MISCELLANEOUS FIELD STUDIES
MAP MF-1618-A
PAMPHLET ACCOMPANIES MAP

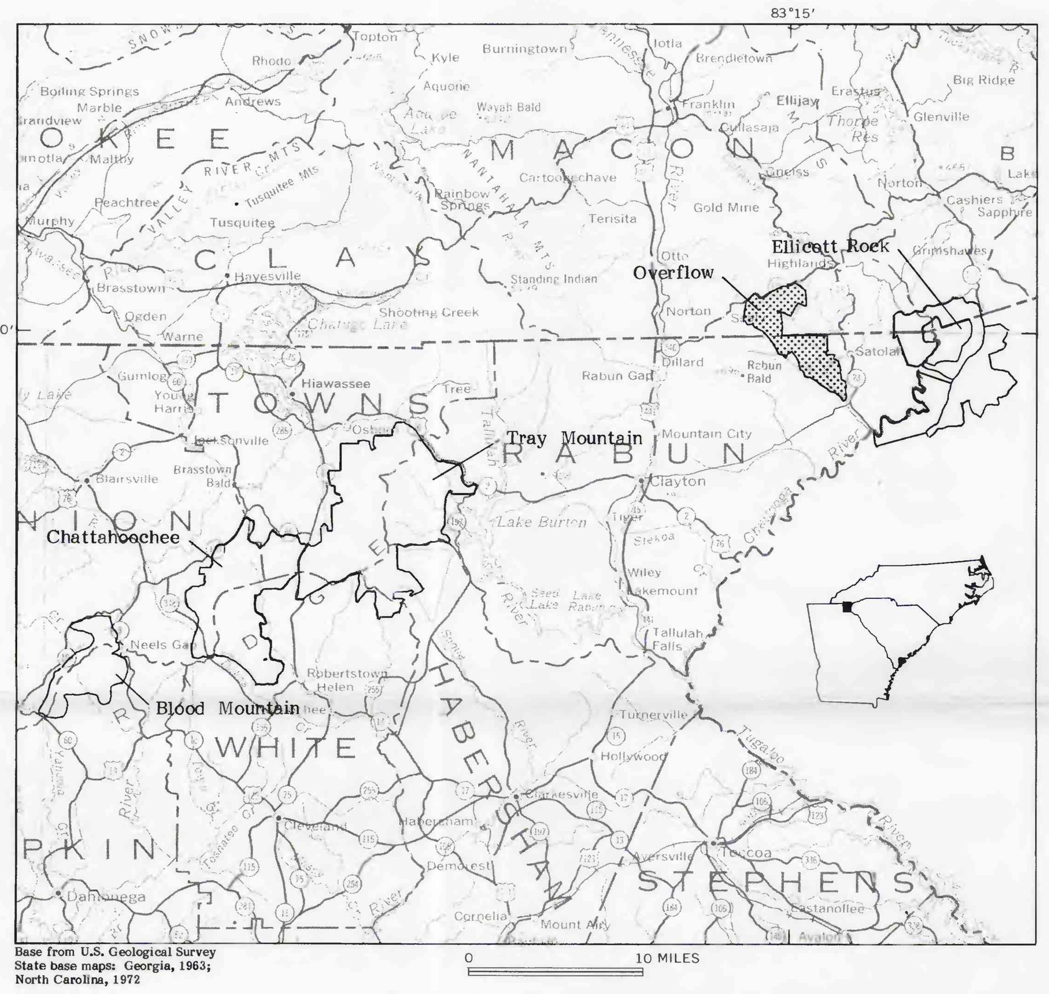

Figure 1.--Index map showing the Overflow Roadless Area (shaded), the Blood Mountain, Chattahoochee, and Tray Mountain Roadless Areas, and the nearby Ellicott Rock Wilderness and additions.

