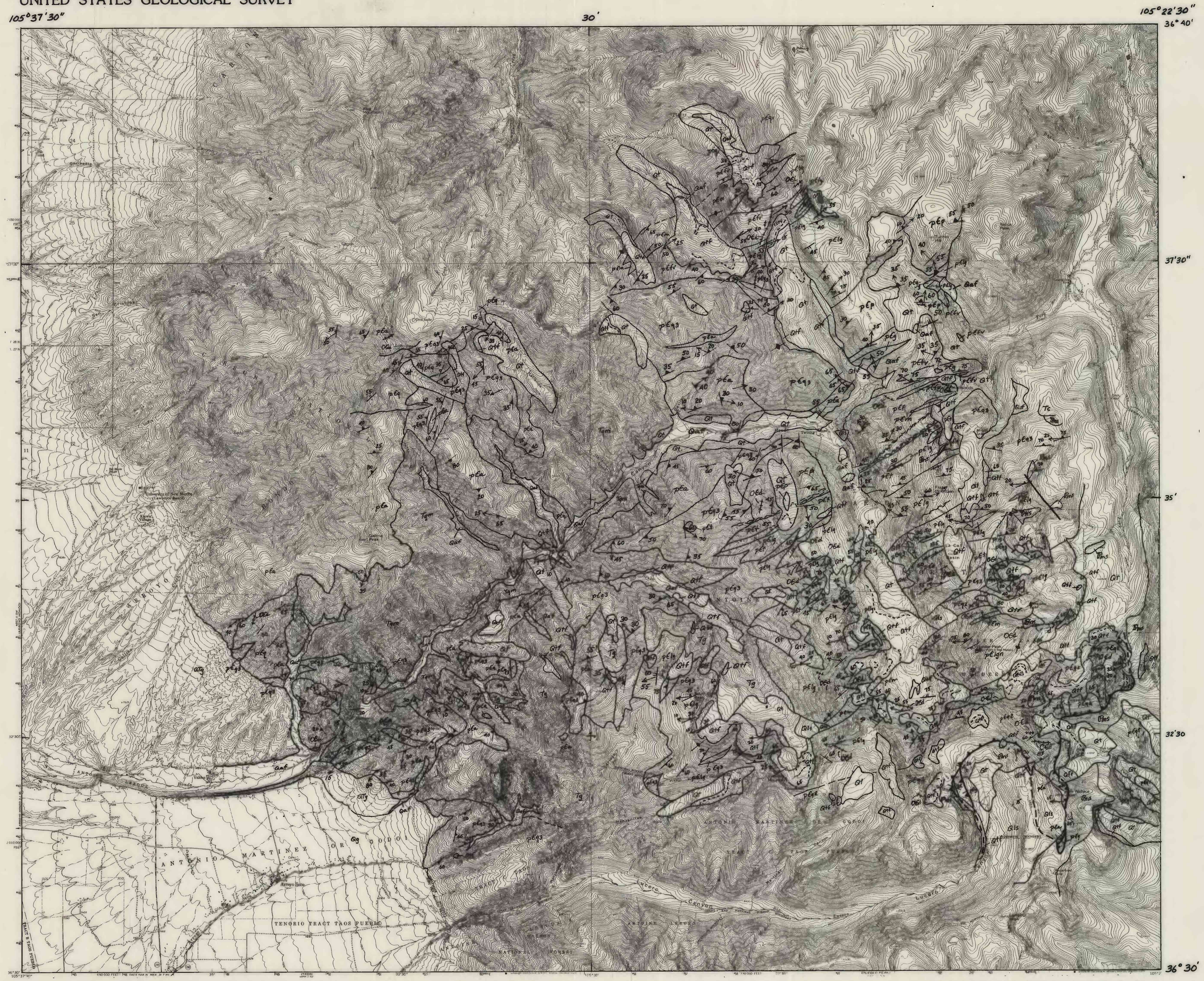
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT
81-1077



Base from U.S. Geological Survey 7 1/2' quadrangles, 1:24,000,
Questa, Red River, Arroyo Seco and Wheeler Peak

SCALE 1:50 000
1 ½ 0 1 2 3 MILES
1 .5 0 1 2 3 KILOMETERS
CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL

Geology mapped in 1980 by J. C. Reed, Jr., J. M. Robertson, and P. W. Lipman, assisted by J. E. Jenkins, I. Klich, and D. A. Sawyer

Geology on lands of the Taos Pueblo and on lands under litigation between the Taos Pueblo and the United States based on published maps (Clark and Read, 1972; Condie, 1980) and on interpretation of aerial photographs.

