



Base from Tennessee Valley Authority and U.S. Geological Survey 1:24,000 Cruso, 1941 (67-PR); Sam Knob, 1946 (76-PR); Shining Rock, 1946 (76-PR); Waynesville, 1941 (66-PR)

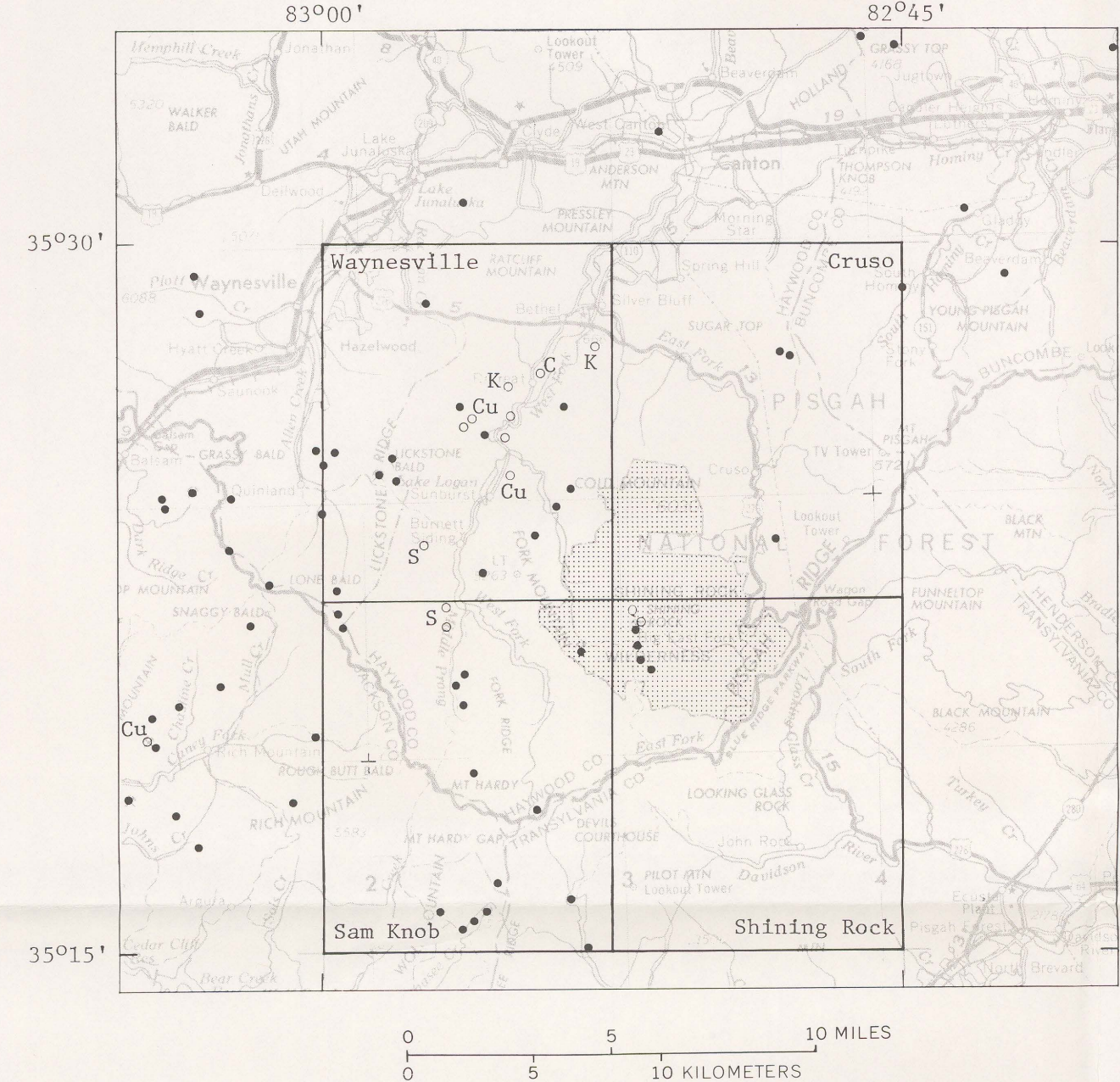


Figure 1.--Index map showing location of Shining Rock Wilderness, pegmatite and other mineral occurrences. Locations are, in part, from Keith (1907), Olson and others (1946), and Lesure (1968).

