U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF–2198–C
Explanatory pamphlet accompanies map

Base from U.S. Geological Survey, 1954, (limited revision, 1964)
Transverse Mercator projection

SCALE 1:250 000

DATUM IS MEAN SEA LEVEL

Geology modified from Nelson and others (1987, 1989)
Manuscript approved for publication March 19, 1992.
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EXPLANATION

[All numbered deposits described in table 2. Locations based in part of Larrabee (1966), Teague and Furcron (1948), Hatcher (1971), and other references cited in table 2]

Deposits

- ● R3 — **Dunite or peridotite**
- ■ R4 — **Pyroxenite**
- ★ E2 — **Soapstone, talc schist, chlorite schist, or serpentinite**
- ▲ J3 — **Ultramafic rock, undivided**
- La1 — **Biotite-rich schist or lamproite, largely altered to vermiculite**
- T1 — **Troctolite**
- R15 — **Massive sulfide mine or prospect**
- HL2 — **Disseminated sulfide in amphibolite**—Dashed line shows outline of sulfide-bearing amphibolite from Nelson and others (1989)
- × 90 — **Rock-sample locality**—Number refers to table 3

LIST OF MAP UNITS AND SYMBOLS

[Stacking order of thrust sheets]

Blue Ridge thrust stack

- T — **Tallulah Falls thrust sheet**
- R — **Richard Russell thrust sheet**
- Y — **Young Harris thrust sheet**
- H — **Helen thrust sheet**
- G — **Great Smoky thrust sheet**

Inner Piedmont thrust stack

- L — **Laurens thrust sheet**
- P — **Paris Mountain thrust sheet**
- S — **Six Mile thrust sheet**—Includes the metagabbro at Anderson (Paleozoic?) (ag) and the Elberton Granite (Mississippian) (eg)
- C-W — **Chauga–Walhalla thrust complex**

Southeast of Lowndesville shear zone

- Ch — **Charlotte thrust sheet**—Includes the Concord Plutonic Suite (Silurian and Devonian) (gb) and the granitic rocks at Coronaca (as used by Fullagar and Butler, 1979; Permian) (cg)
- M — **Mafic–ultramafic thrust sheet**

Granite, granodiorite, quartz diorite, and diorite gneiss, undivided (Pennsylvanian to Cambrian)—Shown mostly where rocks cover large areas or where tectonic boundaries are obscured

Contact

Thrust fault—Dashed where inferred; queried where uncertain. Sawteeth on upper plate

Shear zone

Kyanite schist—Queried where uncertain. Shown around Tallulah Falls dome

MAP SHOWING MAFIC AND ULTRAMAFIC ROCKS AND ROCK- SAMPLE LOCALITIES IN THE GREENVILLE 1° × 2° QUADRANGLE, SOUTH CAROLINA, GEORGIA, AND NORTH CAROLINA