EXPLANATION

Q } QUATERNARY

Unconformity

gg, Ts, Tas, Tsg, Tg } EARLY PALEOZOIC AND(OR) LATE PROTEROZOIC

Q — Colluvium and alluvium (Quaternary)—Unconsolidated deposits consisting of coarse bouldery and cobbly gravels, sand, and clay

gg — Granite and granodiorite gneiss, undivided—Contains small layers and lenses of biotite gneiss, mica schist, and metasandstone; pods and veins of quartz and pegmatite common. Materials suitable for use as crushed stone

Tallulah Falls Formation (Early Paleozoic and(or) Late Proterozoic)—Unnamed biotite gneiss, biotite schist, muscovite-biotite schist, muscovite schist, amphibolite, and metasandstone

Ts — Chiefly muscovite schist interlayered with biotite-muscovite schist and minor metasandstone; small quartz and pegmatite veins common. Suitable for use as crushed stone

Tas — Interlayered assemblage of amphibolite, biotite schist, biotite-muscovite schist, and metasandstone; includes some granitic gneiss. Has many irregular lenses and stringers of quartzo-feldspathic segregations, and has quartz and pegmatite pods and veins. Suitable for use as crushed stone

Tsg — Mostly biotite schist and muscovite-biotite schist interlayered with biotite gneiss, minor metasandstone, some granitic gneiss and rarely amphibolite. Variably sized pods and veins of pegmatite and quartz common. Suitable for use as crushed stone

Tg — Principally biotite gneiss irregularly interlayered with granitic gneiss, and migmatite; includes minor metasandstone that is locally gneissic, mica schist, and amphibolite. Variably sized veins and pods of both pegmatite and quartz are widespread. Rocks locally suitable for crushed stone and nondimensional uses

Contact, approximately located

Strike and dip of layering and foliation

Strike and dip of foliation

Strike and dip of cleavage

Bearing and plunge of lineation; may be combined with foliation

Anticline, showing plunge direction

Minor overturned synform

Horizontal foliation

Vertical foliation

Approximate boundary of roadless area

● Rock sample locality having 0.05 ppm gold

▲ Fine-grained stream-sediment sample locality having 0.1 to 0.25 ppm gold

Base from U.S. Geological Survey, 1:24,000 Highlands, 1946 (photorevised 1967); Rabun Bald, 1946; Satolah, 1946; and Scaly Mountain, 1946 (photorevised 1967)

Geology adapted from Nelson and Koeppen (in press)

Figure 2.--Geologic map describing mineral resource potential for each geologic unit in the Overflow Roadless Area.

Table 1.--*Mines, prospects, and mineral sites, Overflow Roadless Area, North Carolina and Georgia*
[From Davis (1982); revised by G. C. Gazdik, USBM]