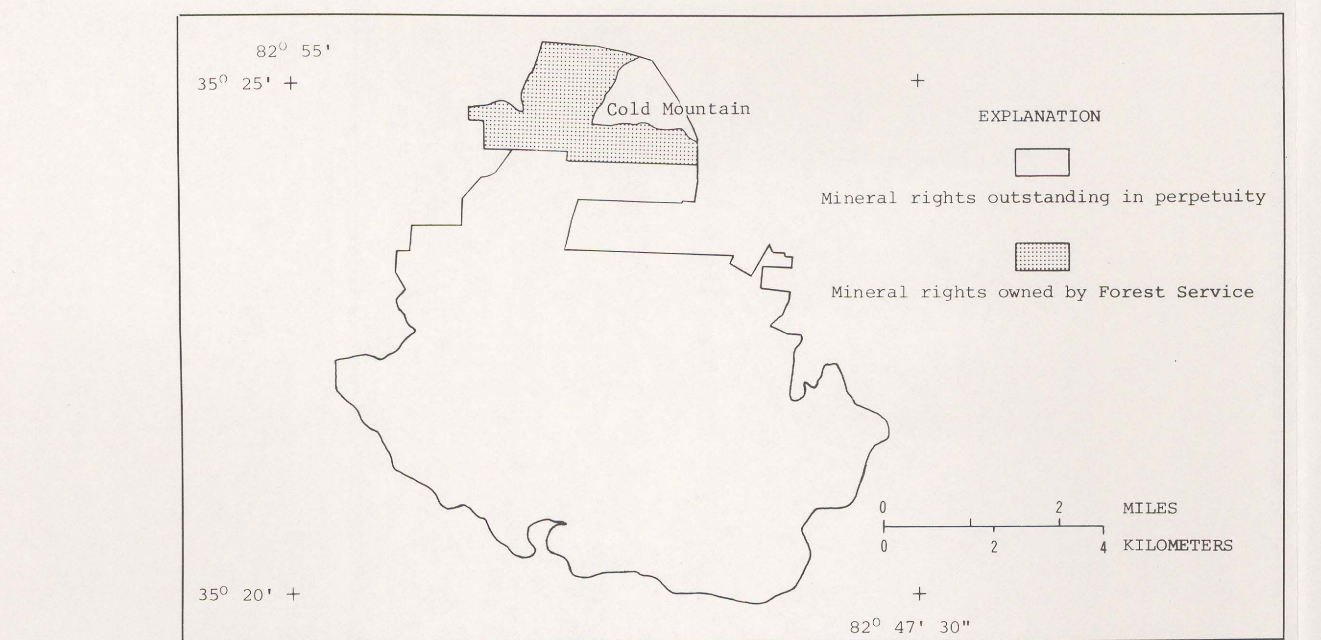
