Geologic Map of the Mesa 30' x 60' Quadrangle, East-Central Arizona

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Compilers

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Scale 1:100,000

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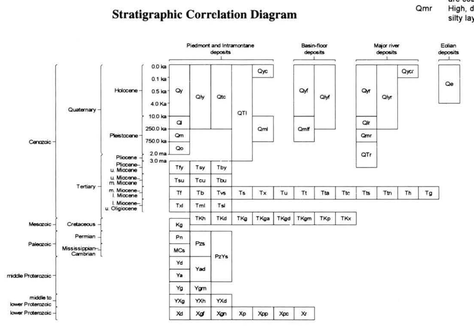
Scale: 1:100,000

1 0 2 4 6 8 MILES
5,000 0 10,000 20,000 30,000 40,000 FEET
1 0 2 4 6 8 10 KILOMETERS

Stratigraphic Correlation Diagram



EXPLANATION

Map Units

Quaternary sedimentary deposits

Piedmont and Intramontane Deposits

Qyc Channel deposits of ephemeral streams *(late Holocene)*—Deposits consist of stratified sand,, silt, pebbles, cobbles, and boulders, with little or no soil development.

Qy Low terrace and alluvial-fan deposits *(Holocene)*—Deposits consist of poorly sorted silt, sand, pebbles, cobbles, and boulders, with weak soil development.

Qtc Hillslope deposits, talus and colluvium *(Holocene and Pleistocene)*—Deposits of angular gravel, colluvium has clay, silt, and sand matrix, soil development variable.

Ql Moderately dissected alluvial fan and terrace deposits *(late Pleistocene)*—Deposits typically consist of sand to cobbles; soil clay accumulation and modest reddening.

Qly Holocene and late Pleistocene alluvial deposits, undivided.

Qm Dissected alluvial-fan and terrace deposits *(middle Pleistocene)*—Coarse, cobbly deposits are with some finer sediment; moderate soil clay accumulation and reddening.

Qmi Late and middle Pleistocene alluvial deposits, undivided.

Qo Deeply dissected alluvial-fan remnants *(early Pleistocene)*—Coarse, poorly sorted cobbly and bouldery deposits; soils have petrocalcic horizons, variable clay content.

Basin-Floor Deposits

Qyf Fine-grained alluvial-fan and terrace deposits *(Holocene)*—Deposits consist of sand, silt, and fine gravel, minimal soil development.

Qlyf Interfingered fine-grained Holocene and late Pleistocene deposits.

Qmif Fine-grained relict alluvial-fan and terrace deposits *(late to middle Pleistocene)* - -Deposits consist of sand, silt, clay, and fine gravel, substantial soil clay accumulation.

Eolian Deposits

Qe Eolian sand dunes *(middle to late Holocene)*—Deposits consist of well-sorted sand

Major-River Deposits

Qycr Modern channel deposits of the Gila, Salt, and Santa Cruz rivers *(late Holocene)*—Deposits consist of sand, cobbles, and boulders; no soil development.

Qyr Floodplain and low terrace deposits *(Holocene)*—Deposits consist of coarse channel gravels and sand to silt overbank deposits; minimal to weak soil development.

Qlyr Late Pleistocene to Holocene terrace deposits, undivided.

Qlr Moderately high,moderately dissected terrace deposits *(late Pleistocene)*—Deposits typically are cobbly with finer layers; moderate soil clay and carbonate development.

Qmr High, dissected terrace deposits *(middle Pleistocene)*—Deposits are cobbly with minor sandy, silty layers; strong soil carbonate and moderate clay development.

Symbols

CONTACTS (dashed where approximately located, dotted where concealed)

- Intrusive or depositional contact
- High-angle fault, showing dip, ball on downthrown side
- Low-angle normal fault, ticks on hanging-wall block
- Low-angle fault, nature uncertain
- Potassium-argon or $^{40}Ar/^{39}Ar$ radiometric date (e.g. 18.57±0.06 Ar/Ar san)
- Bedding: upright (59), horizontal, overturned (41)
- Foliation with lineation in granitoids and metamorphic rocks, compositional layering in gneiss (71), vertical
- Eutaxitic foliation in welded tuffs, flow foliation in lava flows (21)
- Dikes: Felsic, intermediate, mafic
- Pegmatite, Quartz vein
- Minor fold hinge
- Mine dump, tailings, and slag

Quaternary to upper Tertiary sedimentary units

QTl Landslide deposits north of Superior *(early Pleistocene to Pliocene)*.

QTr Very old, high, degraded remnant terrace deposits along major rivers *(early Pleistocene to late Pliocene)*—Deposits are cobbly to bouldery with strong soil carbonate development.

Tertiary sedimentary and volcanic units

Tby Younger basalt *(Pliocene to late Miocene)*—Scattered basalt outcrops in the Florence area dated at one location at 8.9±0.3 Ma.

Tfy Younger felsic volcanic rocks *(Pliocene to late Miocene)*—A single outcrop area of slightly vitrophyric biotite-hornblende felsite near Florence.