Locality no., fig. 3	Name	Production and development	Remarks
1	A. W. Young mine (mica)	Production unknown; open-cut, 70 ft long and 10 to 18 ft deep. Worked before 1923 (Sterrett, 1923).	The pegmatite, which intrudes mica gneiss, ranges in thickness from 6 to 12 ft and contains a quartz core abut 3 ft thick. Color of the mica is smoky brown to green. Some mica is speckled and much of it shows A-structure though good sheets can be cut from between A lines (Sterrett, 1923). Reserve status is unknown.
2	Scaly Mountain occurrences (corundum, asbestos, vermiculite)	No production.	Corundum found in outcrops of soapstone and an asbestos-like material on the south side of Scaly Mountain above 4000 ft elevation (Lewis, 1896, p. 69; Pratt and Lewis, 1905, p. 39). Corundum, in association with rutile, asbestos, and vermiculite, is reported by Conley (1958) near Burnette Lake in the Scaly community. No prospecting known.
3	Name unknown (stone quarry)	Production unknown.	Source of crushed stone for local road construction.
4	Garnet locality	Collecting site.	Almandite garnet occurs in a region 2 mi southwest of Dry Falls (Conley, 1958).
5a-5h	Amethyst localities	Collecting sites. Most sites show recent trenching the largest of which is 100 ft long and 2 to 5 ft deep.	Amethyst crystal fragments seen at these sites were pale violet or yellow. There was no local knowledge of any valuable gem or specimen crystals from the area. The 100-ft-long trench at site 5d on Abes Creek is probably the Waggoner "mine" mentioned by Conley (1958); the name was unknown locally. Best crystal color seen was at site 5h.
6	Bascom mine (mica)	Production unknown. The deposit was opened prior to 1923 by a small cut 15 or 20 ft across (Sterrett, 1923).	Mica has a dark color and part is speckled (Sterrett, 1923). Reserve status is not known.
7	Horse Cove placers (gold)	Production unknown.	Kerr and Hanna (1887) mentioned limited placer mining in Horse Cove. No specific localities are mentioned.
8	Name unknown (mica)	Prospect.	No information found about this prospect. Location is from Teague and Furcron (1948).
9	Hedden placer mine (gold)	Production unknown; floodplain gravels worked for 1000 ft upstream from road for a width of up to 200 ft (Yeates and others, 1896).	Mining was continuous from 1843 to 1847 with intermittent activity until about 1889 (Yeates and others, 1896). Two 5-ft-deep prospect pits dug by Yeates into unworked gravels yielded "fair returns"; gold in these pits occurred as coarse particles in gravels which underlay 3 to 4 ft of overburden. Yeates also reported monazite in the heavy-mineral concentrations. Placer mining occurred at the same time in the next drainage to the south, called Goldmine Branch.
10	Name unknown (stone quarry)	Production unknown.	Source of road metal for local use.
11	Hicks mine (asbestos, vermiculite)	More than 50 tons of cross- and slip-fiber asbestos and 10 tons of vermiculite were produced in 1946 by Powhatan Mining Co. from a drift entry (Teague, 1956). Earlier production, around 1885, was from an open-cut and a 30-ft-long adit (Hopkins, 1914).	Ultramafic body is 300 ft long by 150 ft wide and contains reserves of mass-, cross-, and slip-fiber anthophyllite asbestos and vermiculite (Teague, 1956).
12	Reid mine (asbestos)	Production unknown; development in 1941 consisted of an open-cut 15 ft high, 30 ft long, and 12 ft deep. Asbestos was transported from the mine to a wagon road on Laurel Creek via an 8-by-8-in. flume (Teague, 1956).	First mined for asbestos in the 1890s, then again in 1941. Ultramafic body is at least 150 ft long and 40 ft thick. Composition is mass-fiber anthophyllite asbestos, vermiculite and chlorite (Teague, 1956). Vermiculite occurs at the hanging-wall contact in a zone up to 2 ft thick. Considerable reserves of mass-fiber asbestos remain (Teague, 1956).