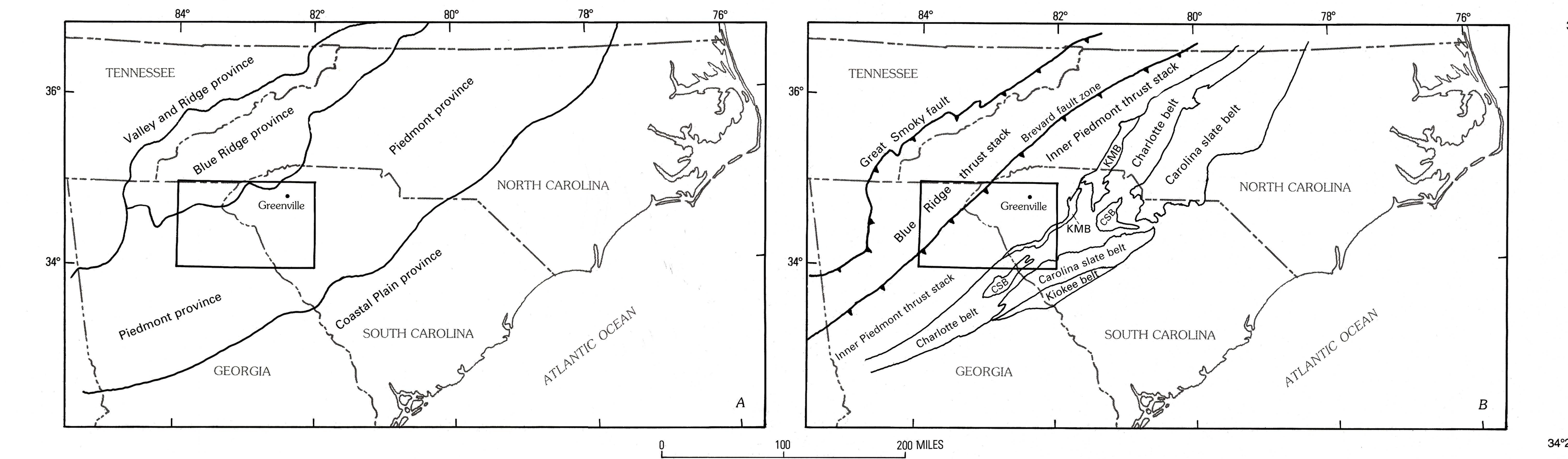
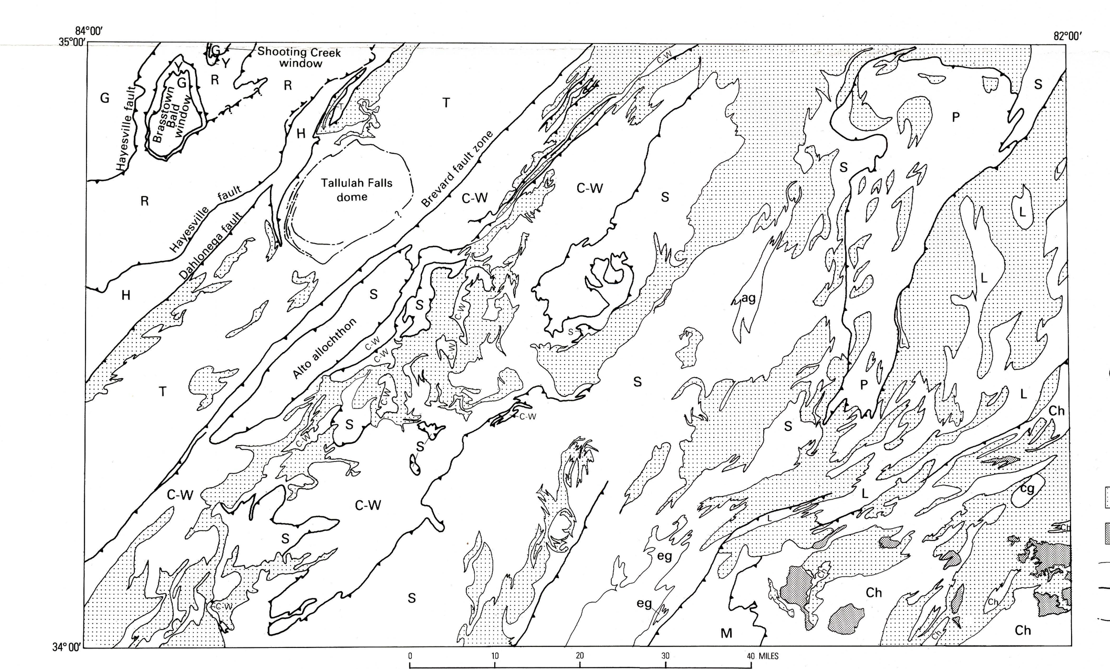


Figure 1.—Maps showing location and setting of the Greenville 1° x 2° quadrangle (box). *A*, Physiographic provinces modified from Fenneman and Johnson (1946). *B*, Previous interpretations of geologic terranes, modified from King (1955), Overstreet and Bell (1965a), and Nelson (1988); CSB, Carolina slate belt; KMB, Kings Mountain belt.



EXPLANATION
(Stacking order of thrust sheets)

Blue Ridge thrust stack

- T — Tallulah Falls thrust sheet
- R — Richard Russell thrust sheet
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Inner Piedmont thrust stack

- L — Laurens thrust sheet
- P — Paris Mountain thrust sheet
- S — Six mile thrust sheet—Includes metagabbro at Anderson (ag) and Elberton Granite (eg)
- C-W — Chauga–Walhalla thrust complex

Southeast of Lowndesville shear zone

- Ch — Charlotte thrust sheet—Includes granite at Coronaca (cg)
- M — Mafic–ultramafic thrust sheet

