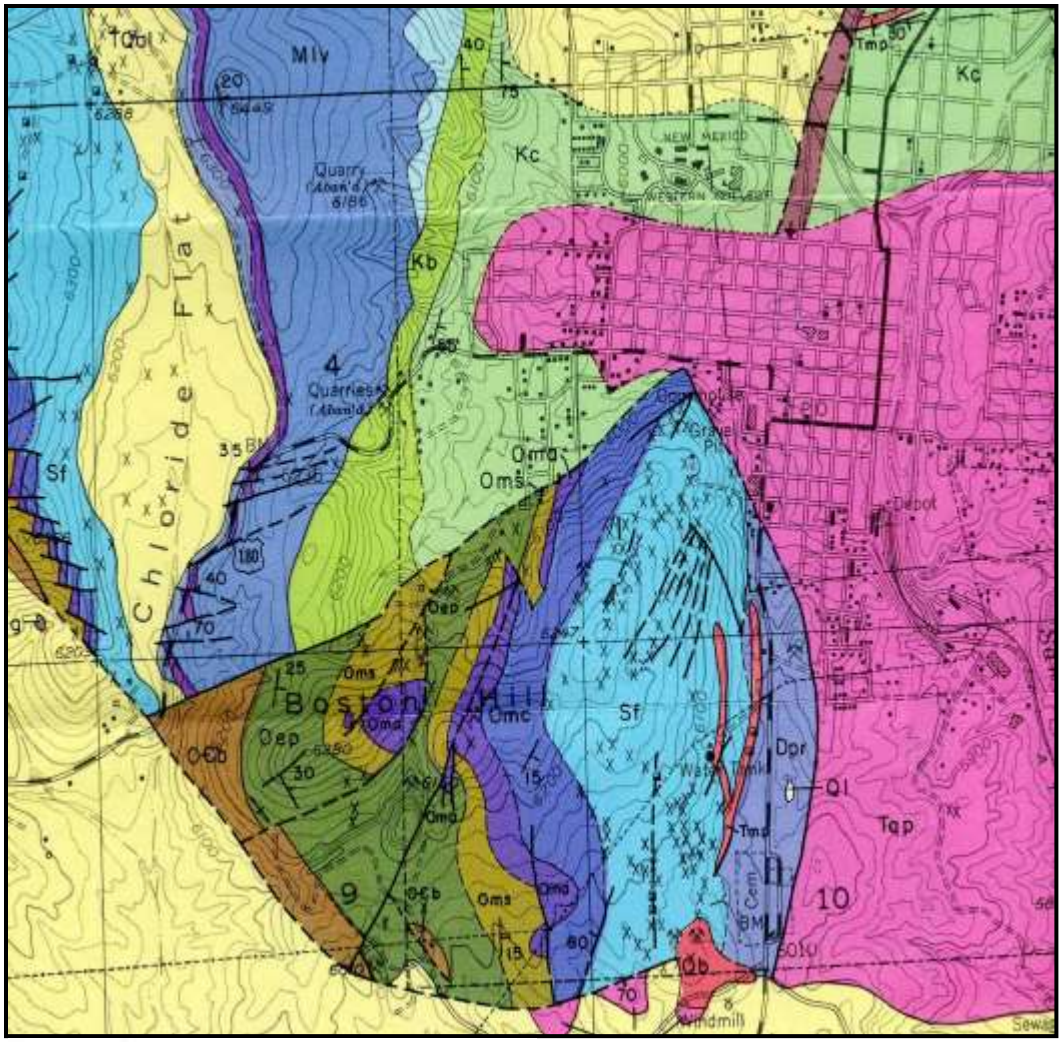
# Geologic Map of Boston Hill




0 mile

Map from: Cunningham, 1974.

M. E. Dowse: 5/2018

**Tqp | Tgp — Intermediate stocks**

Tqp: *Gray matrix with medium to large, euhedral to subhedral white andesine phenocrysts, smaller hornblende, quartz diorite porphyry*

Tgp: *Eighty Mountain-Gomez Peak stock has some large euhedral to subhedral pink orthoclase prophyroblasts, granodiorite porphyry*

**Kc — Colorado Formation** (UPPER CRETACEOUS)

*Mixed lithologies of impure sediments: arkose, sandstone, shale, limestone; light to dark, but generally drab colors; thickness not determined due to spotty nature of outcrops, but must exceed 1000 ft*

**Kb — Beartooth quartzite** (UPPER CRETACEOUS)

*Thick-bedded white to gray sandstone with minor interspersed conglomerate beds; iron stain; 155 ft*