13	Laurel Creek mine (corundum, vermiculite, asbestos, olivine)	About 300 tons of corundum per year was produced from the mid-1870s to 1883 (Lewis, 1896). Mine development consisted of 2 large open-cuts, an inclined shaft, 4 vertical shafts, a tunnel, and numerous exploratory excavations. Considerable byproduct vermiculite was mined (Hunter and Mattocks, 1936). A limited amount of asbestos was mined before corundum was discovered (Hopkins, 1914). No olivine production to date.	Corundum was found in large noncrystalline masses sometimes weighing more than a ton (King, 1894); mine closed because of dewatering problems in main shaft. Corundum resources remain. Prospecting in the 1930s failed to reveal vermiculite near enough to the surface to work (Hunter and Mattocks, 1936). Asbestos is altered and has poor fiber development (Hopkins, 1914). The ultramafic body contains 1,440,000 tons of relatively unaltered forsterite olivine but the olivine grains are uniformly intermixed with talc and asbestos, reducing its present value (Hunter, 1941) as a refractory.
14	Pig Pen Mountain locality or Nicholson mine (asbestos)	A small quantity of mass-fiber anthophyllite asbestos was produced in 1939; a few additional carloads were produced in 1946 (Teague, 1956).	The altered enstatite body is about 200 ft long and 50 ft wide (Hopkins, 1914) and is composed as mass-fiber asbestos, chlorite, serpentine, and talc. Asbestos from this mine required washing to remove magnetite, manganese and clay (Teague, 1956). The Pig Pen Mountain locality of Hopkins (1914) is believed to be the Nicholson mine of Teague (1956). See also the remarks for the Chattooga River prospect, locality 16.
15	Name unknown (sand)	Production unknown.	Location from Teague and Furcron (1948).
16	Chattooga River prospect (asbestos)	About 20 tons of slip-fiber asbestos was extracted by Powhatan Mining Co. in 1955 (Teague, 1956). Hopkins (1914) reported that there had been some earlier production about 1885.	Ultramafic body is 200 ft long by 40 to 60 ft thick. Veins of asbestos up to 7 in. thick are found near the hanging wall; reserves remain (Teague, 1956). The Chattooga River prospect of Teague (1956) has been called by other authors the Nicholson Estate (Hopkins, 1914, p. 145) and Nicholson Heirs (Furcron, 1960, p. 173); the earliest description by King (1894) uses no name.
17	Page Branch placer mine (gold)	Production unknown but reported to be a "large quantity"; mining covered about 5 acres (Yeates and others, 1896).	Yeates and others (1896) reported that much of the gold occurred as nuggets weighing from 5 to 20 pennyweights (0.25 to 1 troy ounce). Gold was found in terrace gravels several feet above the present streambed.
18	Law Ground Branch placer (gold)	Production unknown but reported as probably considerable judging from the huge piles of worked gravels in the area (Yeates and others, 1896).	Yeates and others (1896) observed that about a mile upstream remains of other old placer-works were visible as well as some evidence of prospecting for the gold-bearing veins.
19	Unnamed mine and mill (mica)	Production unknown.	Galpin (1915) mentions that a mica lead was opened near and south of the Pine Mountain Mica and Asbestos Co.'s mill on the West Fork of the Chattooga near Pine Mountain. Exact location of this mill and mine could not be learned. Mica from the mine had A-structure.
20	Hamby placer mine (gold)	Production unknown.	Reported to have been quite rich. Placering was on the Hamby Branch, lot 43, 3rd district. Yeates and others (1896) suggest that the source was probably the same gold-rich veins that enriched the Lamar placer (locality 21).
