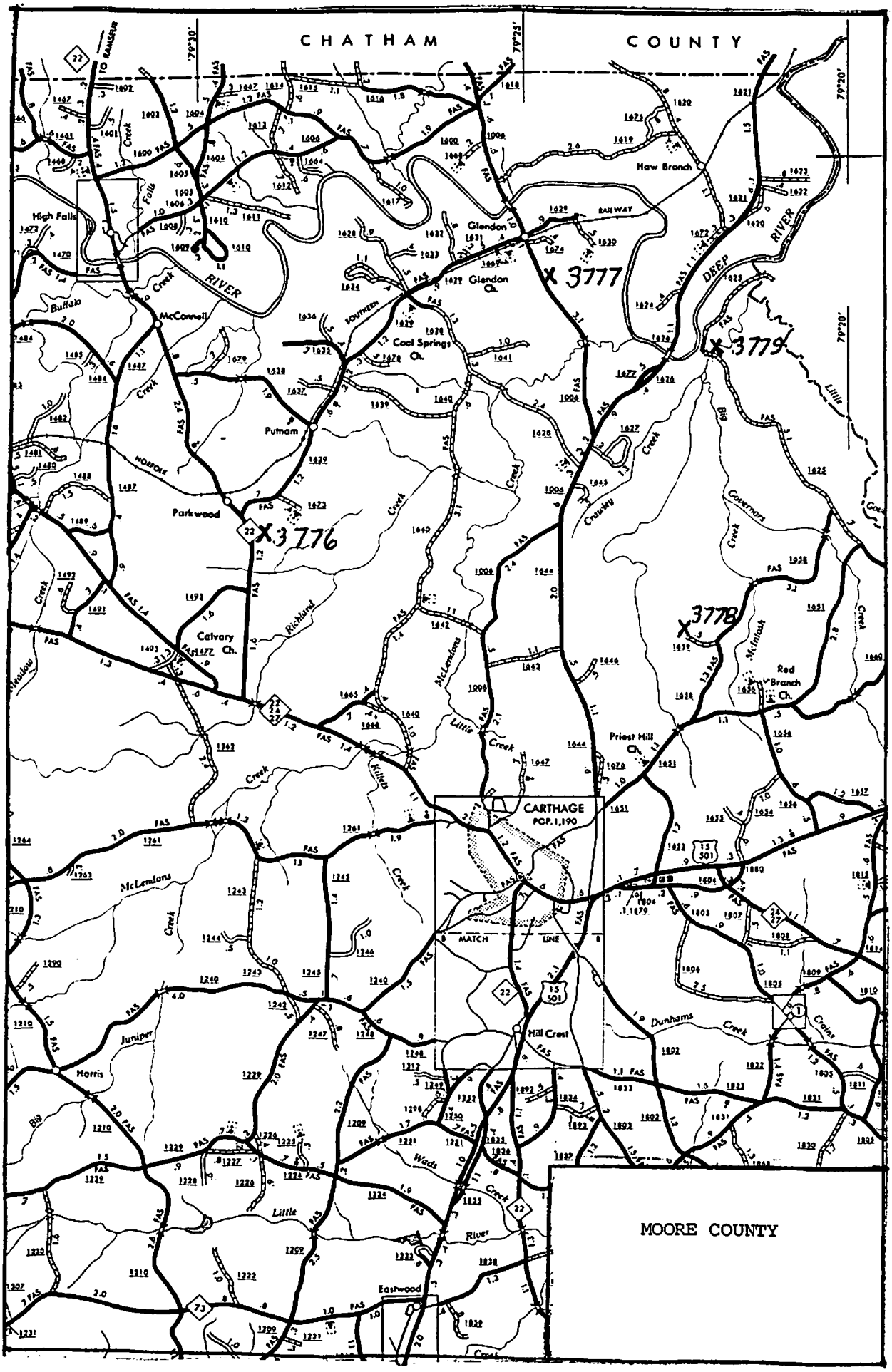


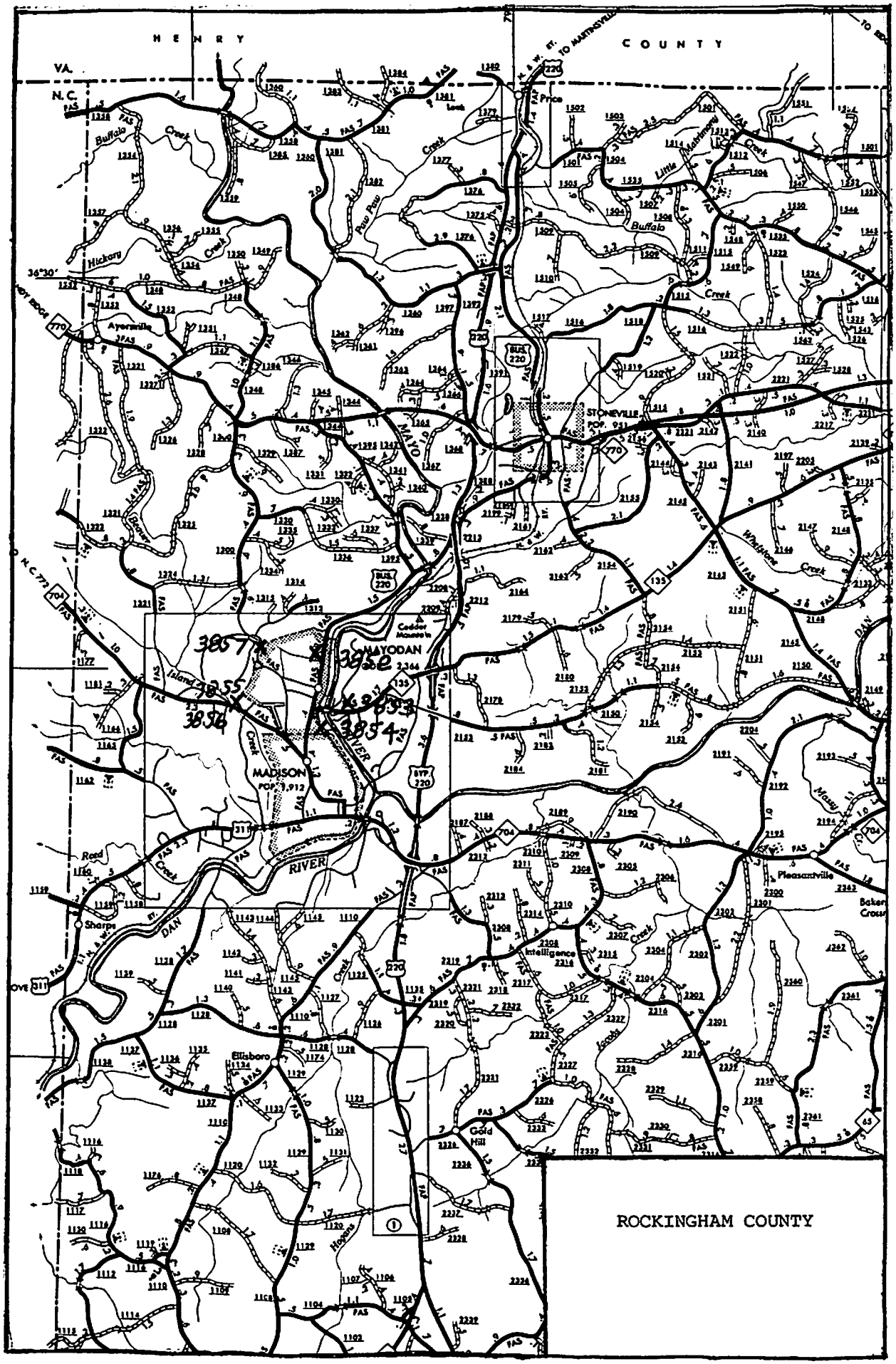
DURHAM COUNTY
DURHAM
POP. 78,302
ORANGE COUNTY
CHATHAM COUNTY
Factory
Fairntosh
Weaver
Huckleberry Spring
TO HILLSBORO
HILLSBORO TO
TO U.S. 70
DUKE
FOREST
DUKE U. FOREST
D. & C. Junction
Joyland
Oak Grove
Gorman
Burton
Chunky
Bilboa
Bethesda
Brassfield
RESEARCH TRIANGLE PARK
Keene
Few
Lowes Grove
PARK-WOOD (UNINC.)
Blands
Genlee
ENO RIVER
NEUSE
FLAT
Ellerbe
MATCH LINE
TO U.S. 64
TO APEX
CHAPEL HILL
36°05'
36°00'
79°00'
78°55'
X 3761
X 3764
X 3765
X 3763