Granitic rocks—Shown where they obscure faults or where extensive

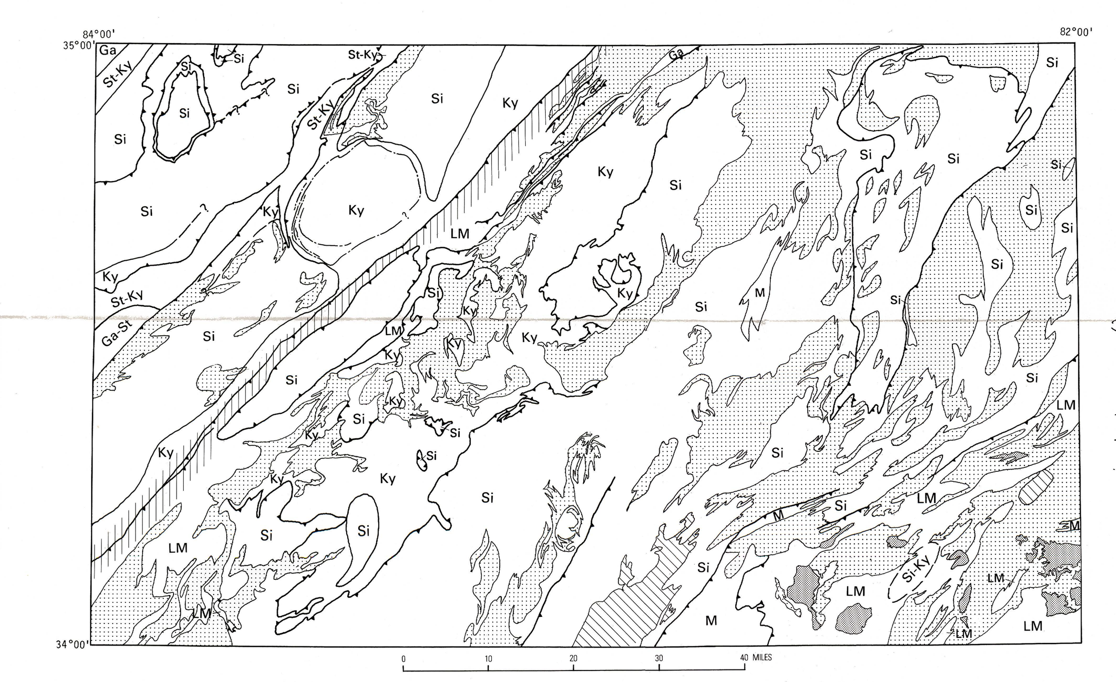
Gabbro and related rocks

Contact

Thrust fault—Dashed where inferred; queried where uncertain. Sawteeth on upper plate

Kyanite schist—Queried where uncertain. Shown around Tallulah Falls dome

Figure 2.—Generalized tectonic map of the Greenville 1° x 2° quadrangle (modified from Nelson and others, 1990).



EXPLANATION

Metamorphic grade

- LM — Low to medium
- M — Medium

Metamorphic zone—May be shown combined

- Ga — Garnet
- St — Staurolite
- Ky — Kyanite
- Si — Sillimanite

Retrograded

Si-Ky — Isograd—Dashed where inferred. Letters represent metamorphic zones

Granitic rocks—Shown where they obscure faults or where extensive

Gabbro and related rocks

Contact

Thrust fault—Dashed where inferred; queried where uncertain. Sawteeth on upper plate

Kyanite schist—Queried where uncertain. Shown around Tallulah Falls dome

Figure 3.—Generalized tectonic map of the Greenville 1° x 2° quadrangle showing metamorphic grade and metamorphic zones (modified from Nelson, 1988). See figure 2 for explanation of geologic map units.

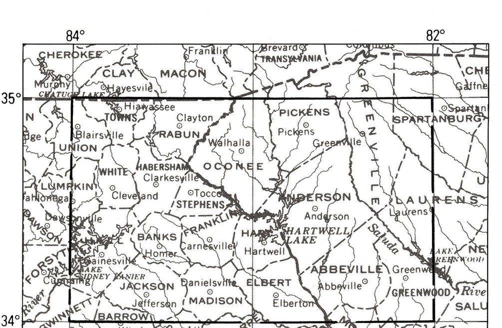
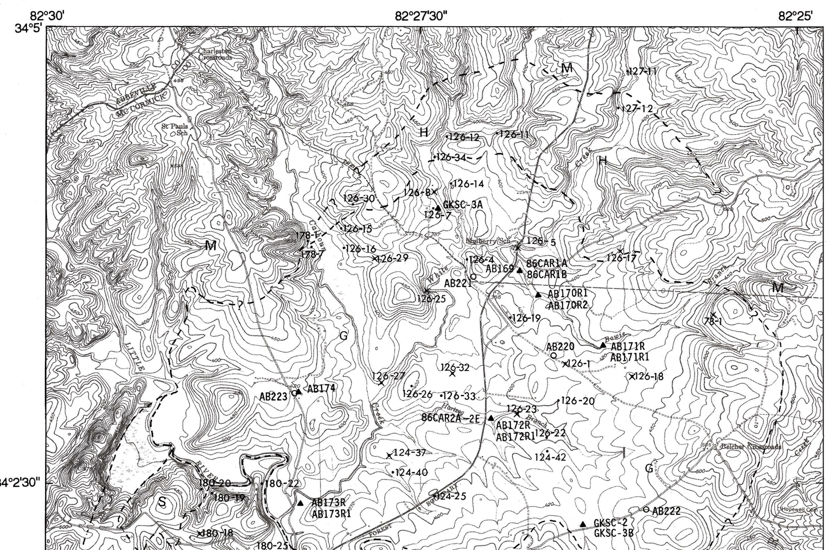


