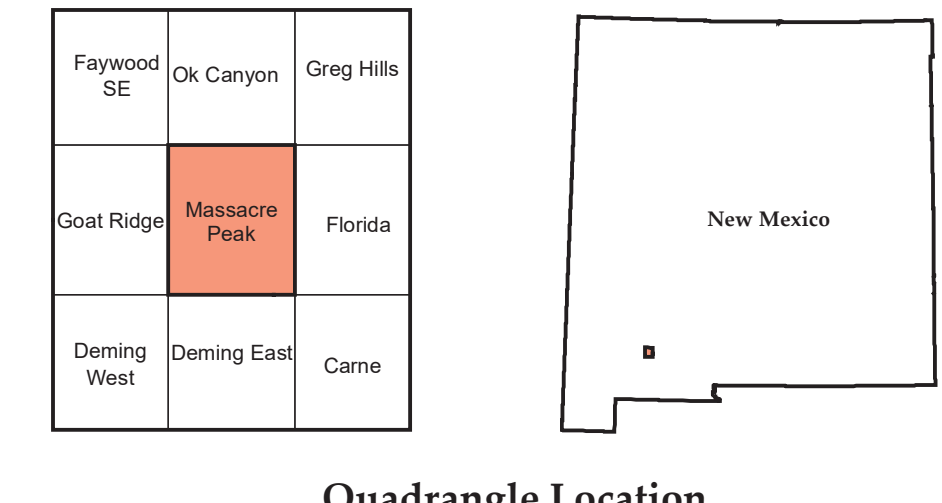
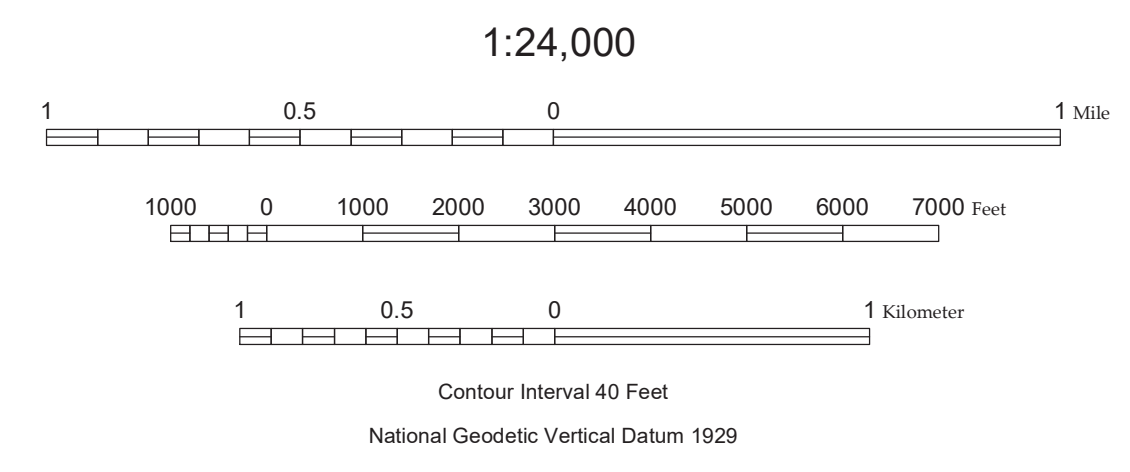


Explanation of Map

- 01.01.01 Contact—Identity and existence are certain. Location is accurate.
01.01.03 Contact—Identity and existence are certain. Location is approximate.
02.01.01 Fault (generic; vertical, subvertical, or high-angle; or unknown or unspecified orientation or sense of slip)—Identity and existence are certain. Location is accurate.
02.01.03 Fault (generic; vertical, subvertical, or high-angle; or unknown or unspecified orientation or sense of slip)—Identity and existence are certain. Location is approximate.
02.02.01 Normal fault—Identity and existence are certain. Location is accurate. Ball and bar on downthrown block.
02.02.03 Normal fault—Identity and existence are certain. Location is approximate. Ball and bar on downthrown block.
02.02.07 Normal fault—Identity and existence are certain. Location is concealed. Ball and bar on downthrown block.
02.08.01 Thrust fault (1st option)—Identity and existence are certain. Location is accurate. Sawtooth on upper (tectonically higher) plate.
31.08 Map
06.03 Vertical bedding—Showing strike.
08.01.03 Vertical generic (origin not known or not specified) foliation—Showing strike.
08.02.03 Inclined flow banding, lamination, layering, or foliation in igneous rock—Showing strike and dip.
08.02.04 Vertical flow banding, lamination, layering, or foliation in igneous rock—Showing strike.
06.02 Inclined bedding—Showing strike and dip.
08.03.02 Inclined metamorphic or tectonic foliation—Showing strike and dip.
31.21 Sample locality—Showing sample number.
31.10 Cross section line and label

