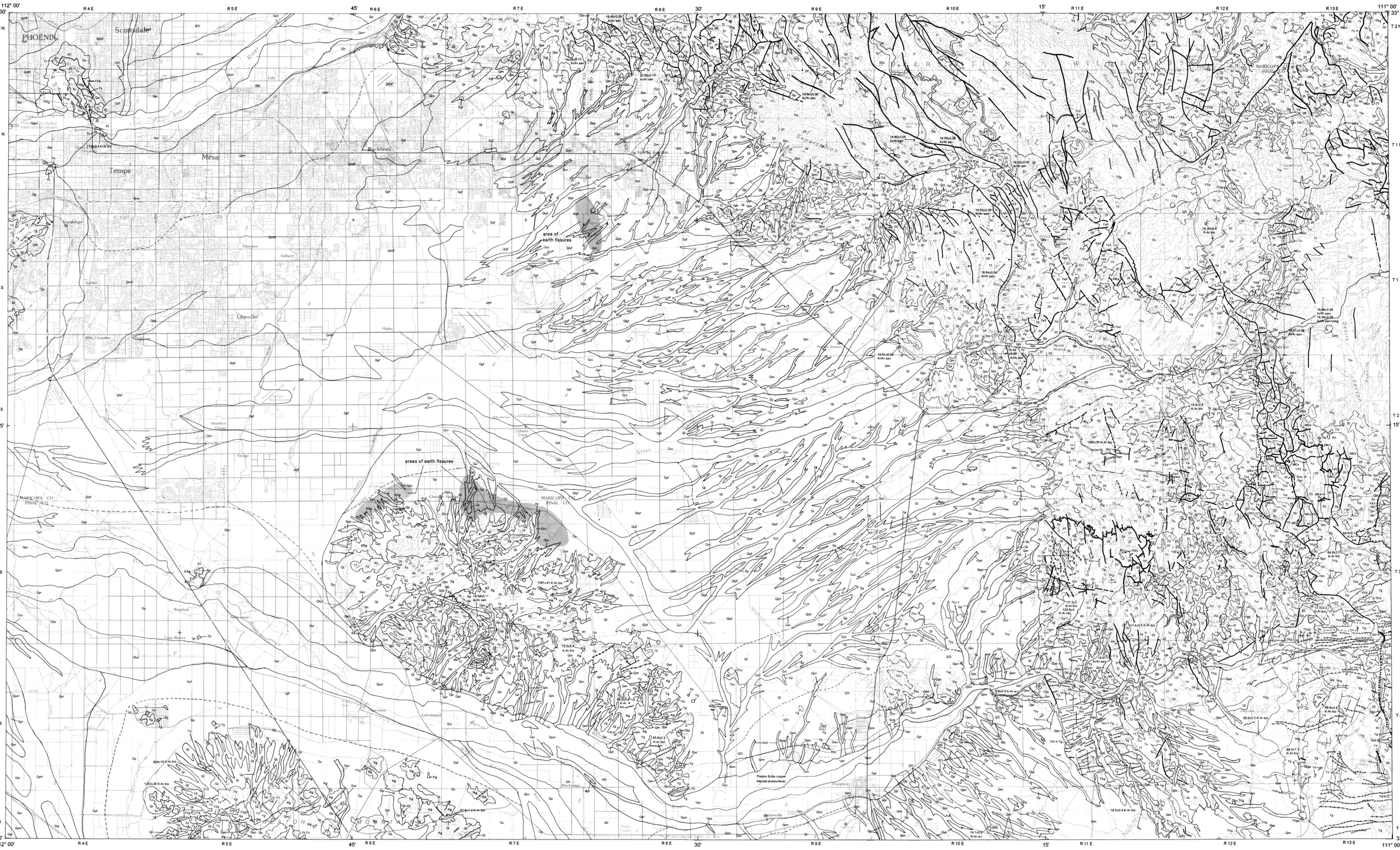

Geologic Map of the Mesa 30' x 60' Quadrangle, East-Central Arizona

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Compilers

Arizona Geological Survey Open-File Report 96-23
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Scale 1:100,000

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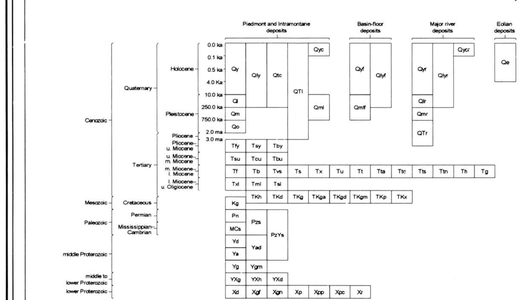
Scale: 1:100,000

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.

Qml 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.

Qmlf 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

59 High-angle fault, showing dip, ball on downthrown side

14 Low-angle normal fault, ticks on hanging-wall block

29 Low-angle fault, nature uncertain

Potassium-argon or $^{40}Ar/^{39}Ar$ radiometric date 18.57±0.06 Ar/Ar san

Bedding: upright 36 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 Supersitton 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 Granodiorite *(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 Motasedimentary 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 Diorite*(middle to early Proterozoic)*

Xd Diorite*(middle to 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

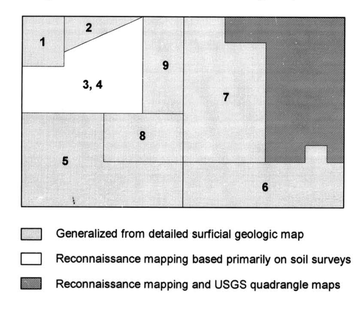
TXg Granitic rocks *(Tertiary to early Proterozoic)*—Small stock exposed in North Butte Quadrangle cut by Laramide dikes.

Acknowledgments

Map compilation was done as part of STATEMAP (a component of the National Geologic Mapping Act), and was part of a mapping program jointly funded by the Arizona Geological Survey and the U.S. Geological Survey under STATEMAP Program Contracts #1434-94-A-1222 and #1434-95-A-1353. We thank Pete Corrao for map labeling and layout, and Larry Fellows for consistent support of geologic mapping.

Sources of Surficial Geology Data

Figure 1. Data Sources Used in Surficial Geology Compilation



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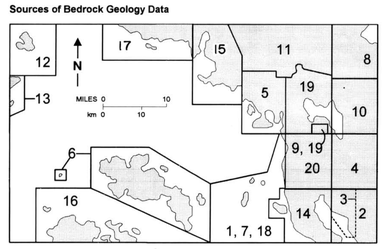

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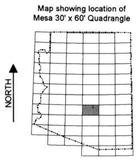
Map showing location of Mesa 30' x 60' Quadrangle