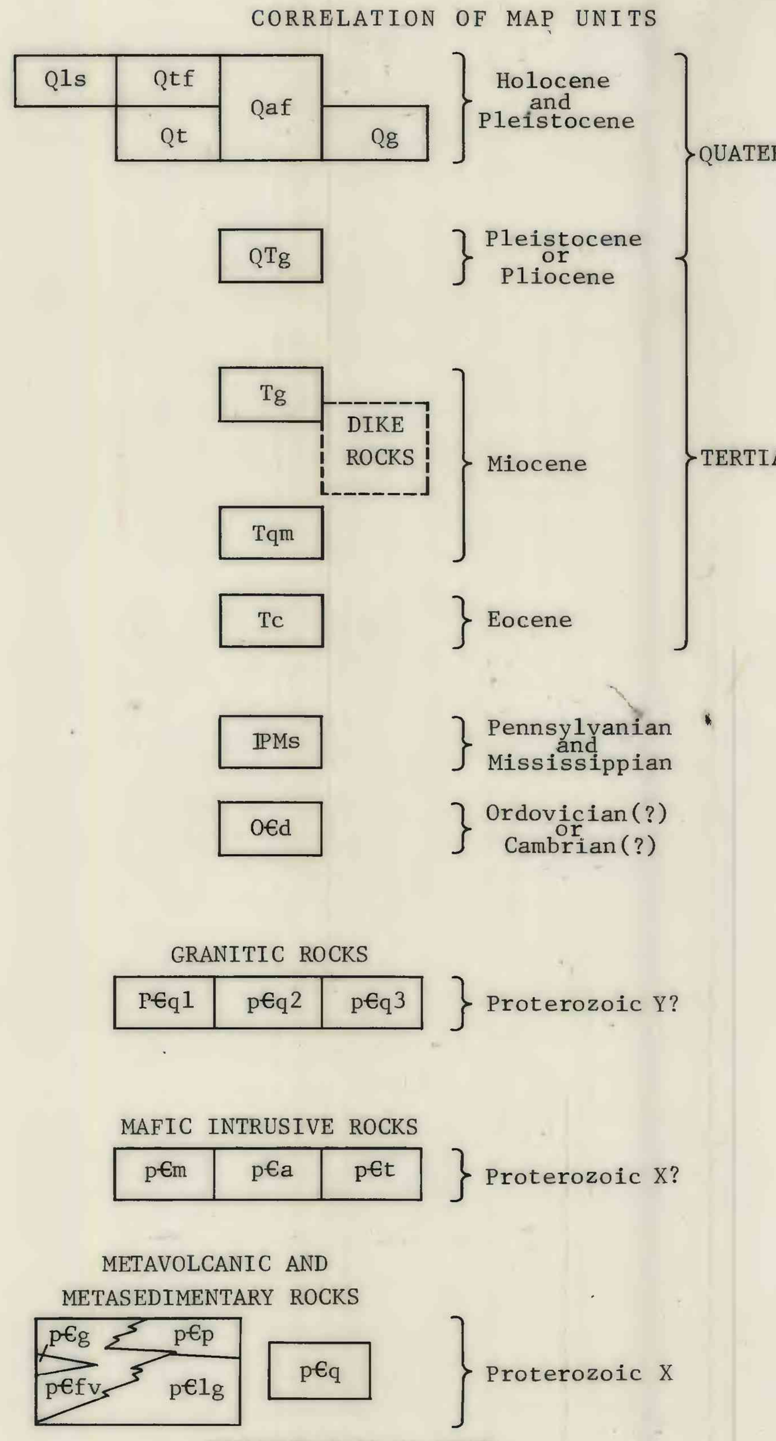
PRELIMINARY GEOLOGIC MAP OF THE WHEELER PEAK-HONDO CANYON AREA, TAOS COUNTY, NEW MEXICO

By

John C. Reed, Jr., James M. Robertson, and Peter W. Lipman

1981

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qaf ALLUVIUM (HOLOCENE AND PLEISTOCENE)--Unweathered gravel, sand, and silt on floodplains and alluvial fans. Includes swamp deposits in local closed depressions and outwash deposits of Pleistocene age

