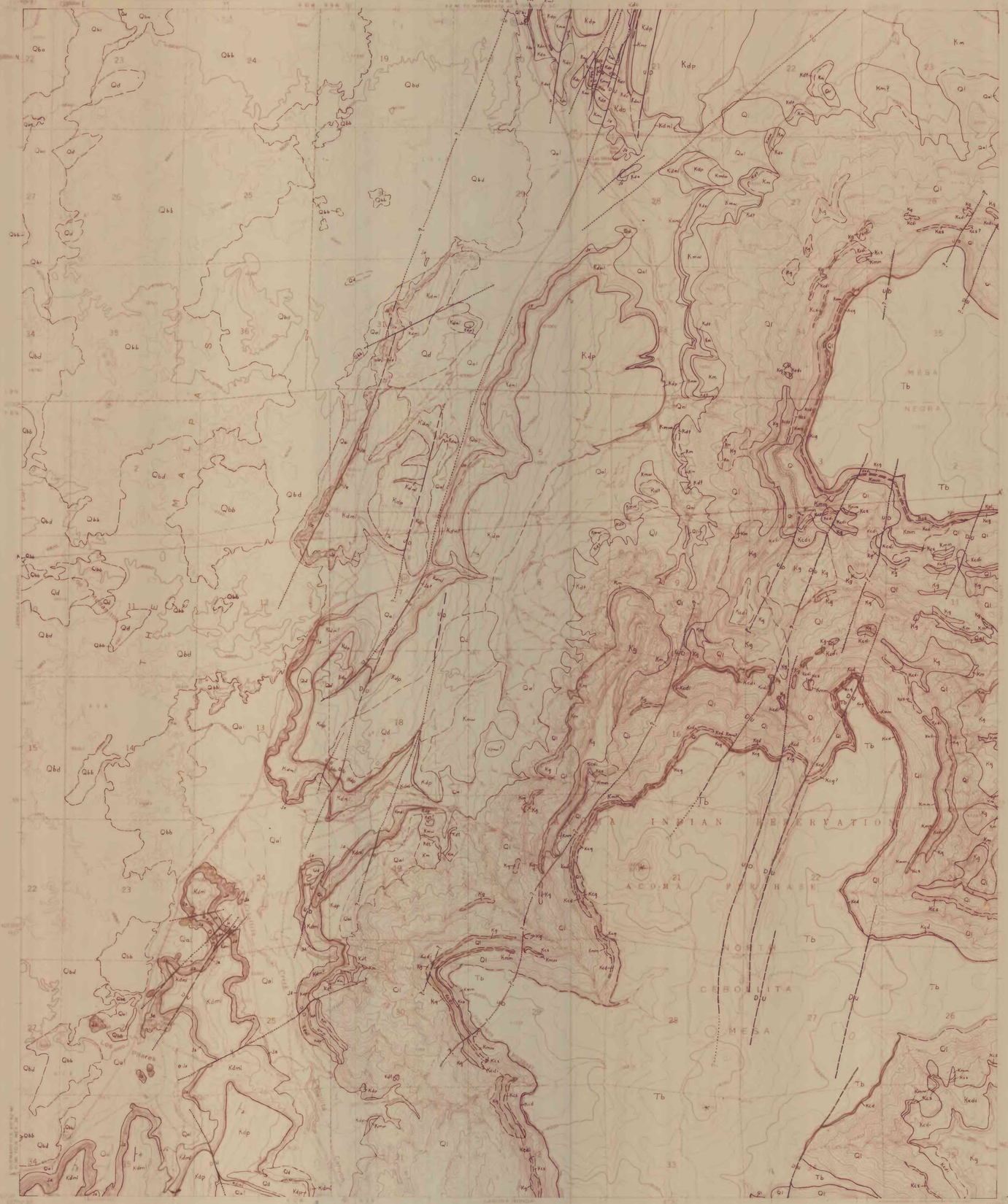
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

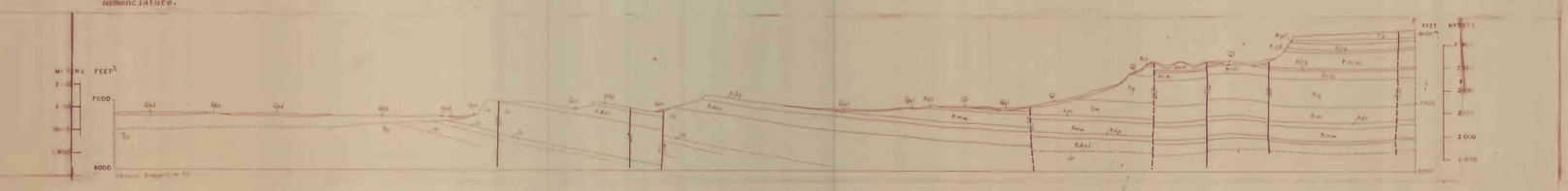
OPEN-FILE REPORT
77-240
LOS PILARES QUAD., NEW MEXICO



Base from U.S. Geological Survey, 1961.

Geology mapped in 1970.