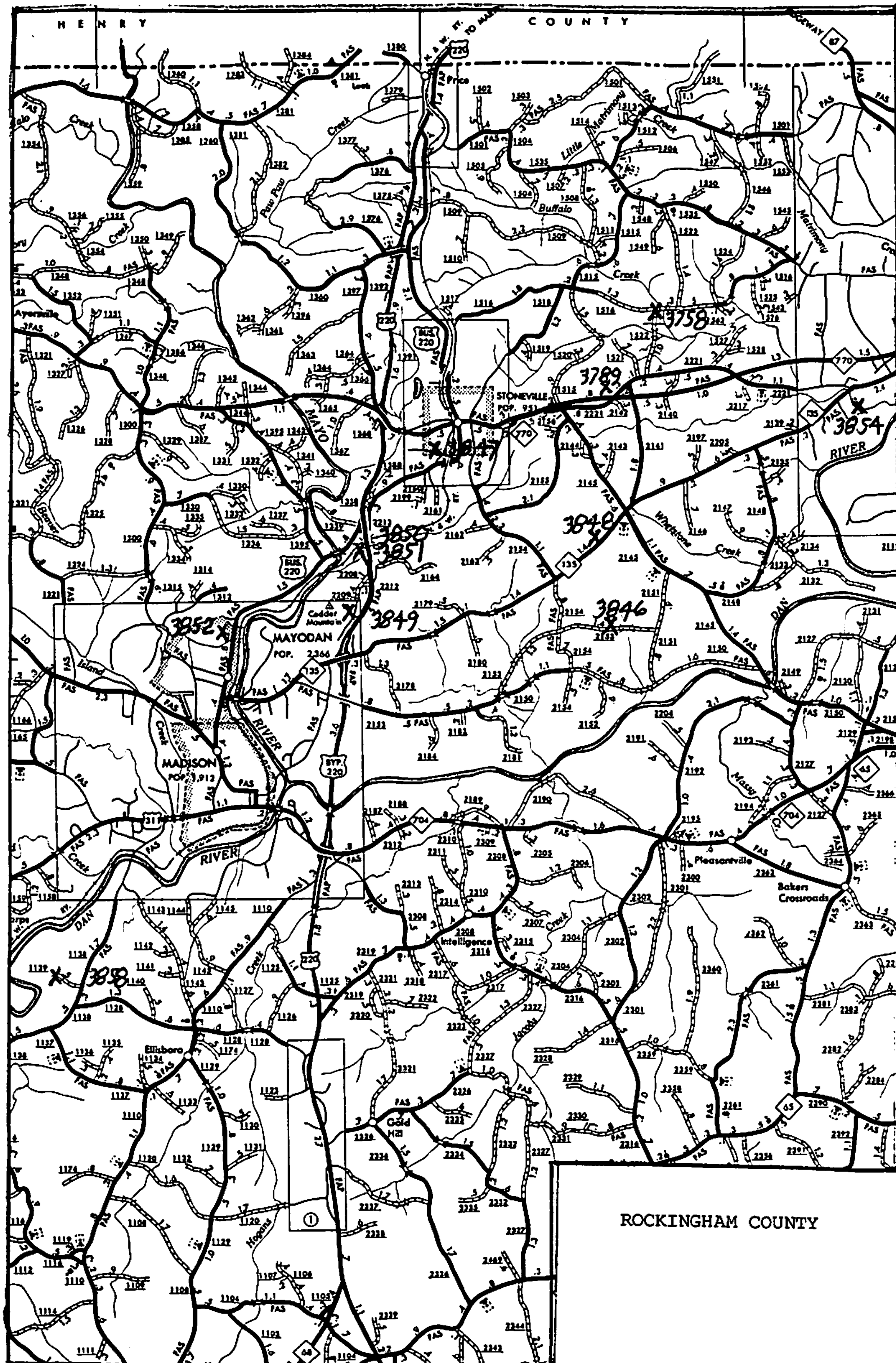

Jordan
Young Airfield
Hachers Run
Dickerson
Fairport
Gibbs Creek
Fishing Creek
Clay
Corinth Ch.
Beltown
Catfail Creek
Providence
Tar River
Culbreth
Jackson Creek
Johnson Creek
Ayscock
Hester
Robertson Creek
Cedar Creek
STEM
POP. 221
Ledge
Dickens Cr.
NATIONAL GUARD RANGE AREA
CAMP BUTNER
Knap of Reeds
STATE RESERVATION
Lyons
Butner
NAT. GUARD DEPOT
BUTNER
DURHAM COUNTY
GRANVILLE COUNTY
36°15'
36°10'