21	Lamar placer mine (gold)	Production unknown; placering was confined to the steambed and its narrow bottom land. The works covered about 15 acres along more than a mile of streambed (Yeates and others, 1896).	Mining active from 1844 to 1858; prospecting did not locate gold-bearing veins, but coarse gold in the stream had a "roughened appearance" indicating a near source (Yeates and others, 1896). The correct location of this mine is lot 30, 3rd district on what is now called Goldmine Branch.
22	Prospects near Hamby School (mica)	Production unknown but described as "a considerable amount" (Furcron and Teague, 1943).	Several small pegmatites in the vicinity are described by Furcron and Teague (1943). Mica is of scrap- to punch-size. One deposit is described as having mica with A-structure but clear and free of spots, and another as having hard, light-rum-colored mica.
23	Norton mine (mica)	Production before 1943 is unknown. In 1943, 10 tons of scrap mica was reported shipped; no other production is recorded (USBM statistical files). Development consisted of a drift 100 ft long and 4 short cross-cuts (Furcron and Teague, 1943).	Furcron and Teague (1943) report that the property was worked sporadically for more than 40 years. The pegmatite is 15 to 20 ft wide and is exposed for 500 ft. Some 6-by-8-in. books of electrical grade mica were produced, but many books had A-structure, greenish color and spotting (Furcron and Teague, 1943).
24	Name unknown (crushed stone)	Production unknown.	Location from Teague and Furcron (1948).
25	Kell mine (mica, feldspar)	Production unknown but included a "considerable" amount of stove mica, 10 by 12 in., and "considerable" punch mica; a block of sheet mica weighing 439 lbs was reportedly part of the 1917 production (Galpin, 1915; Sterrett, 1923). All feldspar produced during mining was shipped. Early workings consisted of a 16-by-60-ft open-cut (Galpin, 1915; Sterrett, 1923). Later 2 drifts and a pit were opened. Some trenching was done by Works Progress Administration (WPA) about 1942 (Furcron and Teague, 1943). USBM statistical files show a single sale of 7 lbs of sheet mica in 1944 shortly after purchase of the mine by the Georgia Mica Co.	Mica fragments observed by Furcron and Teague (1943) at the mine were flat, clear and free of inclusions. Fragments near the trimming shed indicated that some sheets were 15 in. in diameter but were disfigured by A-structure, green color and garnet inclusions. Galpin (1915) gives analysis of a sample of microcline from the mine indicating a good grade of feldspar product.
26	Name unknown (crushed stone)	Production unknown.	Furcron and Teague (1943) reported pegmatites in this quarry, but no mica of commercial quality has been discovered in the immediate area.
27	Rabun Bald mine (mica)	Production in 1928-29 was reported to be about 5 tons; workings consisted of 2 open pits, each 25 ft wide and 5 ft deep (Furcron and Teague, 1943). Prospected again in 1941 by WPA; the only production reported to the USBM after 1941 was 17 lbs of sheet mica sold in 1962.	Some good mica, but much is wavy, spotted, or badly cracked (Furcron and Teague, 1943).
28	Frank Kelly prospect (asbestos)	No known production.	Ultramafic body is small and is composed of amphibole asbestos (both mass- and slip-fiber), chlorite, a little olivine, serpentine, vermiculite, and talc (Teague, 1956).
29	Unnamed prospect (asbestos)	No production. Prospecting consisted of a small opening to expose the peridotite, and a cross-cut in a nearby bank (Hopkins, 1914).	Hopkins (1914) reported that a small amount of cross- and slip-fiber asbestos had been exposed. He assessed the property as not at all promising.