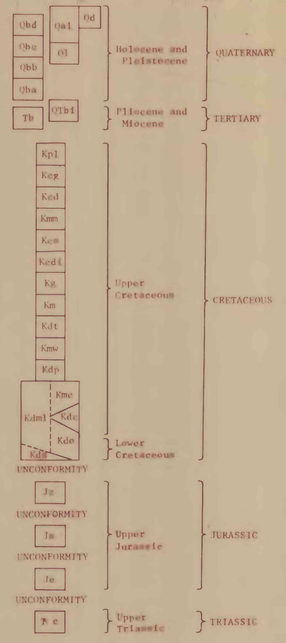
U.S. Geological Survey
OPEN FILE REPORT
This map is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.



PRELIMINARY GEOLOGIC MAP OF THE LOS PILARES QUADRANGLE, VALENCIA COUNTY, NEW MEXICO

By
Charles H. Maxwell
1977

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qal ALLUVIUM (HOLOCENE AND PLEISTOCENE)--Composed largely of clayey silt and fine-grained sand, locally few coarse sand grains or pebbles; as much as 15 m exposed in recent gullies. Includes recent eolian deposits and some colluvial deposits

Qd DUNE SAND (HOLOCENE)--Recent accumulations of silt and sand in dunes and sheets

Qbd, Qbc, Qbb, Qba BASALT FLOWS FROM ZUNI CENTERS (HOLOCENE AND PLEISTOCENE)--Four flows originate at the Zuni volcanic centers southwest of the quadrangle. The youngest flow, is Qbd with progressively older ones Qbc, Qbb and Qba. The youngest flow (Qbd) is apparently about 1,000 years old (Nichols, 1946). Flows are mostly nonporphyritic, average modal composition of all flows is augite 16 percent, plagioclase (Ab_{33}), 31 percent, brown to black volcanic glass, 53 percent (Thaden and others, 1967)

Ql LANDSLIDE DEPOSITS (HOLOCENE AND PLEISTOCENE)--Mostly toreva-block slides of basalt, Gallup and Dakota Sandstones and Mancos Shale. Includes some rock and mud-flow slides, talus, fan accumulations and alluvium, some of which are derived from outcrops and some from landslide debris. The slides are generally older than the alluvium

QTbi BASALT DIKE (PLIOCENE AND MIOCENE)--Located at north edge of map

Tb BASALT FLOWS (PLIOCENE AND MIOCENE)--Cap high mesas, generally aphanitic and vesicular olivine basalts and associated scoria. Generally 20-30 m thick, may be 100 m or more near centers of eruption

Kpl POINT LOOKOUT SANDSTONE (UPPER CRETACEOUS)--Yellowish-gray fine-grained thin to massive even-bedded sandstone, local areas of channeling and cross stratification. As much as 30 m exposed

CREVASSE CANYON (UPPER CRETACEOUS)

Kcg Gibson Coal Member--Largely covered by landslide debris, most exposures interpreted from aerial photographs. Sparse data indicate thin-bedded sandstone, siltstone and shale with numerous interbeds of highly carbonaceous shale and coal a few decimeters to a probable maximum of 1 m thick. Total thickness about 20-25 m

Kcd Dalton Sandstone Member--Light-gray and yellowish-gray fine- and medium-grained thin- to thick-bedded sandstone. Thickness about 15 m

Kcs Stray sandstone member--Yellowish-gray fine- to coarse-grained thin- to medium-bedded sandstone. Thickness 35-45 m

Kcdi Dilco Coal Member--Light yellowish-gray to white thin-bedded sandstone and siltstone with interbedded light- to dark-gray carbonaceous shale and coal beds 1/2 to as much as 1 1/2 m thick, some of which may constitute a future resource. Thickness 35-45 m

Kg GALLUP SANDSTONE (UPPER CRETACEOUS)--Three sandstone tongues and two interbedded Mancos Shale tongues. The sandstone is light brown and light gray, fine to medium grained, thin to massive bedded with local areas of cross stratification and local lenses of dark-brown weathering sandy calcareous limestone. The shale tongues are light yellowish-gray and light-gray friable silty shale with thin interbeds of tan laminated silty sandstone. Total thickness 125-150 m

MANCOS SHALE (UPPER CRETACEOUS)

Kmm Mulatto Tongue--Fissile olive-gray shale, pale yellowish-brown and yellowish-gray siltstone and fine-grained silty sandstone. Thickness 70-80 m

Km Main body--Light- to dark-gray friable shale and silty shale with local lenses of calcareous, siliceous, and sandy siltstone and fine-grained sandstone in the upper part. Thickness 70-90 m

Kmw Whitewater Arroyo Shale Tongue--Shale, dark gray, weathers light gray and grayish tan; uppermost part is light-gray silty shale and siltstone which is transitional into overlying unit. The Mancos Shale weathers to steep soft slopes almost entirely covered by colluvium; talus derived from overlying sandstone, or by landslides. Thickness 50-60 m