- 01-01-00-00-00—Unit—Qca—Undifferentiated colluvium-alluvium (Quaternary)—Thin talus-slope veneers and colluvial and alluvial fills on arroyo valley sideslopes, in mountain canyons and on piedmont slopes
01-02-00-00-00—Unit—Qpy—Younger piedmont-slope arroyo alluvium (Quaternary)—Fills (silty to gravely) of shallow drainages cut below older fan and erosion surfaces graded to closed basins
01-03-00-00-00—Unit—Qpo—Older piedmont-slope alluvium (Quaternary)—Unconsolidated fan deposits, piedmont-valley fills, and erosion surface veneers; associated with surfaces graded to closed basins; uppermost beds often cemented with pedogenic carbonate
01-04-00-00-00—Unit—Qm—Mimbre formation (Pleistocene) (Quaternary)—Piedmont-slope facies; fan gravel and conglomerate with interbedded sandy zones; includes thin erosion-surface veneers near mountain fronts; upper layers contain thick carbonate accumulations (caliche); thickness to 40ft
01-05-00-00-00—Unit—Qtm—Mimbres formation (Pliocene-Pleistocene) (Tertiary)—Similar to Qm except contains more intensely weathered boulders and thicker carbonate zones and is often preserved in higher level terrace remnants than those composed of Qm
01-06-00-00-00—Unit—Tbs—Sedimentary Member of Bear Springs Basalt (Tertiary)—Interbedded tuffaceous sandstone and sandy conglomerates; thickness generally less than 100ft
01-07-00-00-00—Unit—Tbs—Undifferentiated flows and intrusives of Bear Springs Basalt (Tertiary)—Dark-gray to black basaltic andesite (Hawaiite) and basalt; includes some agglutinated scoriaceous material
01-08-00-00-00—Unit—Tkn—Kneading Nun Tuff (Oligocene) (Tertiary)—Pale-red crystal-vitric ash-flow tuff, weathers orange brown; contains 18 to 36 percent phenocrysts of sandine, quartz, oligoclase, and biotite; abundant flattened pumice fragments; thickness 80ft
01-08-00-00-00—Unit—Tsa—Ash-flow tuff unit of Sugarlump Formation (Tertiary)—Grayish-pink crystal-vitric ash-flow tuff, weathers pale red; contains 18 to 33 percent phenocrysts of oligoclase, sandine, quartz, and biotite; abundant flattened pumice fragments; thickness 70ft
01-10-00-00-00—Unit—Ts—Sedimentary unit of Sugarlump Formation (Tertiary)—Interbedded light-colored, tuffaceous volcanoclastic mudstones, sandstones, and conglomerates; includes a lower 12-ft-thick vitric ash-flow tuff and middle 32-ft-thick vitric ash-flow tuff; total thickness to 400 ft
02-00-00-00-00—Heading—Rubio Peak Formation—Rubio Peak Formation (Tertiary)—Rubio Peak Formation
02-01-00-00-00—Unit—Ttp—Granodiorite porphyry (Oligocene) (Tertiary)—Light to medium-gray with abundant white feldspar and few hornblende phenocrysts in matrix of orthoclase, plagioclase, quartz, and minor clinopyroxene; stocks and sill-like
02-02-00-00-00—Unit—Trf—Undifferentiated flows and intrusives (Eocene) of Rubio Peak Formation (Tertiary)—Dark-gray, greenish-gray, and reddish-brown basalts, basaltic andesites, and latites; thinly laminated to dense massive, intrusive-extrusive complexes; mineralogy similar to Tri
02-03-00-00-00—Unit—Trf—Flows of Rubio Peak Formation (Tertiary)—Dark-gray to black, basalts, basaltic andesites, and latites; dense to vesicular; slightly porphyritic to nonporphyritic
02-04-00-00-00—Unit—Tri—Intrusives of Rubio Peak Formation (Tertiary)—Light-to-dark-gray and brownish basalts, basaltic andesites, andesites, and dacites; dikes, plugs, and small stocks; contain up to 50 percent phenocrysts of plagioclase, hornblende, augite, hypersthene, and biotite