Figure 4.—Index map showing counties in the Greenville 1° × 2° quadrangle.



Base from U.S. Geological Survey, 1:24,000, Calhoun Creek, S.C., 1949

EXPLANATION

- Contact—Approximately located; queried where uncertain
- ▲ Rock-sample locality—Sample analyzed for this study (table 3)
- × Rock-sample locality from Medlin (1968) and sample analyzed for this study (table 3)
- • Rock-sample locality from Medlin (1968)
- ○ Soil-sample locality

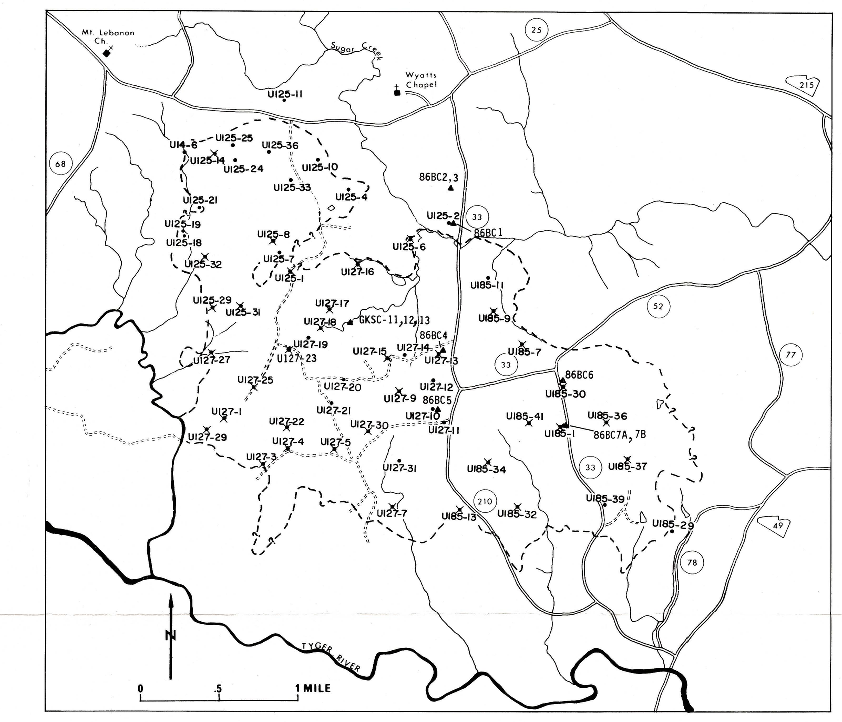
Map units—Modified from Medlin (1968)

- G — Gabbro
- D — Diorite
- S — Syenite
- H — Hornfels
- M — Foliated metamorphic rock—Locally includes hornfels

Figure 5.—Rock-sample and soil-sample locality map of Mt. Carmel Complex, Abbeville and McCormick Counties, S.C. (modified from Medlin, 1968, pl. 5). See map for location of figure and table 3 for analyses.

Base from U.S. Geological Survey, 1:250,000, Spartanburg, S.C.–N.C., 1953 (revised 1969)