Kmc Clay Mesa Shale Tongue--Shale, dark gray, fissile. Lower 15 m contains 3 thin light greenish-gray bentonite beds and numerous brown weathering dark-gray limestone concretions 10-20 cm thick and as much as 1 m in diameter. Cone-in-cone and septarian concretions common. Thickness 10-20 m

Kdmi DAKOTA SANDSTONE AND MANCOS SHALE (UPPER AND LOWER CRETACEOUS)--Clay Mesa Shale Tongue of Mancos Shale and Oak Canyon Member of Dakota Sandstone, shown undivided where Cubero Sandstone Tongue of Dakota Formation not present. Thickness 40-60 m

DAKOTA SANDSTONE

Kdt Twowells Sandstone Tongue (Upper Cretaceous)--Sandstone, fine to very fine grained, silty, local thin lenses medium to coarse grained; light gray, weathers to grayish orange, light brown and tan; thin to medium bedded. Local thicker lenses have foreset-type crossbeds, resistant slabby beds at top grading downward to silty sandstone with thin interbeds of siltstone in lower part, contains many imprints, burrows, trails, and disturbed bedding. Uppermost part contains "[illegible]" [illegible] Stanton (Landes and others, 1973, p. 19). Thickness 5-25 m

Kdp Paguate Sandstone Tongue (Upper Cretaceous)--Light brown and tan, fine to very fine grained, local lenses are medium to coarse grained, thin to medium bedded. Thickness 10-30 m

Kdc Cubero Sandstone Tongue (Upper Cretaceous)--Light grayish-tan, weathers yellowish-gray, very fine grained sandstone and siltstone. Carbonaceous plant fragments, tracks, trails, and borings are abundant, especially near top. Brown-weathering limestone concretions, locally very fossiliferous, occur in upper part of unit; lower part contains thin to very thin interbeds of very fine grained sandstone, siltstone, limestone, and shale; locally very fossiliferous. Pinches out in northern part of quadrangle. Thickness 0-10 m

Kdd Oak Canyon Member (Upper and Lower Cretaceous)--Sandstone and siltstone, light gray and grayish-tan, locally calcareous or carbonaceous. Sandstone is very fine grained and thin-bedded; siltstone is generally shaly with abundant finely comminuted carbonaceous material; numerous thin-bedded light-gray, brown weathering, fossiliferous limestone lenses and concretions, and limestone or aragonite cone-in-cone concretions. Thickness 15-30 m

Kdd Basal sandstone units of the Oak Canyon Member (Lower Cretaceous)--Comprising two distinct and easily separated units, a lower fluviatile conglomerate and sandstone and an upper paralic sandstone. Mapped together because of space limitations. Upper unit; sandstone, light gray to white, thin bedded, fine to medium grained, angular to well rounded grains predominantly of quartz, with sparse feldspar, chert, and quartzite grains; siliceous cement. Generally smooth, even bedded, locally disturbed by trails and burrows. Present only along northern edge of quadrangle. Lower unit; sandstone and conglomerate, light gray to white, medium to coarse grained, poorly sorted, rounded to angular grains; festoon crossbedding. Lenses and layers of conglomerate, especially at base of unit, have prominent scour and fill structures. Not mapped separately but present from center of quadrangle thickening southward at base of Kdmi. Thickness 0-20 m

Js ZUNI SANDSTONE (UPPER JURASSIC)--Sandstone, variable in color, generally yellowish gray or tan, locally chalk white, fine to medium grained; well rounded grains largely of quartz, very well sorted. Large-scale eolian cross beds. Conspicuous bleached zone at top of unit, under the basal Dakota Sandstone. Thickness 110-170 m

Js SUMMERVILLE FORMATION (UPPER JURASSIC)--Shown only on cross section. Thickness 20-25 m

Je ENTRADA SANDSTONE (UPPER JURASSIC)--Shown only on cross section, Thickness 50-60 m

Ꞧc CHINLE SHALE (UPPER TRIASSIC)--Shown only on cross section. Thickness more than 600 m

REFERENCES

Landis, E. R., Dane, C. H., and Cobban, W. A., 1973, Stratigraphic terminology of the Dakota Sandstone and Mancos Shale, West-central New Mexico: U.S. Geol. Survey Bull. 1372-J.

Nichols, R. L., 1946, McCartys basalt flow, Valencia County, New Mexico: Geol. Soc. America Bull., v. 57, no. 11, p. 1049-1086.

Thaden, R. E., Merrin, Seymour, and Raup, O. B., 1967, Geologic map of the Grants SE quadrangle, Valencia County, New Mexico: U.S. Geol. Survey, Map GQ-682.

CONTACT--Dashed where approximately located, or inferred from aerial photographs (local areas on slopes of Mesa Negra and North Cebollita Mesa); dotted where concealed

U D ----?---- FAULT--Dashed where approximately located or inferred from aerial photographs; dotted where concealed; queried where uncertain. U, upthrown side; D, downthrown side. Arrows indicate movement on cross section

STRIKE AND DIP OF BEDS

★ SCORIA CONES AND CENTERS OF ERUPTION OF BASALT--Located on North Cebollita Mesa