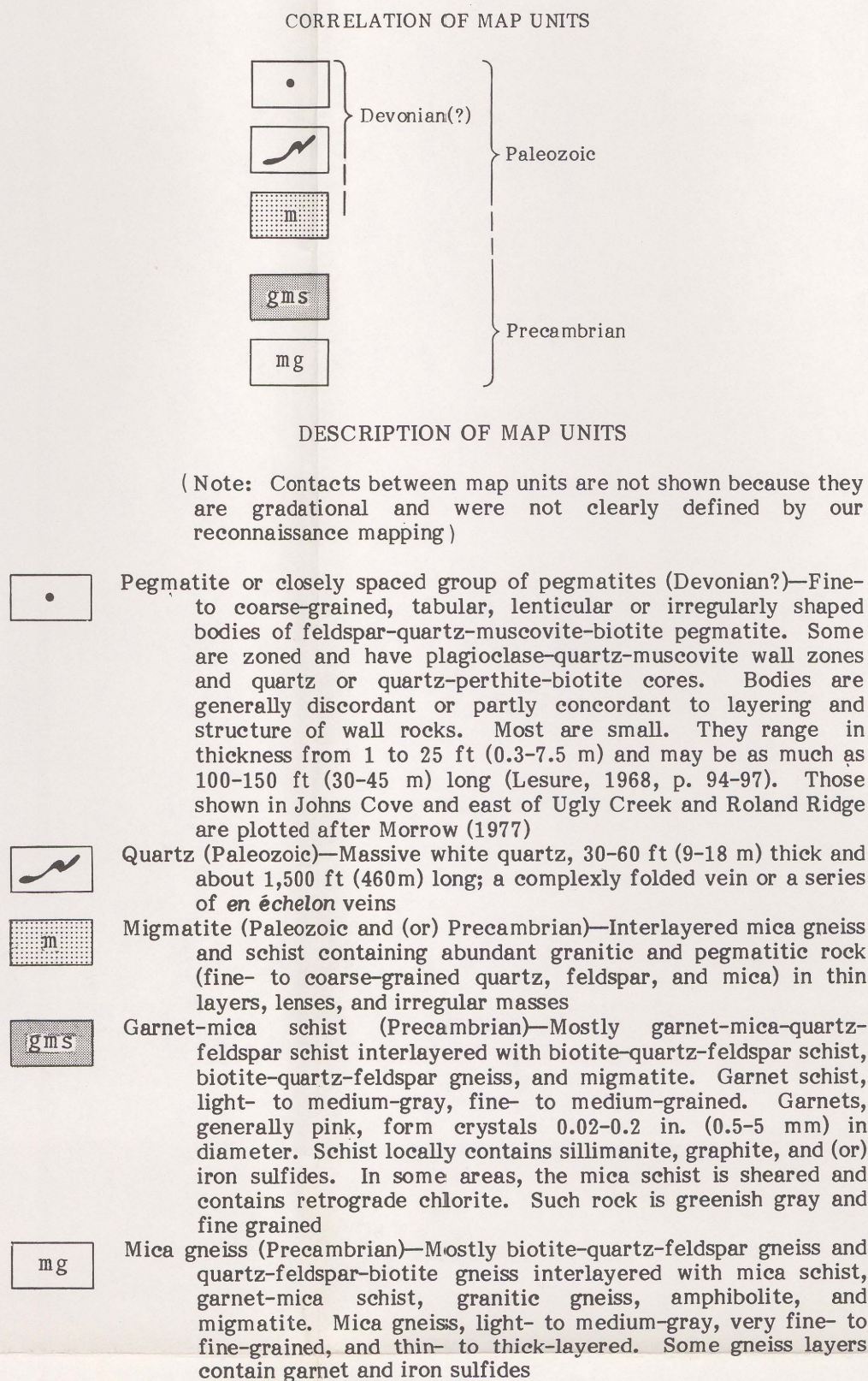