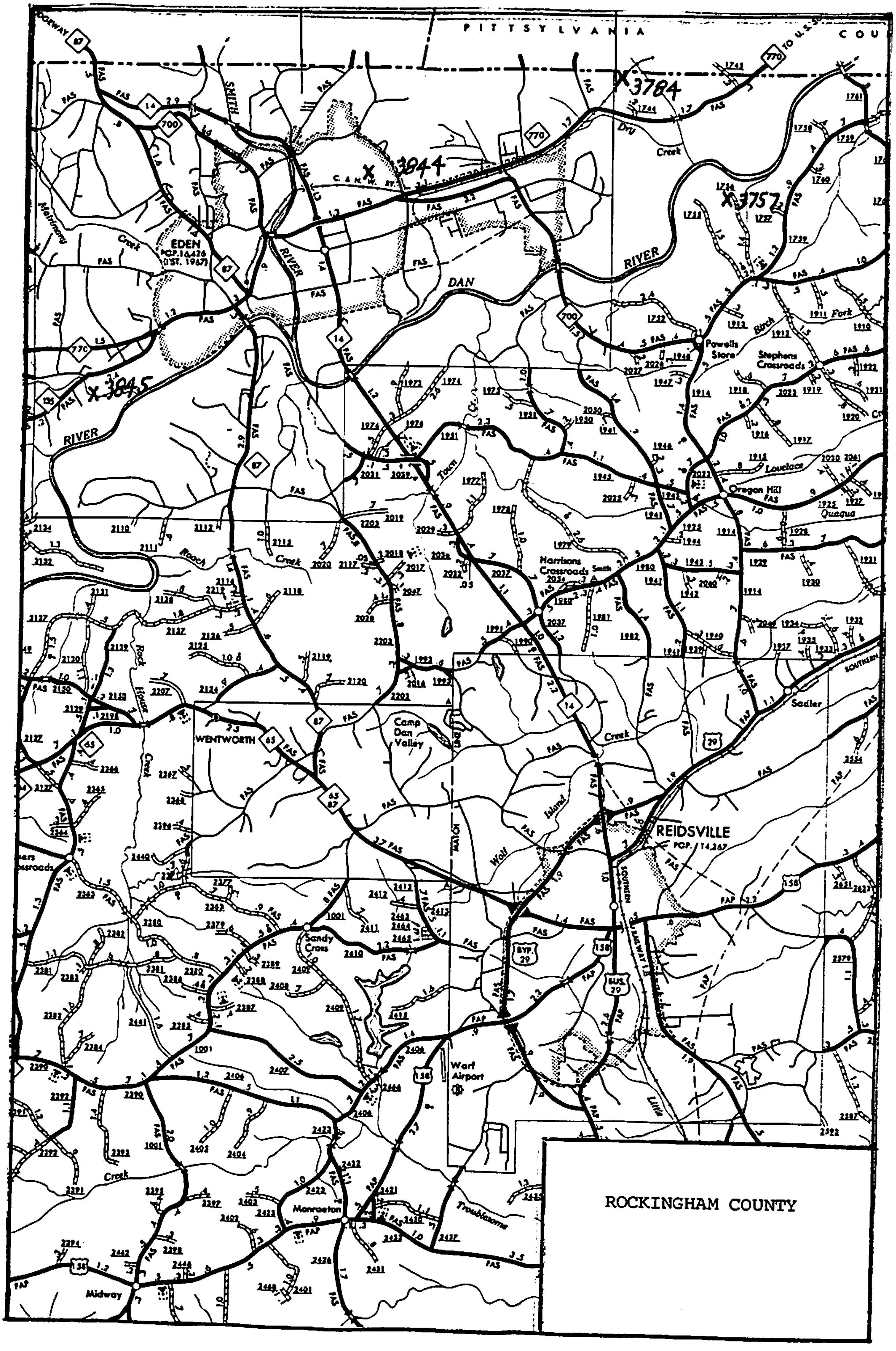

CHATHAM COUNTY
LEE COUNTY
DEEP RIVER
RIVER
FEAR RIVER
SANFORD
POP. 12,253
SANFORD WATER WORKS
BROADWAY
POP. 466
Colon
Osgood
Rosser
McKAY ISLAND
Lemon Springs
SWANNS EST.
POP. 130
Chestnut Ch.
Moores Ch.
Juniper Ch.
Lebanon Ch.
TO RALEIGH
TO PITTSBORO
TO PINEHURST SPRINGS
TO ELKTON
TO FAYETTEVILLE
35°35'
35°25'
79°10'
79°05'
79°00'


TROY
POP. 2,346
BISCOE
POP. 1,053
Capeka
Wadeville
Orvil
Pekin
Harrisville
Exway
Rock Creek
Big Creek
Little River
Thicket Creek
Town Creek
Indian Mound
State Park
Little River
3766
35°10'
79°50'
79°55'
TO ROCKINGHAM
COUNTY LINE ROAD
RICHMOND
COUNTY
MONTGOMERY COUNTY