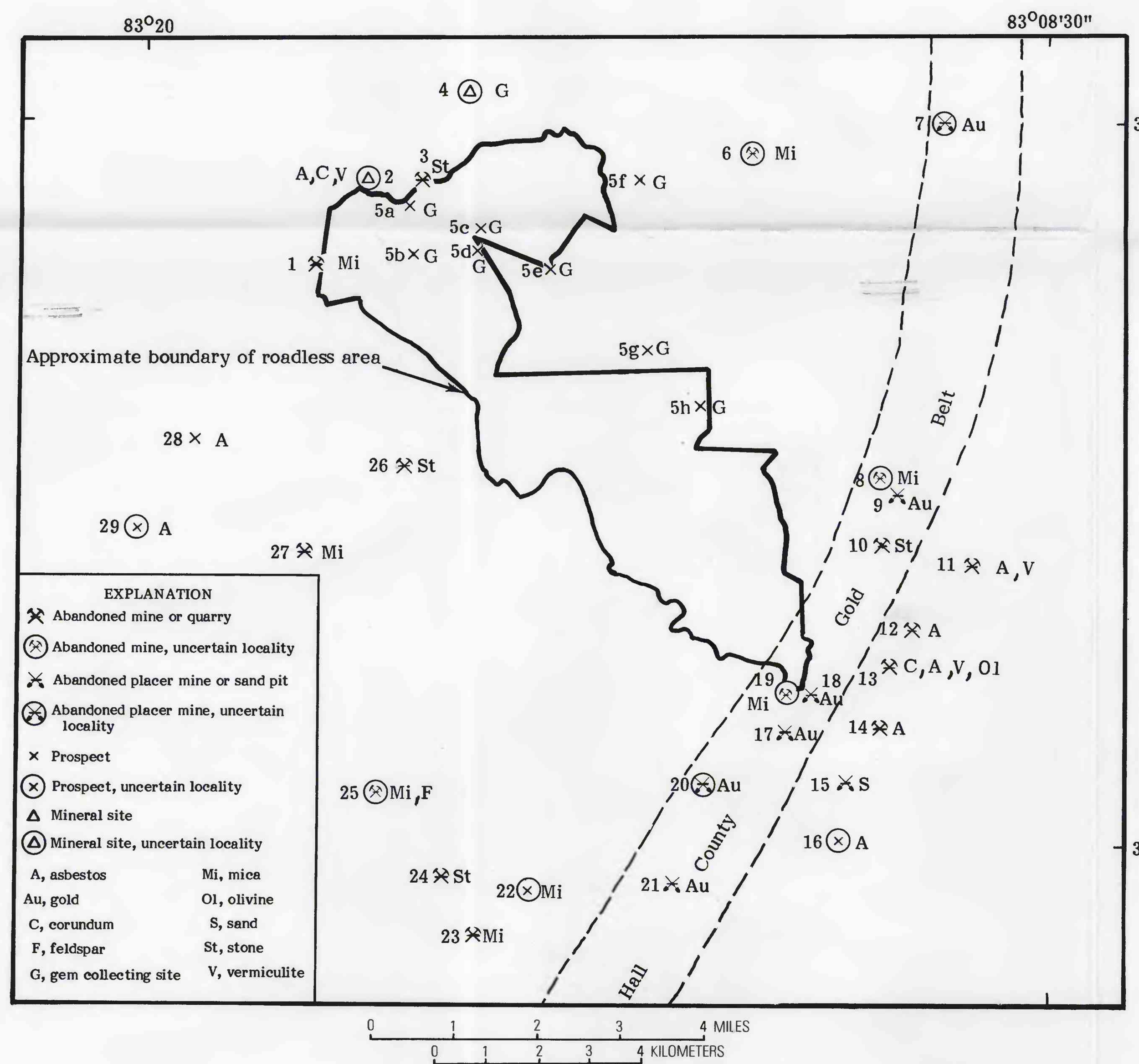

Figure 3.--Mines, prospects, and mineral localities in the Overflow Roadless Area and vicinity. Numbers are keyed to descriptions in table 1.

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral resource potential survey of the Overflow Roadless Area in the Chattahoochee National Forest, Rabun County, Ga., and the Nantahala National Forest, Macon County, N. C. The Overflow Roadless Area (08-026) was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

SUMMARY

The Overflow Roadless Area is on the western edge of the Hall County gold belt, a 2-mi-wide band of isolated gold-bearing quartz veins and associated placers that have been prospected and worked since the 1800's, but no records exist of gold occurrences or mining activity within the roadless area. Geochemical data from rocks, pan-concentrated heavy minerals, and fine-grained stream sediments do not reveal any anomalous concentrations of trace elements that might be related to hidden mineral deposits. Minor isolated deposits of amethyst gemstone and mica pegmatite occur within the area. Rock suitable for use as crushed stone and aggregate is abundant both in and adjacent to the roadless area. Paleozoic sedimentary rocks that probably underlie the metamorphic rocks exposed at the surface at depths of about 5 mi have an unknown potential for hydrocarbons in the form of natural gas. No reasonable estimate of this potential can be made with available information.

INTRODUCTION

The Overflow Roadless Area comprises 4600 acres in the Chattahoochee National Forest in Rabun County, Ga., and 3200 acres in the adjoining Nantahala National Forest, Macon County, N.C., in the eastern Blue Ridge Mountains (fig. 1). The roadless area is centered about 4 mi southwest of Highlands, N.C., and about 12 mi northeast of Clayton, Ga. (fig. 1). Access to the area is via North Carolina Route 106, which forms the northern boundary, and by Georgia and North Carolina Route 28, which is several miles to the east. U.S. Forest Service roads 86B, 86D, and 79 provide access to parts of the roadless area interior.