Tsy Younger sediments *(Pliocene to late Miocene)*

Tbu Basalt, upper unit *(late to middle Miocene)*

Tcu Conglomerate *(late to middle Miocene)*

Tsu Sandstone *(late to middle Miocene)*

Tf Felsic to intermediate volcanic rocks *(middle to early Miocene)*

Tt Tuff and bedded pyroclastic deposits *(middle to early Miocene)*

Tta Apache Leap tuff *(Miocene, ≈18.6 Ma)*

Ttc Tuff of Comet Peak tuff *(Miocene, ≈18.6 Ma)*

Tts Superstition tuff *(Miocene, ≈18.6 Ma)*

Txt Breccia associated with the Superstiton tuff *(Miocene, ≈18.6 Ma)*—Probably the product of collapse of caldera walls during eruption and caldera subsidence.

Ttn Tuff of North Butte *(Miocene, ≈19.0 Ma)*

Tb Basalt *(middle to early Miocene)*

Tv Volcanic rocks, undivided *(middle to early Miocene)*

Tvs Volcanic-lithic sandstones and bedded pyroclastic rocks *(middle to early Miocene)*

Ts Clastic sedimentary rocks *(middle to early Miocene)*

Tx Rock avalanche breccia *(middle to early Miocene)*

Tu Volcanic and sedimentary rocks, undivided *(middle to early Miocene)*

Tml Mafic to intermediate volcanic rocks, lower unit *(early Miocene or Oligocene)*

Tsl Clastic sedimentary rocks, lower unit *(early Miocene or Oligocene)*—Rocks of this unit have been mapped as Whitetail Conglomerate.

Txl Rock avalanche breccia, lower unit *(early Miocene or Oligocene)*

Tertiary intrusive rock units

Th Hypabyssal intrusive rocks *(middle to early Miocene)*—Dikes, dike swarms, and irregular shallow-level intrusions.

Tg Granite and granodiorite *(middle to early Miocene)*—South Mountain granodiorite and granite stock north of Superior.

Laramide (late Cretaceous to early Tertiary) granitoids

TKh Hypabyssal porphyry *(late Cretaceous to early Tertiary)*

TKga Aplite *(late Cretaceous to early Tertiary)*

TKd Diorite *(late Cretaceous to early Tertiary)*

TKg Granite and granodiorite *(late Cretaceous to early Tertiary)*

TKgd Granodioritie *(late Cretaceous to early Tertiary)*

TKgm Muscovite granite *(late Cretaceous to early Tertiary)*

TKp Porphyritic granite *(late Cretaceous to early Tertiary)*

TKx Intrusive breccia *(late Cretaceous to early Tertiary)*

Kg Sacaton Peak granite *(late Cretaceous)*

Paleozoic and middle Proterozoic sedimentary rocks and diabase

Pn Naco Limestone *(middle Pennsylvanian)*

MCs Carbonate and clastic strata *(Cambrian to Mississippian)*—Includes Cambrain Bolsa Quartzite, Cambrian Abrigo Formation, Upper Devonian Martin Limestone, and Missippian Escabrosa Limestone.

Pzs Quartzite and carbonate rocks *(Paleozoic)*

Yd Apache diabase *(middle Proterozoic)*

Ya Apache Group and Troy Quartzite *(middle Proterozoid)*

Yad Apache diabase and Apache Group, undivided *(middle Proterozoic)*

PzYs Metasedimentary rocks, undivided *(Paleozoic or middle Proterozoic)*

Middle and Early Proterozoic igneous and metamorphic rock units

Yg Oracle and related granite *(middle Proterozoic)*

Ygm Mineral Mountain muscovite granite *(middle Proterozoic)*

YXg Felsic granitoid, undivided *(middle to early Proterozoic)*

YXh Hornblendite to hornblende gabbro *(middle to early Proterozoic)*

YXd Diortoid *(middle to early Proterozoic)*

Xd Diortioid and granitoid related to Madera Diorite *(early Proterozoic)*

Xgf Foliated felsic granitoid *(early Proterozoic)*

Xgn Estrella gneiss *(early Proterozoic)*—Exposed at South Mountain.

Xr Metarhyolite *(early Proterozoic)*—Unit is exposed at Papago Buttes in northwestern corner of map area.

Xp Pinal Schist undivided *(early Proterozoic)*

Xpp Pinal Schist, phyllite facies *(early Proterozoic)*

Xpc Pinal Schist, calc-silicate and amphibolite facies *(early Proterozoic)*

Tertiary to Early Proterozoic granitoids

TXg Granitic rocks *(Tertiary to early Proterozoic)*—Small stock exposed in North Butte Quadrangle cut by Laramide dikes.

Acknowledgments

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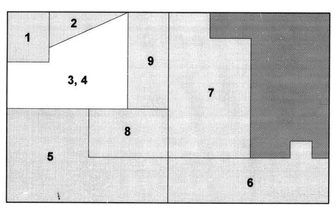
Sources of Surficial Geology Data

Figure 1. Data Sources Used in Surficial Geology Compilation



- Generalized from detailed surficial geologic map
- Reconnaissance mapping based primarily on soil surveys
- Reconnaissance mapping and USGS quadrangle maps

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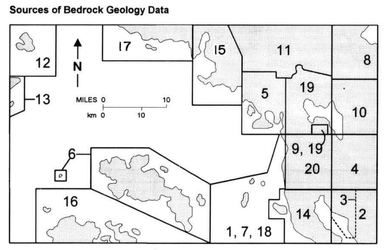
Sources of Bedrock Geology Data



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Map showing location of Mesa 30' x 60' Quadrangle