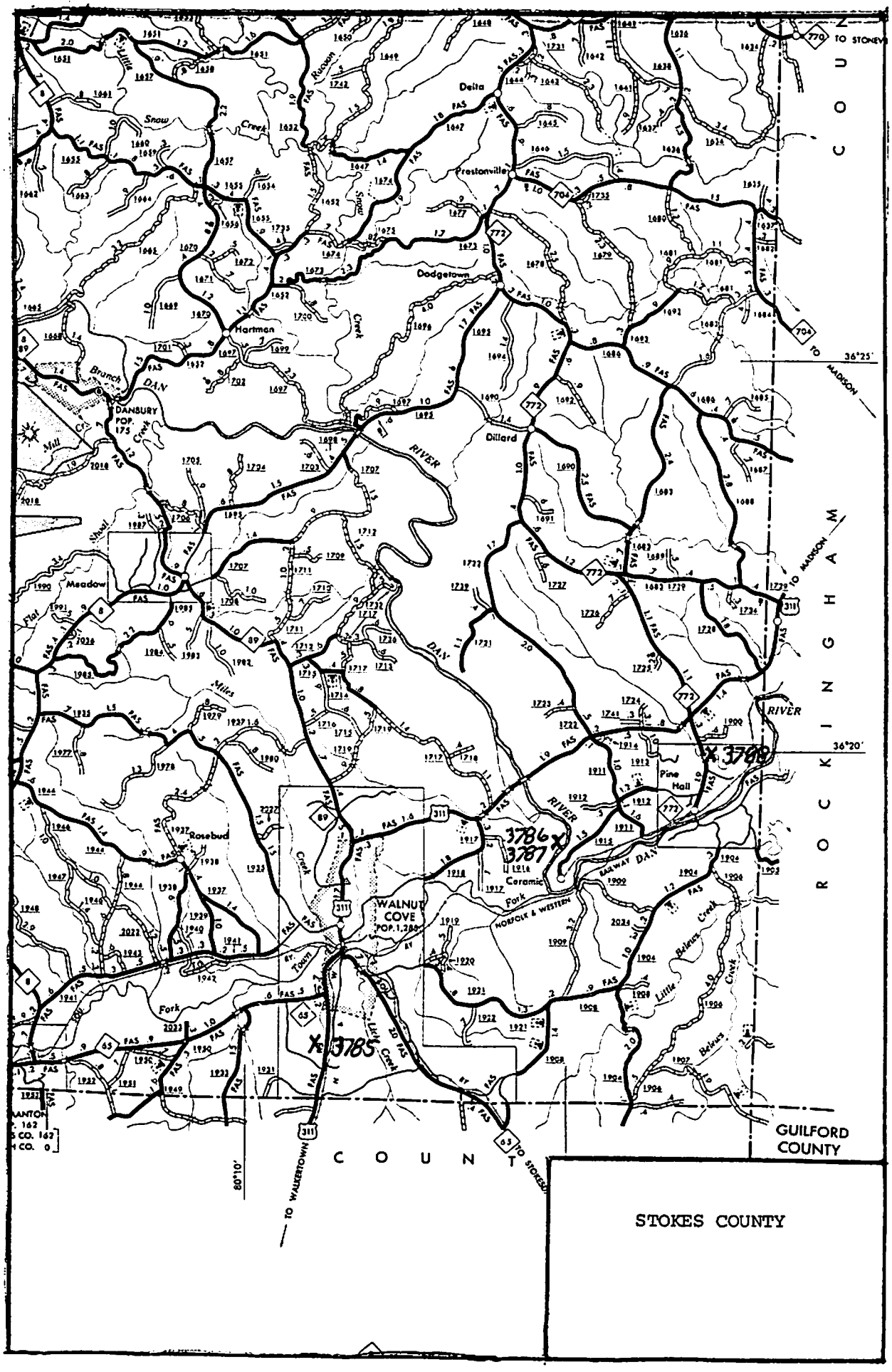

CHATHAM COUNTY
79°30'
79°25'
79°20'
MOORE COUNTY
CARTHAGE
POP. 1,190
MATCH LINE
High Falls
Buffalo Creek
McConnell
Cool Springs Ch.
Glendon
Glendon Ch.
Haw Branch
Deep River
Little River
Big Governors Creek
Pumam
Parkwood
Calvary Ch.
Richland Creek
McLendons Creek
Priest Hill
Red Branch Ch.
Hill Crest
Dunhams Creek
Juniper Creek
Harris
Big Woods
Little River
Eastwood
Crains Creek
X 3777
X 3779
X 3776
X 3778