02-05-00-00-00—Unit—Trt—Tuff breccias and conglomerates of Rubio Peak Formation (Tertiary)—Grayish-orange, light- to dark-gray, talus, lahars, and volcanoclastic deposits; boulders to 5 ft surrounded by tuffaceous material; bedding generally indistinct except in sandy and conglomeratic lenses; maximum thickness about 1,000 ft
02-06-00-00-00—Unit—Trs—Starvation Draw member of Rubio Peak Formation (Tertiary)—Interbedded pebble to boulder conglomerates, red sandstones, mudstones, and shales; clasts in lower conglomerates mostly from Precambrian, Paleozoic, and Cretaceous rocks; mostly volcanic rock in upper beds; thickness to about 500ft
03-01-00-00-00—Unit—Kc—Colorado Formation (Cretaceous)—Interbedded, gray, fossiliferous shales, thin-bedded limestones, calcarenites, and flint clays; thickness to 170ft
03-02-00-00-00—Unit—Ks—Sarten Sandstone (Cretaceous)—Light-gray to yellowish-gray, medium- to massive-bedded, fine- to medium-grained sandstone; few pebble conglomeratic beds; crossbedding and ripple marks fairly common; fossiliferous, gray, shaly marls at base and calcareous sandstone at top; thickness to 300 ft
03-03-00-00-00—Unit—Pa—Abo Formation (Permian)—Interbedded, reddish, chert-pebble breccias, chert-limestone-pebble conglomerates, red shale, shaly limestone, and fine sandstone; thickness to 300ft
03-04-00-00-00—Unit—Tm—Magdalena Group (Pennsylvanian)—Basal white chert conglomerate overlain by interbedded limestone, shale, and calcareous siltstones; thickness to 180 ft
03-05-00-00-00—Unit—Mlv—Lake Vally Formation (Mississippian)—Light-gray to black, thin- to medium-bedded, fossiliferous limestones and marls; abundant chert lenses and knotty nodules; some shale in lower members; intensely altered except in Rattlesnake Ridge and small outcrop 0.3 mi northwest of Lucky mine; thickness to 400 ft
03-06-00-00-00—Unit—Dp—Percha Shale (Devonian)—Dark-gray shale with limestone nodules in upper part; only exposure is at east end of Fluorite ridge; partly silicified; completely faulted; thickness about 500 ft
03-07-00-00-00—Unit—Sf—Fusselman Dolomite (Silurian)—Medium-gray, massive-bedded dolomite and dolomitic limestone; only exposure is at southeast end of Fluorite Ridge; partly silicified; completely faulted; thickness about 500 ft
03-08-00-00-00—Unit—Om—Montoya Dolomite (Ordovician)—Dark-gray, medium- to thick-bedded, dolomite and dolomitic limestone; abundant chert; only exposures are at southeast end of Fluorite Ridge; altered and faulted; thickness about 300 ft
03-09-00-00-00—Unit—Oe—El Paso Limestone (Ordovician)—Medium-gray, medium-bedded limestone and dolomitic limestone; only exposures are at southeast end of Fluorite Ridge; altered and faulted; thickness about 400 ft
03-10-00-00-00—Unit—O_b—Bliss Sandstone (Cambrian)—Dark-reddish-brown and greenish-gray, thin- to thick-bedded sandstone; only exposures are at southeast end of Fluorite Ridge; thickness about 100ft
03-11-00-00-00—Unit—Pc—Precambrian (Precambrian)—Gray and red granitic diorite(?), amphibolite and feldspar-quartz-mica gneiss and schist, only exposed at southeast end of Fluorite Ridge

Base map from U.S. Geological Survey 1964. North American Datum of 1927 (NAD27). Projection and 100-meter grid: Universal Transverse Mercator, Zone 13S, shown in blue. 10,000-foot ticks: New Mexico Coordinate System of 1927 (west zone), shown in red.



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Digital layout and cartography by the NMBGMR Map Production Group: Phil L. Miller, Amy L. Dunn, and Andi Knight

Geologic Map of the Massacre Peak 7.5-Minute Quadrangle, Luna County, New Mexico

1982
by
Russell E. Clemons'

New Mexico Bureau of Geology and Mineral Resources, 801 Leroy Pl., Socorro, New Mexico 87801

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