Figure 2.-- Status of mineral rights in the Shining Rock Wilderness. Forest Service owns all surface rights.



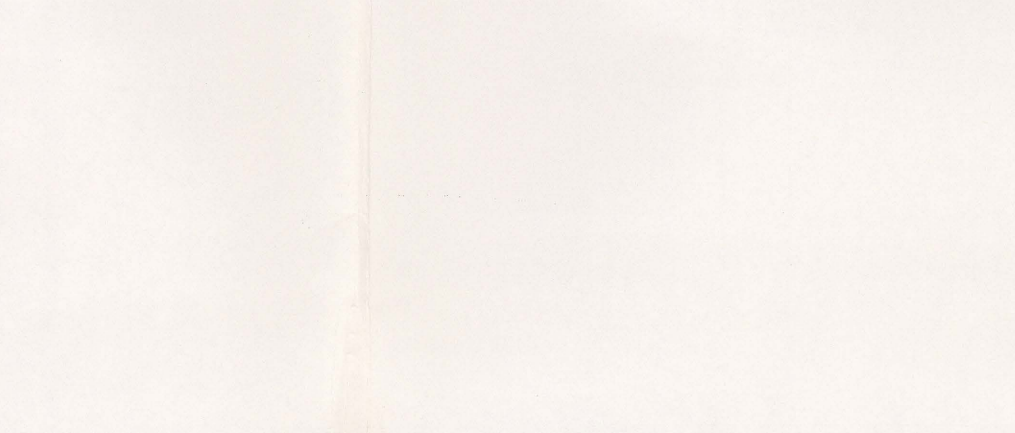
- Named pegmatites
1. Little East Fork
 2. Shining Rock
 - 3 a. Flower Knob, north
 - 3 b. Flower Knob, west
 - 3 c. Flower Knob, east
 - 4 a. Grassy Knob (Revis)
 - 4 b. Unnamed
 - 5 a. Grassy Cove Top, north
 - 5 b. Grassy Cove Top, middle
 - 5 c. Grassy Cove Top, south

- Strike and dip of foliation or layering
- Inclined
 - Vertical
 - Generalized

- Strike and dip of inclined foliation or layering—Showing plunge of minor folds or lineation
- Synclinal
 - Anticlinal

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 geological and mineral resource survey of the Shining Rock Wilderness in the Pisgah National Forest, Haywood County, N.C. Shining Rock Wilderness was established by Public Law 88-577, September 3, 1964.

SUMMARY

The Shining Rock Wilderness is in the Blue Ridge Mountains of Haywood County, N. C., and is underlain by complexly folded, high-grade metamorphic rocks. These rocks contain a few small, subeconomic deposits of sheet muscovite mica that have a small potential for scrap mica. Quartz, as a source of silica (SiO₂), and gneiss and schist suitable for common building stone and crushed rock are the only identified economic mineral resources. Other minerals and rocks, including kaolin, soapstone, copper, corundum, and dunite, have been prospected or mined nearby, but either they do not occur or have no current economic potential in the wilderness. A possibility exists for the presence of natural gas at depths greater than 5,000 ft (1,500 m).

INTRODUCTION

The Shining Rock Wilderness contains about 13,400 acres (5,423 ha) within the Pisgah National Forest in the Blue Ridge Mountains of western North Carolina. The study area is in Haywood County, 9 mi (14 km) southeast of Waynesville and 20 mi (32 km) southwest of Asheville (fig. 1). The Blue Ridge Parkway forms the southeast boundary. Forest Service road F.S. 816 from the parkway west of milepost 450 provides access to the southern part of the wilderness at Vestor Gap. Access to the eastern part is from U.S. Highway 276 at the bridge over East Fork of the Pigeon River and from the road up Crawford Creek. On the west side access is by North Carolina State Roads 215 and 1129 up Little East Fork.

SURFACE AND MINERAL-RIGHTS OWNERSHIP

All surface rights in the wilderness are held by the U.S. Forest Service. The Forest Service owns mineral rights to about 1,200 acres (486 ha) on the west and south flanks of Cold Mountain; mineral rights are outstanding in perpetuity on the remaining acreage (fig. 2). Although prospecting and mining development permits are granted in the Pisgah National Forest, no outstanding permits exist in the wilderness.