SURFACE- AND MINERAL-RIGHTS OWNERSHIP

The Federal Government owns all surface and mineral rights in the Overflow Roadless Area. There are currently no outstanding prospecting or mining permits nor have there been any recent applications.

GEOLOGY

The Overflow Roadless Area is underlain by highly deformed and metamorphosed rocks of the Tallulah Falls Formation of Late Proterozoic and (or) Early Paleozoic age, part of the Hayesville thrust sheet, which together with the underlying Great Smoky thrust sheet composes a large part of the allochthonous southern Blue Ridge Mountains (Nelson and Koeppen, in press). In Georgia and adjoining North Carolina the Hayesville sheet was emplaced by westward-directed transport over the Great Smoky sheet along the Hayesville-Fries thrust fault. The Overflow Roadless Area is in the eastern part of the Hayesville thrust sheet; rocks of the Great Smoky thrust sheet are not exposed in the roadless area.

The principal rocks exposed in the roadless area are biotite-muscovite gneiss and schist, fine-grained biotite-feldspar gneiss, amphibolite, feldspathic and argillaceous metasandstone, and minor quartzite (fig. 2) (Nelson and Koeppen, in press). Numerous variably sized bodies of granite, granodiorite gneiss, and migmatite are present, and discontinuous veins and pods of pegmatite and quartz are widespread. Even though ultramafic rocks have not been observed within the roadless area, they are present nearby, and hence may exist as small undetected pods within it.

Rocks underlying the Overflow Roadless Area have been complexly folded, some exposures showing deformation by three generations of folding. Generally, the metamorphic rocks in the Hayesville thrust sheet range from the kyanite to sillimanite grade of regional Barrovian metamorphism.

GEOCHEMICAL SURVEY

No known metallic mineral deposits exist in the Overflow Roadless Area. Our reconnaissance geochemical sampling found scattered traces of gold and silver in rock and fine-grained stream-sediment samples, but no concentrations of these or other metals which might be related to significant mineralization in the area (Koeppen and Nelson, in press). The geochemical evaluation is based on an analysis of the trace-element content of 78 samples of rock, 58 samples of fine-grained stream sediment, and 39 heavy-mineral pan concentrates from streams. Traces of gold (0.05 to 0.25 parts per million (ppm)) and silver (0.0 to 0.5 ppm) were detected in two fine-grained stream-sediment samples and in six rock samples, but gold and silver were not detected in any of the pan concentrates. Considering the lack of gold in all other samples from the roadless area, even the relatively few rock samples containing gold can be regarded as anomalous. Their scattered distribution and low concentration suggest they represent only small isolated pockets or fine veinlets of fine-grained gold, possibly concentrated by fluid movement during a late stage of regional metamorphism. No other anomalous geochemical concentrations were recognized in the roadless area.

MINERAL RESOURCE POTENTIAL

The Overflow Roadless Area has a low potential for crushed stone, and contains minor amounts of low-quality mica and amethyst gemstone. Traces of gold (0.25 ppm or less) in a small number of rock-chip or fine-grained stream-sediment samples (fig. 2) are probably related to small, weakly mineralized pockets and indicate only a low resource potential. No geochemical or mineralogical evidence was found during the geochemical survey to suggest hidden deposits of other metallic minerals in the area.

Crushed stone

Gneiss and schist in the roadless area are suitable for use as crushed rock, aggregate, or other construction materials (figs. 2, 3). These rocks are abundantly available outside the area from more readily accessible sites and existing quarries.

Mica

Greenish-brown, bent, and ruled mica occurs in the pegmatite at numerous scattered localities near the roadless area (fig. 3). The area includes a part of the Rabun pegmatite district, a region of poorly exposed and weathered pegmatites (Lesure and Shirley, 1968). A small number of the sites noted as prospects on the U. S. Geological Survey 1:24,000-scale topographic maps of the area correspond to the largest pegmatite occurrences, which all are small and of low quality; the resource potential for mica is considered to be low in the roadless area.