Qtf TALUS (HOLOCENE)--Angular unweathered rock debris at base of steep slopes and cliffs. Also includes rock glaciers and moraines of neoglacial age. Short dashes indicate crests of conspicuous ridges on rock glaciers, neoglacial moraines, and protalus ramparts

Qls LANDSLIDE DEPOSITS (HOLOCENE)--Unsorted debris on slopes marked by closed depressions, pull-away scarps, and other evidence of downslope movement. Most are inactive, but one near Twining shows evidence of current movement

Qt TILL (PLEISTOCENE)--Poorly sorted and rudely stratified to unstratified glacial clay, silt, and sand containing pebbles, cobbles, and boulders ranging from angular to subrounded

Qg GRAVEL (PLEISTOCENE)--Unweathered well-rounded and well-sorted gravel locally interstratified with sand and silt. Veneers pediment surface west of the mountain front and south of Rio Hondo

QTg GRAVEL (PLEISTOCENE OR PLIOCENE)--Weathered well-rounded and poorly sorted gravel in matrix of yellow-brown sandy silt. Pebbles and cobbles of amphibolite and amphibole gneiss are thoroughly decomposed in most places. Assigned to the Servilleta Formation by Lambert (1966)

Tqm QUARTZ MONZONITE (MIOCENE)--Coarse-grained nonfoliated porphyritic hornblende-biotite quartz monzonite. Contains gray to pink potassium feldspar phenocrysts 1-4 cm long set in matrix composed of gray quartz, white plagioclase, and scattered euhedral to subhedral grains of hornblende and biotite

Tg GRANITE (MIOCENE)--Medium-grained nonfoliated light-colored biotite granite. Generally light gray to white and commonly contains round quartz phenocrysts 0.25-0.5 cm in diameter

DIKE ROCKS--Dikes of porphyritic and nonporphyritic rhyolite, quartz latite, and andesite are widespread throughout map area and are ubiquitous in a zone trending northwest from near the head of the South Fork of Rio Hondo through Lobo Peak. Dikes of this swarm cut quartz monzonite northwest of Rio Hondo and granite in the valley of the South Fork but no dikes have been found cutting the Tertiary granite in the drainage of Arroyo Seco

Tc CONGLOMERATE (EOCENE)--Well-rounded pebbles, cobbles, and boulders of quartz, quartzite, and quartzite conglomerate in well-indurated matrix of rudely stratified reddish-brown sand. Clasts are coated with manganese oxides. Exposed in small erosional remnants north of Bull-of-the-Woods Mountain and east of Middle Fork Lake

ℙMs PALEOZOIC SEDIMENTARY ROCKS--Well-indurated quartz- and chert-pebble conglomerate, coarse-grained calcareous sandstone, fine-grained sandy and cherty limestone, and black shale of Espiritu Santo and Tererro Formations of Mississippian age and Magdalena Group of Pennsylvanian age (Clark and Read, 1972)

O€d PALEOZOIC DIABASE--Fine- to medium-grained dark-green to black diabase in sheared and faintly foliated dikes as much as 20 m thick. These dikes were considered to be of Precambrian age by Clark and Read (1972) and Condie (1980), but they closely resemble dikes of similar trend in southwestern Colorado that are of Cambrian or Ordovician age (Hansen and Peterman, 1971; Tweto, 1980)

PRECAMBRIAN ROCKS
GRANITIC ROCKS

p€q3 QUARTZ MONZONITE OF HONDO CANYON (PROTEROZOIC Y?)--Fine- to medium-grained light-gray to pink equigranular cataclastic quartz monzonite ranging from well-foliated mylonite gneiss and blastomylonite to nonfoliated recrystallized cataclasite. Transitional into unit p€q2

p€q2 QUARTZ MONZONITE OF OLD MIKE PEAK (PROTEROZOIC Y?)--Medium- to coarse-grained equigranular pink to gray biotite quartz monzonite, generally displaying strong cataclastic foliation, and locally passing into well-foliated mylonite gneiss

p€q1 QUARTZ MONZONITE OF PLACER FORK (PROTEROZOIC Y?)--Medium-grained pink equigranular biotite quartz monzonite; massive to very faintly foliated