GEOLOGY

The Shining Rock Wilderness contains high-grade, regionally metamorphosed sedimentary rocks of probable Precambrian age (Hadley and Nelson, 1971). Most of the area is underlain by mica gneiss containing varying amounts of interlayered mica schist, garnet-mica schist, granitic gneiss, amphibolite, and migmatite (Lesure, 1981a). Locally, mica-garnet schist, generally containing sillimanite and less commonly iron sulfides, is the dominant rock type. In other areas the gneiss and schist are intruded by abundant thin layers and lenses of granitic material forming a mixture of rock types called migmatite.

The gneiss and schist have been complexly folded and possibly faulted. Small folds, a few feet to more than 30 ft (10 m) in wavelength, plunge northeast, generally at angles of less than 40°. Larger folds are suggested by the outcrop patterns of garnet-mica schist, but were not completely identified in the reconnaissance mapping. No faults were observed, but the presence of sheared mica schist containing retrograde chlorite suggests at least local faulting.

A few quartz veins and small dikes or sills of mica pegmatite and trondhjemite intrude the gneiss and schist. The largest mass of quartz is a complexly folded vein or series of an *echelon* veins about 1,750 ft (530 m) long and 30-60 ft (9-20 m) thick exposed on top of Shining Rock Mountain. The white quartz can be seen from afar and consequently is the "shining rock" from which the mountain and in turn the wilderness take their names.

The pegmatites are medium- to coarse-grained mixtures of quartz, feldspar, and muscovite. They are generally tabular or lens shaped and small. The average size is 1-8 ft (0.3-2.4 m) wide and probably less than 100 ft (30m) long (table 1). The trondhjemite dikes are light-colored, fine-grained mixtures of mostly feldspar and quartz containing mineral amounts of mica.

GEOCHEMICAL SURVEY

The U.S. Geological Survey (USGS) made a reconnaissance geochemical survey of the Shining Rock Wilderness (Lesure, 1981b) to test for indistinct or unexposed mineral deposits that might be recognized by their geochemical halos. None of the elements tested for appears in unusually large concentrations that might be indicative of mineral resources. Gold, present in trace amounts, ranges from less than 0.002 parts per million (ppm) to 0.024 ppm in 21 rock samples, but was not detected in soil or stream-sediment samples at a detection limit of 0.05 ppm.

MINERAL RESOURCE POTENTIAL

Quartz (SiO₂) and building stone are the only identified potentially economic mineral resources in the Shining Rock Wilderness. Known deposits of mica pegmatite are too small and of too low grade to be of current economic interest. Other minerals and rocks, such as kaolin, soapstone, or dunite, have been mined or prospected nearby but have no known potential in the wilderness. A possibility exists for the presence of natural gas at great depth.

Quartz

The large mass of quartz exposed on Shining Rock Mountain is a potential source of almost pure silica (SiO₂). It is a sinuous vein or series of an *echelon* veins about 1,750 ft (530 m) long and 30-60 ft (9-20 m) wide. It is exposed above ground to a height of 3-20 ft (1-6 m) and probably extends an equal or greater distance below ground. We estimate that at

Table 1.--Summary description of mica pegmatite deposits in Shining Rock Wilderness, Haywood County, N.C.

