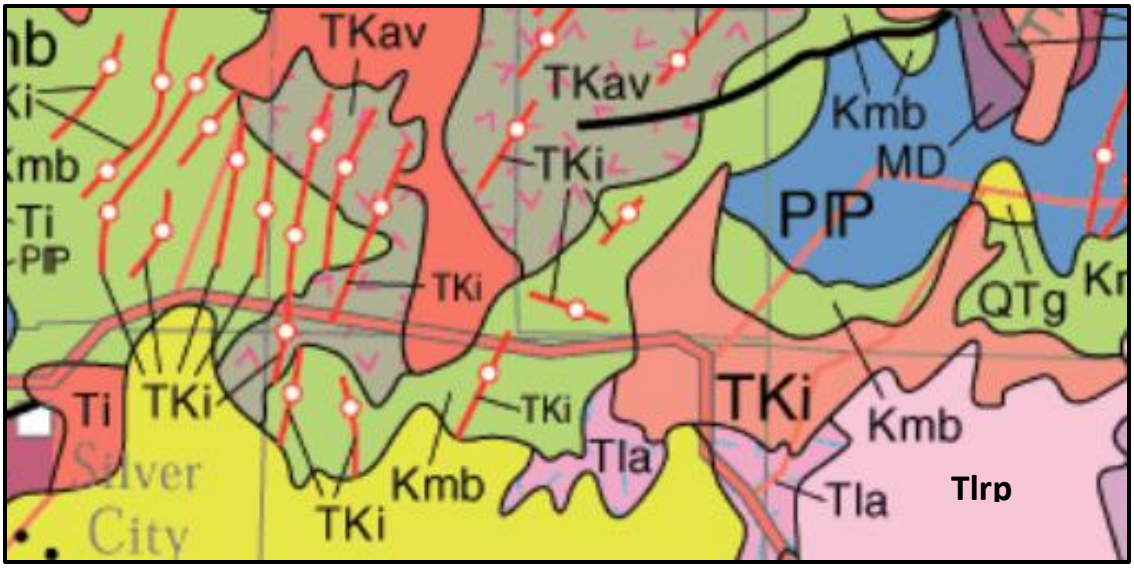
Rolling Stones Gem & Mineral Society: Geology Field Trip
Silver to Bayard to Hanover, February 2, 2020



From the geologic map of NM: Available from www.geoinfo.nmt.edu

Pennsylvanian and Permian limestones (blue – PP) deposited in a shallow sea are the oldest rocks along today's field trip route. After a period of erosion, when the seas withdrew from the continent, the seas advanced again and deposited the sandstones and shales of the Beartooth Quartzite and the Colorado Formation (green – Kmb). Later there was significant igneous activity in the area. The oldest igneous rocks are volcanic flows and breccias of intermediate (andesitic) composition (olive with red checks - TKav). All of the earlier rocks were later intruded by igneous rocks (reds - TKi) in small stocks, dikes and sills. Younger volcanic rocks (pink – Tla and Tlrp) were deposited primarily as ash-flow tuffs. The region has also experienced extensive faulting, particularly along Highway 365 from Bayard north to Fierro.

Road Log: Set trip odometer to 0 at the light as you leave the Walmart Parking Lot.

0.0 **Turn right from the parking lot.**

0.4 **Turn right on Ranch Club Road**

0.6 **Turn right on Pinos Altos Road**

1.0 **Turn right on 32nd Street Bypass**

1.3 **Stop 1: Colorado Shale**
.Predominantly dark gray shales the Colorado also contains occasional white, cross-bedded sandstone layers. The Colorado is cut by many igneous dikes and sills.

2.2 **Junction with Highway 180. Turn left.**

3.0 **Stop 2: Volcanic Breccia**
A breccia containing angular fragments of shallow intrusive and volcanic rocks containing the mineral, pyroxene. Dark-colored, andesite, lavas are also present.

5.9 Outcrops of Colorado Shale, cut by numerous dikes and sills.

6.3 Layered white rocks, possibly a small area of volcanic ash associated with a north-trending chain of plugs of rhyolite porphyry that contains large feldspar crystals.

6.6 Fort Bayard Stock.

7.2 **Turn Left at light for Fort Bayard.**

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7.7 Stop sign, continue straight and follow the road around the back of the hospital.

7.9 **Stop 3: Fort Bayard Stock**
Light gray granitic rock (quartz diorite) containing feldspar, quartz, biotite and hornblende. Xenoliths of slightly darker rock are also present.
Follow road around the hospital and return to Highway 180.

8.6 **Turn Left on Highway 180.**

9.9 Bayard is underlain by an older gravel unit overlain by welded tuff breccia.

11.5 **Stop 4: Volcanic Ash**
Two layers of volcanic ash. Lower is pink and soft, upper is grey and harder. They appear similar in composition.
Proceed about .2 miles and **turn left** into parking area by historic marker. Return to Bayard.

12.9 **Turn Right on Hurley Road.**

13.1 **Turn Right on Central Avenue.** Proceed north on Highway 365. Outcrops along the highway are mostly quartz diorite that is highly fractured and weathered.

17.0 **Stop 5: Overview of historic mines**. The Bullfrog (at Vanadium) and the Blackhawk produced primarily lead, copper and zinc from veins and replacement of limestone along faults.

17.8 **Turn Left on Highway 152.**
Road climb out of Hanover through outcrops of Pennsylvanian Magdalena Limestone. About halfway up the hill the limestones are cut by a wide igneous dike.

18.7 **Stop 6: Pennsylvanian Limestone.**

19.4 Road on right to quarry in Beartooth Quartzite. The silica-rich rock was used as a flux in the smelter.

19.8 **Stop 7: Contact metamorphism adjacent to the Copper Flat deposit.** Limestone has been metamorphosed to marble.

20.7 Pennsylvanian Magdalena Limestone.

22.3 Junction Highway 180. **Turn Right to return to Silver City**

References:

Steve J. Skotnicki, S. J. and C. A. Ferguson, 2007, Geologic Map of the Fort Bayard Quadrangle, Grant County, NM: NM Bureau Geology and Mineral Resources, Open-File Geologic Map 152 (https://geoinfo.nmt.edu/publications/maps/geologic/ofgm/details.cfml?volume=152)

Jones, W.R., Hernon, R.M., and Moore, S.L., 1967, General geology of the Santa Rita quadrangle, Grant County, NM: U.S. Geological Survey, Professional Paper 555, scale 1:24,000.

Information Sources:

NM Geologic Information: www.geoinfo.nmt.edu
Geologic Maps: https://ngmdb.usgs.gov/ngmdb/ngmdb_home.html

M. Dowse 1/2020