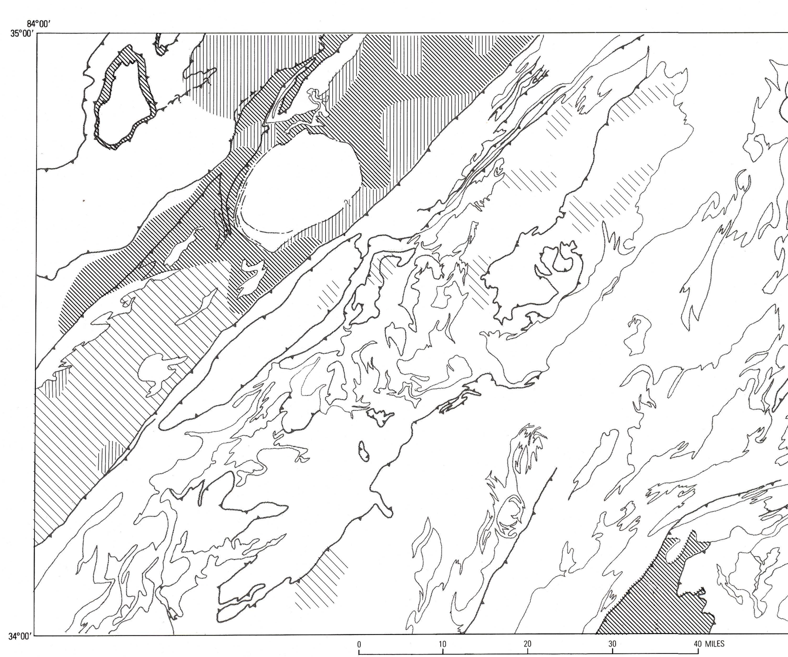
Figure 6.—Northwest corner of Spartanburg 1° × 2° quadrangle showing location of figure 7 and Broad River sample locality (x; see table 3).



EXPLANATION

- Boundary of gabbro-norite pluton at Buffalo—Approximately located; queried where uncertain
- Dirt road
- ▲ Rock-sample locality—Sample analyzed for this study (table 3)
- × Rock-sample locality from Medlin (1968) and sample analyzed for this study (table 3)
- • Rock-sample locality from Medlin (1968)

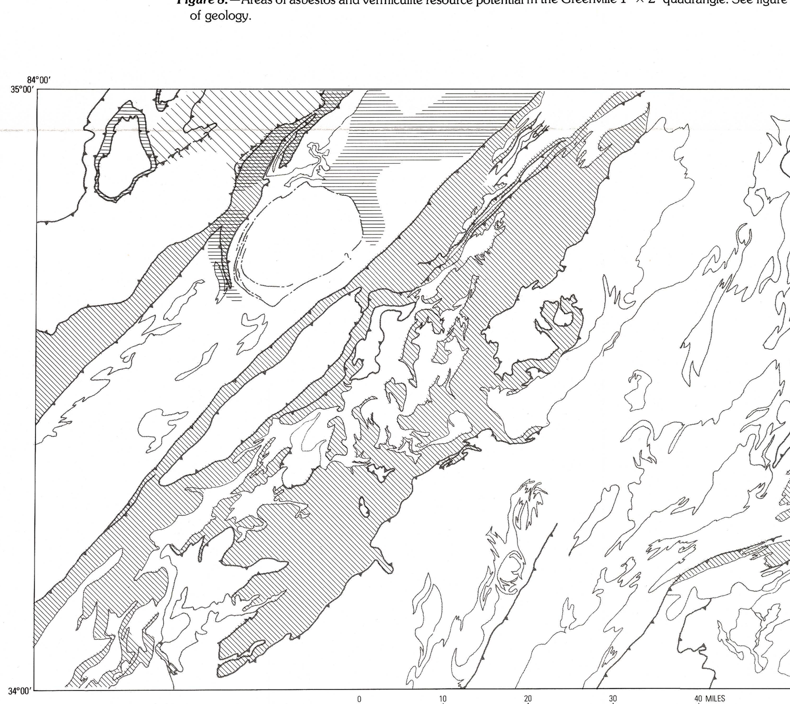
Figure 7.—Rock-sample locality map of the gabbro at Buffalo, Union County, S.C. (modified from Medlin, 1968, pl. 2). See figure 6 for location and table 3 for analyses.



EXPLANATION

- Low potential for the occurrence of small deposits of asbestos
- Moderate potential for the occurrence of small deposits of asbestos
- High potential for the occurrence of small deposits of asbestos
- Moderate potential for the occurrence of deposits of vermiculite
- High potential for the occurrence of deposits of vermiculite

Figure 8.—Areas of asbestos and vermiculite resource potential in the Greenville 1° × 2° quadrangle. See figure 2 for explanation of geology.



EXPLANATION

- Low potential for the occurrence of massive sulfide deposits and for the occurrence of dunite bodies
- Moderate potential for the occurrence of massive sulfide deposits
- Moderate to high potential for the occurrence of deposits of corundum and for dunite bodies

Figure 9.—Areas of corundum, dunite, and massive sulfide resource potential in the Greenville 1° × 2° quadrangle. See figure 2 for explanation of geology.

MINERAL RESOURCE ASSESSMENT OF MAFIC AND ULTRAMAFIC ROCKS IN THE GREENVILLE 1° × 2° QUADRANGLE, SOUTH CAROLINA, GEORGIA, AND NORTH CAROLINA

By

Frank G. Lesure, John P. D'Agostino, and David Gottfried

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