[Data are from Lesure (1968, p. 94-97), except as noted]													
Locality number	Deposit name	Principal periods worked	Workings	Description of mica	Production	Pegmatite				Wall rock	Weathering	Internal structure, texture, and mineralogy of pegmatite	
						Shape	Size	Attitude					Relation to wall-rock structure
								Strike	Dip				
1	Little East Fork (Arrowood)	World War I, and World War II, 1952-53	4 cuts, 20-40 ft (6-13 m) long; 3 adits, 20-100 ft (6-32 m) long; prospect pits in area 150 by 200 ft (45 x 60 m)	Ruby color, "A" structure, biotite intergrowths, cracked, bent	Less than 100 lbs sheet; 6-7 tons of scrap	Tabular	6-25 ft (2-7 m) thick, more than 160 ft (50 m) long and 75 ft (21 m) deep	Northeast	Northwest	Partly concordant	Biotite gneiss	Partly weathered	Feldspar-quartz-muscovite-biotite wall zone, coarse-grained; perthite-quartz-muscovite-biotite core, coarse-grained; quartz fracture fillings.
2	Shining Rock mine	1900, 1953-54	Cut, 40 ft (12 m) long; shaft, 40 ft (12 m) deep; drift, 84 ft (16 m) long	Ruby color, "A" structure, hard, bent, ruled	Less than 1,000 lbs. mine-run in 1950's	Irregular	3-8 ft (1-2.5m) thick, 100 ft (30 m) long, 40 ft (12 m) deep	Northwest	Southwest	Discordant	Interlayered biotite gneiss and hornblende gneiss	Partly weathered	Kaolinized plagioclase-quartz-perthite-muscovite wall zone, medium-grained; quartz core.
3a	Flower Knob prospect, north	1950's (?)	Prospect pit	Clear, bent, ruled, small	Unknown	Tabular	3-6 ft (1-2 m) thick	Northeast	Vertical	Discordant	Biotite gneiss	Partly weathered	Feldspar-quartz-muscovite-biotite pegmatite, medium- to coarse-grained.
3b	Flower Knob prospect, west	1950's (?)	Prospect pit, 6 by 9 ft (2x3 m), possibly 6 ft (2 m) deep, caved	Small, bent	Unknown	Tabular	3-8 ft (1-2m) thick	Northeast	Vertical	Discordant(?)	Biotite gneiss	Partly weathered	Quartz-feldspar-muscovite-biotite pegmatite, fine- to medium-grained.
3c	Flower Knob prospect, east (Wildie Old Field)	1950's (?)	Adit, 6 ft (2 m) long, caving	Small, bent, ruled	Unknown	Lens	1-5 ft (0.3-1.5 m) thick	Northwest	Northeast	Partly concordant	Biotite gneiss	Partly weathered	Feldspar-quartz-muscovite pegmatite, fine- to medium-grained.
4 a	Grassy Knob prospect (Revis)	1952-53	Adit, 86 ft (26 m) long, drift 14 ft (4 m) long	Ruby color, hard, clear, tied, bent, small	None	Small lenses	1-5 ft (0.3-1.5 m) thick, 20 ft (6 m) long (largest)	Northeast	Vertical	Concordant	Biotite gneiss	Unweathered	Plagioclase-quartz-muscovite pegmatite, medium-grained; accessory biotite, garnet, pyrite.
1 b	Unnamed prospect	1950's (?)	Shallow cut in road bank	Small, bent	Unknown	Lens (?)	1-5 ft (0.3-1.5 m) thick	Northwest	Northeast	Partly concordant	Biotite gneiss	Partly weathered	Feldspar-quartz-muscovite pegmatite, fine- to medium-grained.
1 s a	Grassy Cove Top prospect, north	1950's (?)	Cut, 50 ft (15 m) long	Bent, tied	Unknown	Lens	1-4 ft (0.3-1.2 m) thick	Northwest	Northeast	Partly concordant	Biotite gneiss	Partly weathered	Do.
1 s b	Grassy Cove Top prospect, middle	1950's (?)	Trench, 23 ft (7 m) long, caving	None seen	Unknown				Covered				
1 s c	Grassy Cove Top prospect, south	1950's (?)	Cut, 50 ft (15 m) long	Ruby color, bent, tied, ruled	Unknown	Lens	1-3 ft (0.3-1 m) thick	Northwest	Northeast	Partly concordant	Biotite gneiss	Partly weathered	Feldspar-quartz-muscovite pegmatite, fine- to medium-grained.

1 M. L. Dunn, Jr. (unpub. data, 1980).

MINERAL RESOURCE POTENTIAL MAP OF THE SHINING ROCK WILDERNESS, HAYWOOD COUNTY, NORTH CAROLINA

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