Gold

The Overflow Roadless Area lies immediately west of the Hall County gold belt, a 2-mi-wide band of isolated auriferous quartz veins and associated stream placers (fig. 3). Most mining activity in the belt occurred between 1840 and 1890 (Yeates and others, 1896), and although production records for the belt are extremely sketchy, it appears that the amount of gold removed from the six prospects near the roadless area was relatively small.

All samples collected by the USGS in the roadless area were analyzed spectrographically for gold; additionally, fine-grained stream sediments and rock chips were analyzed by means of atomic absorption. Six of the rock-chip samples contained 0.05 ppm gold, and two samples of the fine-grained stream sediment contained 0.1 and 0.25 ppm gold, respectively. The gold-bearing samples are from scattered locations in the area and do not apparently define any restricted pattern of distribution. In consideration of the lack of gold in all other samples, the few samples with detectable gold can be regarded as anomalous. Because the gold-bearing samples are both widely scattered and of low concentration, it would appear that each probably represents only localized, low-grade mineralization. Considering the sparse distribution of the concentrations, the amount of data is minimal for a statistical generalization. The potential for gold resources within the roadless area, nevertheless, is estimated to be low.

Oil and gas

Recent seismic studies (Cook and others, 1979; Harris and others, 1981) indicate that the metamorphic rocks forming the Blue Ridge Mountains of North Carolina and adjoining Georgia were emplaced by westward-directed thrust faulting over a thick sequence (3,000 to 15,000 ft) of potentially hydrocarbon-bearing sediments. On the basis of the seismic profiles, the sediments probably occur at depths of as much as 5 mi below the surface. High temperature at such depths limits the likelihood of hydrocarbons occurring there, but if present they are probably in the form of natural gas. No reasonable estimate of potential for gas in the roadless area can be made with available information; deep drilling would be necessary before estimates of potential can be made.

REFERENCES CITED

Cook, F. A., Albaugh, D. S., Brown, L. D., Kaufman, Sidney, Oliver, J. E., and Hatcher, R. D., Jr., 1979, Thin-skinned tectonics in the crystalline southern Appalachians; COCORP seismic-reflection profiling of the Blue Ridge and Piedmont: Geology, v. 7, no. 12, p. 563-567.

Davis, M. P., 1982, Mineral resources of Overflow Further Planning Area, Rabun County, Georgia, and Macon County, North Carolina: U.S. Bureau of Mines Open-file Report MLA 31-82, 39 p.

Harris, L. D., Harris, A. G., de Witt, Wallace, Jr., and Bayer, K. C., 1981, Evaluation of southern eastern overthrust belt beneath the Blue Ridge-Piedmont thrust: American Association of Petroleum Geologists Bulletin, v. 65, no. 12, p. 2497-2505.

Koeppen, R. P., and Nelson, A. E., in press, Geochemical survey of the Overflow Roadless Area, Rabun County, Georgia, and Macon County, North Carolina: U.S. Geological Survey Miscellaneous Field Studies Map MF-1618-C.

Lesure, F. G., and Shirley, L. E., 1968, Mica, *in* Mineral resources of the Appalachian region: U.S. Geological Survey Professional Paper 580, p. 311-325.

Nelson, A. E., and Koeppen, R. P., in press, Geologic map of the Overflow Roadless Area, Rabun County, Georgia, and Macon County, North Carolina: U.S. Geological Survey Miscellaneous Field Studies Map MF-1618-B.

Yeates, W. S., McCallie, S. W., and King, F. P., 1896, Preliminary report on a part of the gold deposits in Georgia: Georgia Geological Survey Bulletin 4-A, 542 p.

MINERAL RESOURCE POTENTIAL MAP OF THE OVERFLOW ROADLESS AREA, RABUN COUNTY, GEORGIA, AND MACON COUNTY, NORTH CAROLINA

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