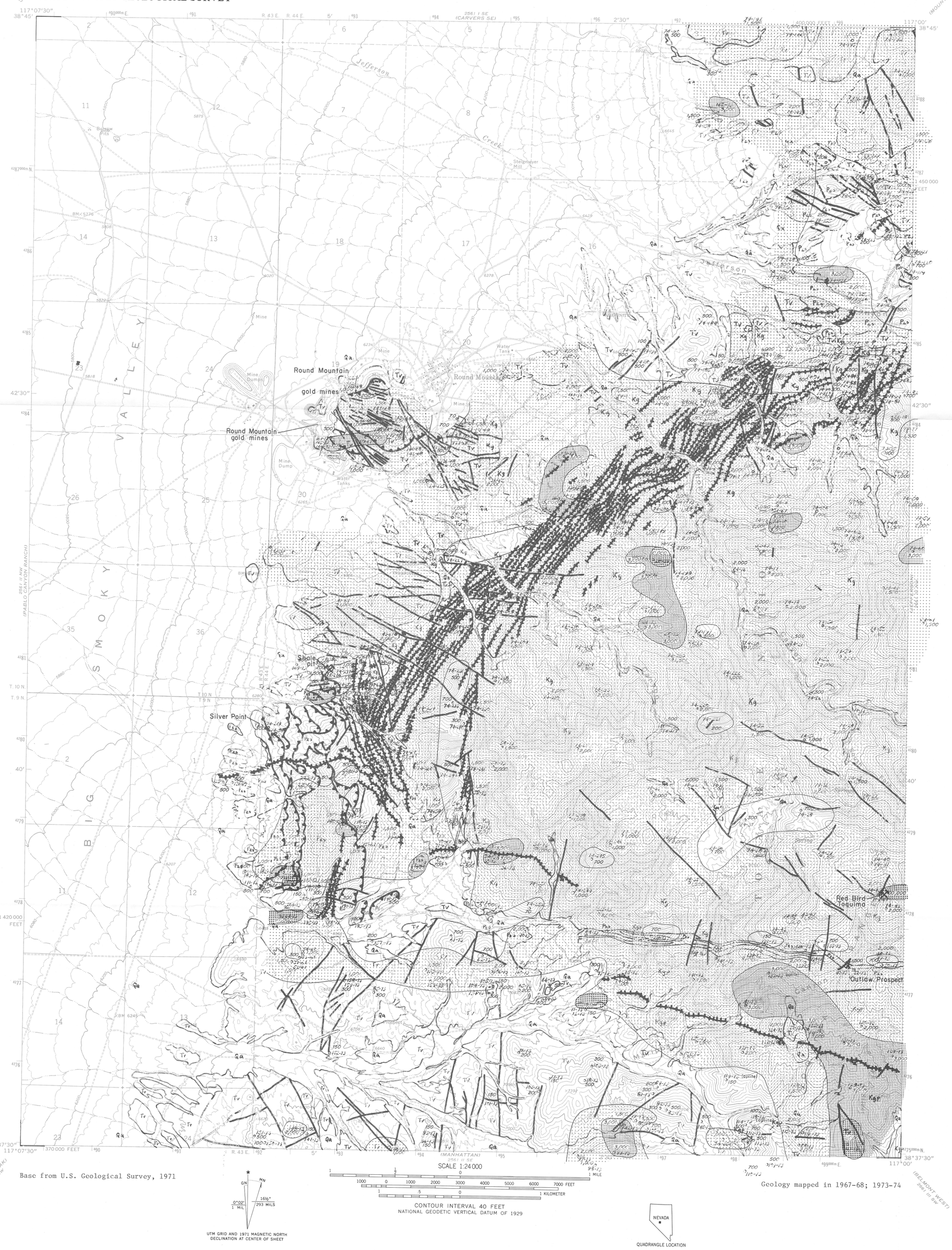
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES MAP MF-835J
Ba, ROUND MTN. QUAD., NEVADA



Base from U.S. Geological Survey, 1971

Geology mapped in 1967-68; 1973-74

SCALE 1:24 000

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1971 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

QUADRANGLE LOCATION

EXPLANATION

Qa	ALLUVIUM (QUATERNARY)
Tv	VOLCANIC ROCKS (TERTIARY)
Td	DIORITE (TERTIARY)
	RHYOLITE (TERTIARY)
Kg	GRANITE (CRETACEOUS)
Kgp	PORPHYRITIC GRANITE (CRETACEOUS)
Pzs	SEDIMENTARY ROCKS (PALEOZOIC)
	HIGH-ANGLE FAULT
	LOW-ANGLE FAULT
	CONTACT
123-73	SAMPLE LOCALITY

ISOPLETHS--Separate areas characterized by the reported element concentrations. Number shows barium content in parts per million

- 20-700 ppm Ba
- 1,000-2,000 ppm Ba
- 3,000-7,000 ppm Ba
- 10,000->100,000 ppm Ba

DISCUSSION

This series of geochemical maps shows the distribution and abundance of iron, copper, lead, zinc, molybdenum, silver, antimony, arsenic, tungsten, barium, potassium, and boron in the Round Mountain quadrangle, Nye County, Nevada. These maps are intended to provide help in exploration for possible concealed mineral deposits in the quadrangle.