**Mlv — Lake Valley Limestone** (LOWER MISSISSIPPIAN)

*Gray crinoidal limestone consisting of four members; lowest 40 ft is alternating massive limestone and slabby shaly partings (Andrecito); Alamogordo has 20 ft of massive light-gray cliff-forming cherty limestone overlain by 270 ft of similar but thinner-bedded limestone; Nunn is darker, coarsely crystalline, 50 ft; Tierra Blanca is light gray, crinoidal; 105 ft*

**Dpb / Dpr — Percha Shale** (DEVONIAN)

**Dpb, Box Member:** *Light-gray to buff, containing gray limestone nodules and lenses, 135 ft thick, grades into Dpr*

**Dpr, Ready Pay Member:** *Gray to black fissile shale, 290 ft thick*

**Sf — Fusselman Dolomite** (SILURIAN)

*Dark brownish-gray, slabby to massive dolomite; pitted surface and vugs common; mottled color in southern portion due to manganese stain; 100 ft*

Montoya Group (UPPER ORDOVICIAN)

**Omc — Cutter Dolomite**

*Light to medium brownish-gray sublithographic dolomite; 40 ft*

**Oma — Aleman Formation**

*Alternating bands (1 to 3") of medium-gray, fine-grained dolomite and pink to gray chert; 60 ft*

**Oms — Second Value Dolomite**

*Medium-gray, fine-grained, silty or sandy dolomite (Upham Dolomite Member); lowermost 3 to 20 ft is brown coarse dolomitic sandstone Cable Canyon member; 105 ft*

**Oep — El Paso Dolomite** (UPPER ORDOVICIAN / LOWER ORDOVICIAN)

*Medium-gray to gray-brown, often mottled, fine to coarsely crystalline dolomite, sandy dolomite, and mudstone; lower third is fuccoidal; upper two-thirds has lenses and nodules of pink to gray chert; contains intraformational breccias, channel and mound structures, and, in lower beds, scattered glauconite; 330 ft*

**O€b — Bliss Sandstone** (UPPER CAMBRIAN / LOWER ORDOVICIAN)

*Red-brown and gray sandstone with interstitial hematite; basal conglomerate grades to arkosic sandstone; beds of oolitic hematite, dolomite; upper dolomite bed represents Cambrian-Ordovician boundary; glauconite may mask hematite in some beds; 225 ft*

**Simplified Geologic History of Boston Hill**

Paleozoic (Cambrian to Permian):
Rising seas in the Late Cambrian deposited beach sands (Bliss Sandstone) across the region. For most of the Paleozoic the area was covered by a warm shallow sea where limestone was deposited. The limestones of the Lower Paleozoic were later altered to dolomite (like limestone but containing magnesium as well as calcium). The Percha Shale, deposited in the Devonian, occurred when mud was deposited. At the end of the Paleozoic the region underwent uplift and mountain building. This resulted in erosion of some of the previously deposited layers (Pennsylvanian and Permian) in the Silver City Area.

Mesozoic (Cretaceous):
The sea slowly rose across the landscape again in the Cretaceous depositing beach sands (Beartooth Quartzite) across the region. The Beartooth Quartzite unconformably overlies the Mississippian Lake Valley Limestone at Boston Hill. A rounded pebble conglomerate is often present at the bottom of the Beartooth. As the seas deepened mud was deposited (Colorado Shale).

Cenozoic:
Faulting, volcanism and erosion during the Cenozoic helped to shape the landscape we see today. The first event was the uplift and folding of the Silver City Range. The Paleozoic and Mesozoic sedimentary rocks were uplifted and tilted toward the southeast with the rocks on the east side of the range being tilted nearly 90 degrees. Next the rocks were intruded by the Silver City Stock, an igneous magma that cooled within the Earth. The final event was basin and range normal faulting along the west side of the Silver City Range that uplifted the mountains Range again. Gravels were deposited on the down-dropped side of the faults.

Mineralization at Boston Hill: The mineral deposits (manganese bearing iron) were formed by hydrothermal (hot water) fluids from the Silver City Stock that moved into the sedimentary rocks. The mineralization occurs in fractures and breccias (broken rock) in the Lower Paleozoic layers, but the fractures did not penetrate the Percha Shale. Therefore the shale acted as a dam blocking further movement of the fluids and the mineralization is concentrated in the rocks just below the shale layer.

For Further Information: *These publications are available from www.geoinfo.nmt.edu*


- Cunningham, J. E., 1974, Geologic map and sections of Silver City Quadrangle, New Mexico: NMBMMR Geologic Map 30.
- Entwistle, L. P., 1944, Manganiferous Iron-ore deposits near Silver City, NM: NMBMMR Bulletin 19.
- Hildebrand, R. S., Ferguson, C. A. and Skotnicki, S., 2008, Preliminary geologic map of the Silver City quadrangle, Grant County, New Mexico: NMBMMR OFGM 164, 1:24,000.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