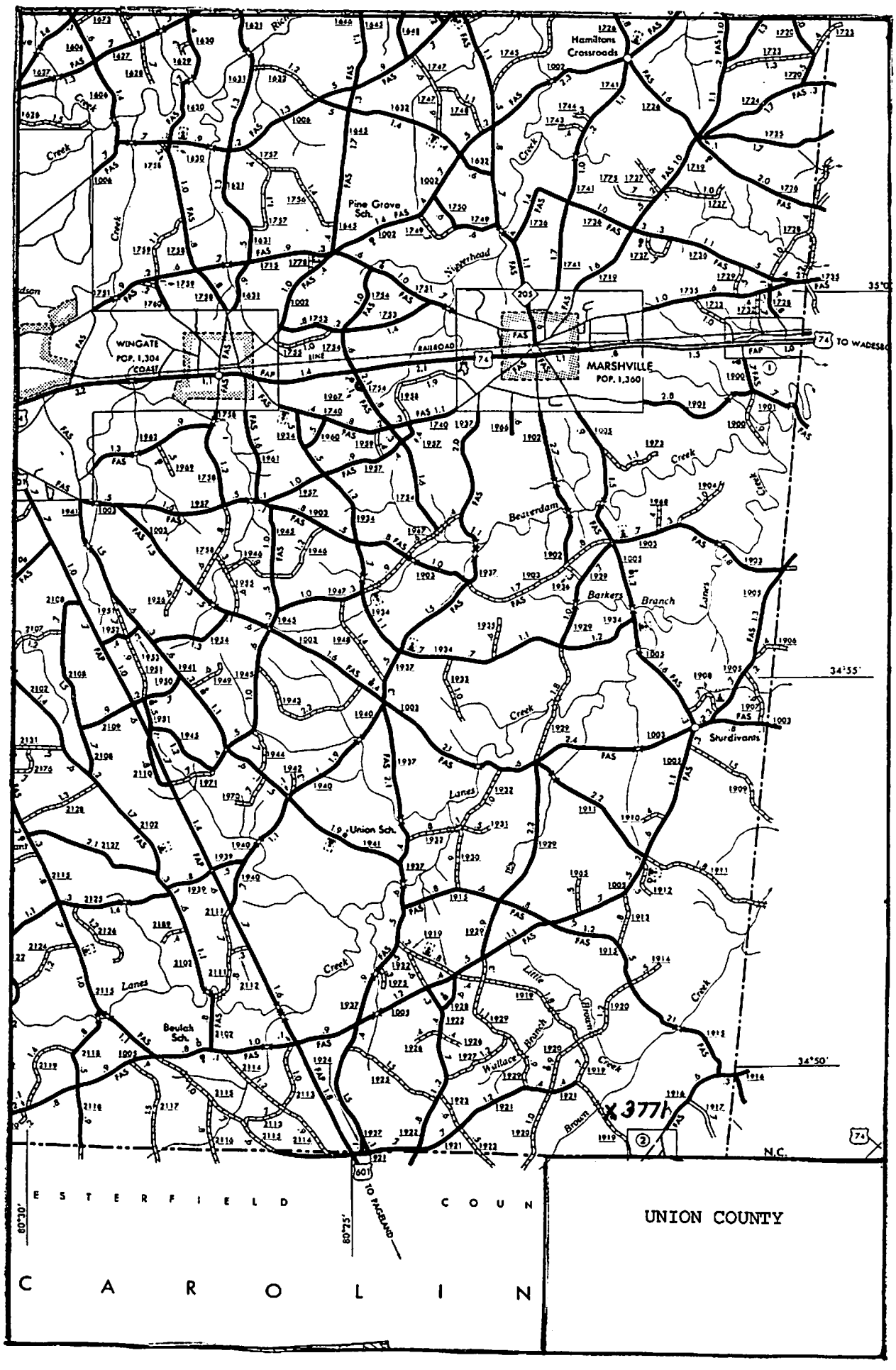

HENRY
COUNTY
VA.
N.C.
Price
Buffalo Creek
Pow Pow Creek
Hickory Creek
Little Buffalo Creek
Ayersville
STONEVILLE
POP. 951
MAYODAN
POP. 2,344
MADISON
POP. 3,912
Island
Cedar Mountain
Reed Creek
Sharps
Ellisboro
Gold Hill
Pleasantville
Intelligence
DAN RIVER
ROCKINGHAM COUNTY