MAFIC INTRUSIVE ROCKS

p€m MAFIC AND ULTRAMAFIC INTRUSIVE ROCKS (PROTEROZOIC Y?)--Medium- to coarse-grained nonlayered metagabbro and metaperidotite(?) in pods and sills in metasedimentary and metavolcanic rocks

p€a AMPHIBOLITE (PROTEROZOIC X?)--Medium- to coarse-grained nonlayered to rudely layered amphibolite locally interleaved with fine-grained light-gray biotite gneiss and commonly extensively veined by pegmatite, tonalite, and fine-grained quartz monzonite

p€t TONALITE (PROTEROZOIC X?)--Medium- to fine-grained, medium- to light-gray hornblende-biotite tonalite, generally displaying conspicuous cataclastic foliation and locally passing into mylonite gneiss and phyllonite

METASEDIMENTARY AND METAVOLCANIC ROCKS

p€fv FELSIC VOLCANIC AND HYPABYSSAL ROCKS (PROTEROZOIC X)--Well-layered to massive light-gray to pink well-foliated felsite and felsic phyllite, generally containing round quartz grains 1-5 mm in diameter, probably partly resorbed phenocrysts. Locally contains sheared clasts of amphibolite, amphibole gneiss, and felsite distinguished from the matrix by differences in color or quartz phenocryst(?) content. Fragmental textures and rude bedding suggest that many rocks of this unit are volcanic or volcaniclastic, but some may be hypabyssal intrusives

p€g GREENSTONE--Fine-grained weakly foliated nonlayered calcareous greenstone

p€p PHYLLITE--Lusterous medium- to dark-greenish gray quartz-sericite-biotite(?) phyllite, locally calcareous, and locally containing thin beds of dark gray metasiltstone and metagraywacke, thin layers and lenses of amphibolite, amphibole schist, marble, ferruginous quartzite, and magnetite iron-formation. In part derived by retrogressive metamorphism of felsic volcanic rocks

p€lg LAYERED GNEISS--Fine- to medium-grained thinly interlayered light greenish-gray amphibole gneiss, dark-green fine- to medium-grained amphibolite, and light- to medium-gray biotite gneiss. Locally contains layers and lenses of felsic volcanic rocks a few meters thick, gray marble a few meters thick, and layers of dark blue to purple ferruginous quartzite and magnetite iron-formation as thick as 5 m. Includes greenstone and greenschist displaying well-preserved volcanic breccias, amygdules, and volcanic textures 1.5 to 2.5 km southeast of Gold Hill. Also includes layers and lenses of bedded chert, one of which near the contact with the phyllite 3 km southeast of Gold Hill, is at least 25 m thick and displays well-preserved epigenetic breccia and chert-pebble conglomerate, some with graded bedding

p€q QUARTZITE--Fine-grained white to bluish-gray rudely layered quartzite, locally interlayered with quartz-muscovite schist. Quartzite displays thin dark heavy-mineral streaks parallel to bedding and cross-bedding, and locally contains lenses of quartz-pebble conglomerate a few centimeters thick. Quartzite south and east of Blue Lake has not been examined in the field but is described by Clark and Read (1972) as"... gray-white, coarsely crystalline, slabby and locally massive... Magnetite-rich layers are common and parallel flakes of white mica are disseminated throughout the rock...". Contact relations of quartzite to adjacent Precambrian rocks are uncertain

CONTACT--Most approximately located; contacts of surficial units in part sketched from aerial photographs

U
D
HIGH ANGLE FAULT--U, upthrown side; D, downthrown side

THRUST FAULT--Teeth on upper plate; dashed where inferred beneath younger deposits

OUTLINE OR TALUS LOBE OR CREST OF PROTALUS RAMPART OR MORAINAL RIDGE

20 STRIKE AND DIP OF BEDDING

STRIKE AND DIP OF LAYERING

30 inclined

vertical

STRIKE AND DIP OF FOLIATION

60 inclined

vertical

DIRECTION AND PLUNGE OF LINEATION--Marked by mineral alignment, elongated mineral aggregates, or axes of crenulations

10 inclined

horizontal

REFERENCES CITED

Clark, K. F. and Read, C. B., 1972, Geology and ore deposits of Eagle Nest area, New Mexico: New Mexico Bureau of Mines and Mineral Resources Bulletin 94, 149 p.

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