Samples were collected from bedrock throughout the quadrangle to assess the abundance and distribution of metals and other elements that outline mineralized systems and may indicate exploration targets. The samples were collected from the most intensely mineralized rock in any given locality, and are from shear or fault zones, fractures, jasperoid bodies, veins, and altered rocks. None of the samples necessarily represents a body of rock large enough to be mined economically.

Iron-oxide stain is the most conspicuous effect of mineralization in the rocks of the quadrangle, and most of the geochemical samples were collected because of the presence of iron-oxide stain. The iron oxide is almost certainly the result largely of weathering of pyrite in mineralized rocks. Accordingly limonite pseudomorphs after cubic pyrite are widespread.

All the elements discussed were determined by the semiquantitative spectrographic method by H. G. Neiman, M. W. Solt, and J. C. Hamilton. The elements were reported in the series 1, 0.7, 0.5, 0.3, 0.2, 0.15, 0.1, and so on. Approximate lower limits of determination for the elements reported here are: Fe, 0.001 percent; K, 0.7 percent; Cu, 1 ppm (parts per million); Pb, 10 ppm; Zn, 300 ppm; Ag, 0.5 ppm; Mo, 3 ppm; Sb, 200 ppm; As, 1,000 ppm; W, 100 ppm; Ba, 2 ppm; and B, 20 ppm. Under favorable conditions greater sensitivity is attainable for some of these elements.

The isopleths of element abundance on maps in this series were arbitrarily selected. The contour intervals were chosen to show, within the limitations of the analytical data, areas of generally low (probably background and lower than normal) values, areas of probably anomalous values, and areas of highly anomalous values. I emphasize that the isopleth lines surround areas in which the collected samples show the indicated values; most rock adjacent to and between sample localities may contain much lower elemental values than do the collected samples.

Most of geochemical samples collected in the Round Mountain quadrangle contain 1,000-2,000 ppm Ba, probably a background amount for the types of rocks sampled. Because of the low level of determination of barium by the semiquantitative spectrographic method it was possible to distinquish areas on the map where reported values for barium are as little as 20 ppm. A wide area in principally volcanic rocks at the south end of the quadrangle contains abnormally low barium (150-500 ppm). Other zones of abnormally low barium are in the vicinity of northwest-striking faults in the northwest corner of the map; peripheral to the small diorite stock east of Round Mountain and specifically in an east-trending zone that coincides with the northernmost tungsten belt which also has anomalously high values of base metals; scattered patches in the vicinity of northwest-trending faults that extend from Round Mountain southeastward to the quadrangle boundary; in the vicinity of a postulated buried intrusive south of Round Mountain and notably along the zone of north-striking faults and rhyolite dikes that extends 2-4 mi (3-6 km) south of Round Mountain and with which abnormally high molybdenum is associated; and in patches along the screen of Ordovician schist in granite.

Areas where barium content is 3,000-7,000 ppm are widely scattered in the quadrangle. Exceptional concentrations of barium (1-10 percent) are found 2 mi (3 km) southeast of Round Mountain, 4 mi (6 km) south of Round Mountain, and in the southeast part of the quadrangle. Three of the barium-rich samples (71-73, 117-73, and 144-73) are from manganese-rich concentrations in volcanic rocks. The greatest amount of barium (>10 percent) was detected in a barite-rich sample from the Red Bird Toquima mercury mine in granite, 5.5 mi (9 km) southeast of Round Mountain.

Barium, like lead, is unusually low in the vicinity of some intrusive centers and along the screen of Ordovician schist in granite. It is also unusually low where some base metals have been deposited in abundance; such as peripheral to the small diorite stock east of Round Mountain and in the vicinity of a postulated buried intrusive south of Round Mountain. Possibly barium was leached and swept out locally by hydrothermal solutions that introduced metals into the rocks.

Geochemical samples collected from two similar aplite dikes in granite in the southeast corner of the quadrangle (samples 119-73 and 132-73, labeled "aplite" on the geochemical map) contain notably different amounts of barium (105 and 3,000 ppm Ba, respectively). This discrepancy in barium content of aplites, as well as the general distribution of barium shown throughout the quadrangle, suggests that part of the barium distribution is secondary. Probably much barium was leached locally from rocks by pervasive hydrothermal activity, and deposited in favorable structural environments such as at the Red Bird Toquima mercury deposit.

An east-trending zone of geochemical samples that contain 1,000-2,000 ppm Ba lies about 1.5 mi (2.5 km) north of the south boundary of the quadrangle amongst samples that contain 700 ppm or less Ba. This locally high zone coincides with a zone of potassium enrichment in the volcanic rocks.

GEOCHEMICAL AND GENERALIZED GEOLOGIC MAP SHOWING DISTRIBUTION OF BARIUM IN THE ROUND MOUNTAIN QUADRANGLE, NYE COUNTY, NEVADA

By
D. R. Shawe

1977

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1977

For sale by Branch of Distribution, U.S. Geological Survey, Box 25286, Federal Center, Denver, CO 80225