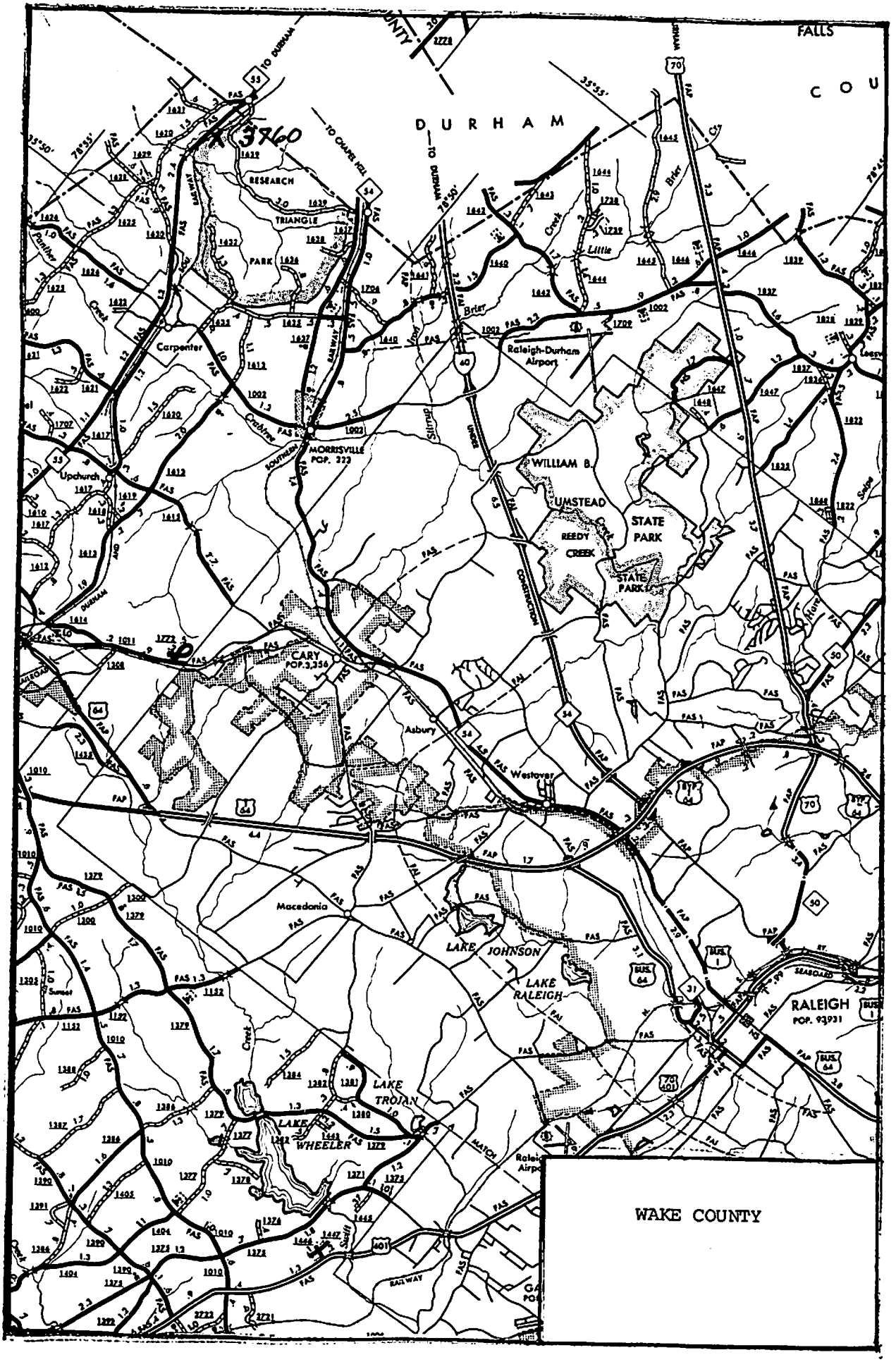

HENRY COUNTY
ROCKINGHAM COUNTY
STONEVILLE POP. 951
MAYODAN POP. 2,366
MADISON POP. 1,912
Price
Ayersville
Pleasantville
Bakers Crossroads
Intelligence
Ellisboro
Gold Hill
Cedar Mountain
MAYO RIVER
DAN RIVER
Buffalo
Little Matrimony Creek
Paw Paw Creek
Whetstone Creek
Jacobs Creek
Hogans Creek
Island Creek
Massy
3758
3789
3854
3847
3848
3850
3851
3849
3846
3852
3858



ROCKINGHAM COUNTY


Delta
Prestonville
Dodgetown
Hartman
DANSBURY
POP. 175
Dillard
Meadow
Rosebud
WALNUT
COVE
POP. 1,285
Pine
Hall
Ceramic
Fork
Creek
Branch
Mill
Shoal
Flat
Miles
Little
Snow
Rawson
Beaver
DAN
RIVER
Railway
Norfolk & Western
TO STONEY
TO MADISON
TO WALKERTOWN
TO STOKESDALE
36°25'
36°20'
80°10'
ROCKINGHAM
COUNTY
GUILFORD
COUNTY
STOKES COUNTY
X 3785
X 3786
X 3787
X 3788


Hamiltons Crossroads
Pine Grove Sch.
WINGATE
POP. 1,304
MARSHVILLE
POP. 1,360
RAILROAD
TO WADESB
Beaverdam
Barkers Branch
Sturdivants
Union Sch.
Beulah Sch.
Lanes
Creek
Wallace Branch
Little Brown
34°55'
34°50'
80°30'
80°25'
N.C.
UNION COUNTY
ESTERFIELD COUN
C A R O L I N
TO PAGELAND


DURHAM
FALLS
COU
TO DURHAM
TO CHAPEL HILL
TO DURHAM
RESEARCH
TRIANGLE
PARK
Carpenter
Crabtree
Creek
MORRISVILLE
POP. 222
Upchurch
Raleigh-Durham
Airport
WILLIAM B.
UMSTEAD
STATE
PARK
REEDY
CREEK
STATE
PARK
CARY
POP. 3,356
Asbury
Westover
Macedonia
LAKE JOHNSON
LAKE
RALEIGH
LAKE
TROJAN
LAKE
WHEELER
RALEIGH
POP. 93931
WAKE COUNTY