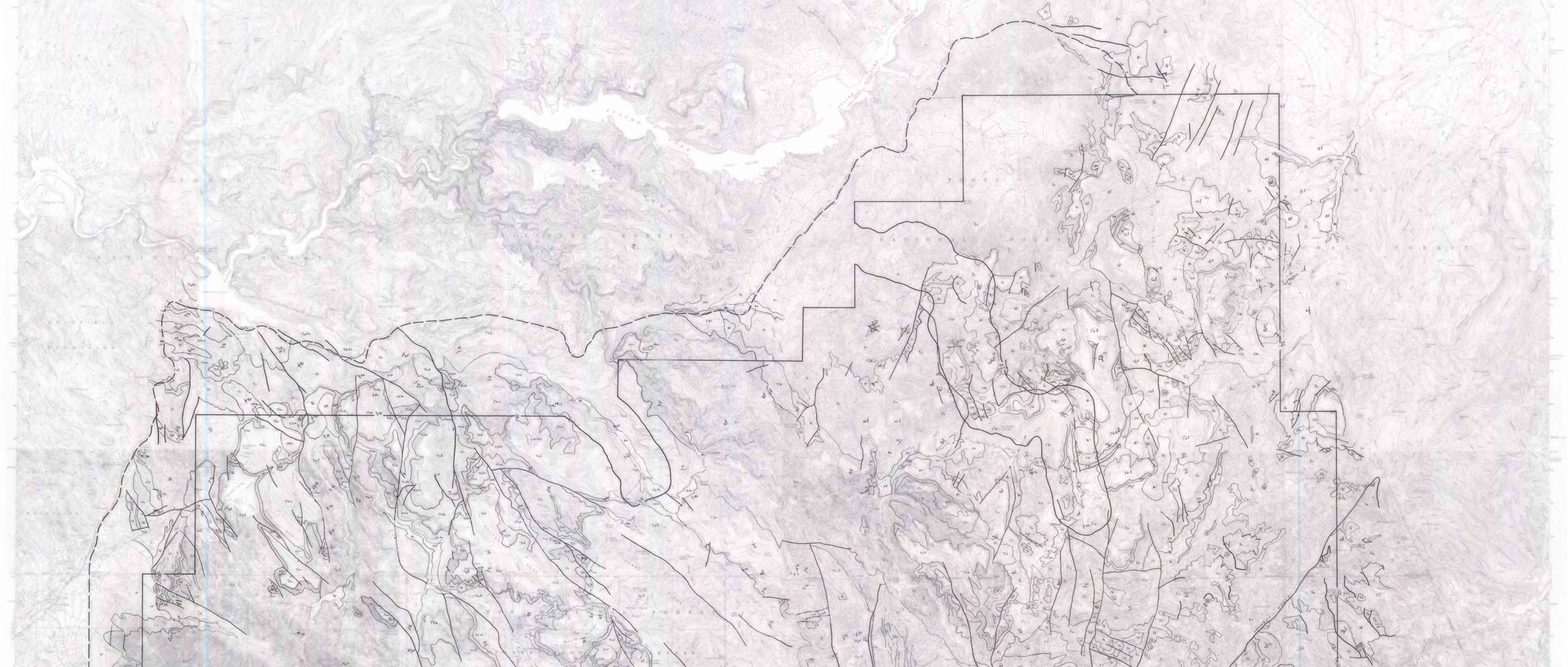
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT
83-885
SHEET 1 OF 3



Base from U.S. Geological Survey, 1:24,000
Haunted Canyon, Iron Mountain, 1948; Goldfield, 1956;
Horse Mesa Dam, Mormon Flat Dam, Pinyon Mountain,
Two Bar Mountain, 1964; Weavers Needle, 1966

SCALE 1:48 000

1 ½ 0 1 2 3 MILES

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 20 AND 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

ARIZONA

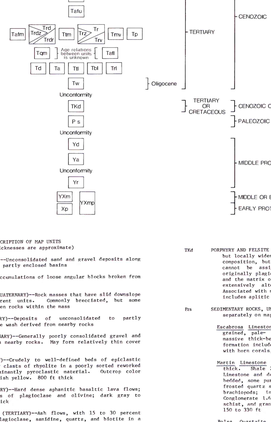
AREA OF MAP

Reconnaissance geology mapped by D.W. Peterson,
D.L. Gaskill, M.L. Sorensen, W.E. Yeend, N.H. Sumson,
K.L. Stark, and G.D. Johnpeer, 1975-77

RECONNAISSANCE GEOLOGIC MAP OF THE SUPERSTITION WILDERNESS AND CONTIGUOUS ROADLESS AREAS, MARICOPA, PINAL, AND GILA COUNTIES, ARIZONA

CORRELATION OF MAP UNITS

[1]The Early (2,500-1,600 m.y.), Middle (1,600-900 m.y.), and Late (900-570 m.y.) Proterozoic Eras have been adopted by the U.S. Geological Survey, replacing the terms Proterozoic X, Y, and Z (=Precambrian X, Y, and Z), respectively; the map symbols X, Y, and Z are retained for these eras.



DESCRIPTION OF MAP UNITS

(All thicknesses are approximate)

Qa ALLUVIUM (QUATERNARY)—Unconsolidated sand and gravel deposits along streambeds and in partly enclosed basins

Qt TALUS (QUATERNARY)—Accumulations of loose angular blocks broken from nearby slopes

Ql LANDSLIDE DEPOSITS (QUATERNARY)—Rock masses that have slid downslope largely as coherent units. Commonly brecciated, but some relatively unbroken rocks within the mass

Qc COLLUVIUM (QUATERNARY)—Deposits of unconsolidated to partly consolidated slope wash derived from nearby rocks

Qf FANGLOMERATE (QUATERNARY)—Generally poorly consolidated gravel and sand derived from nearby rocks. May form relatively thin cover over bedrock

Tsu UPPER TUFF (TERTIARY)—Crudely to well-defined beds of epiclastic breccia. Angular clasts of rhyolite in a poorly sorted rewashed matrix of predominantly pyroclastic material. Outcrop color chiefly pale grayish yellow. 800 ft thick

Tbu UPPER BASALT (TERTIARY)—Hard dense aphanitic basaltic lava flows; small phenocrysts of plagioclase and olivine; dark gray to black. 150 ft thick

Tafu UPPER ASH-FLOW TUFF (TERTIARY)—Ash flows, with 15 to 30 percent phenocrysts of plagioclase, sanidine, quartz, and biotite in a matrix that varies from densely welded to nonwelded; includes outflow bodies near Canyon Lake that are part of extensive units to the north and west. 200 ft thick

Tafm MIDDLE ASH-FLOW TUFF (TERTIARY)—Poorly to distinctly layered ash flows contemporaneous with and interbedded with middle tuff and lava flows. Distribution limited to west and northeast flanks of Coffee Flat Mountain. 400 ft thick

Tvd RHYODACITE (TERTIARY)—Lava flows, generally 20 to 40 percent phenocrysts of quartz, plagioclase, sanidine, biotite, and opaque minerals; matrix dark medium gray, reddish gray. Distinct flow structures, locally contorted; vitrophyre and breccia at base and margins, some zones extensively devitrified. Maximum thickness about 700 ft. Flows issued from several discrete vents. Unit as mapped also contains rhyolite and tuff. Devitrified rhyolite and rhyodacite vents mapped separately

Tvdv Devitrified rhyodacite

Tvdr Rhyodacite vents

Tvm MIDDLE TUFF (TERTIARY)—Includes air-fall, water-laid, and ash-flow tuff. Ash-flow tuff ranges from densely welded to nonwelded; air-fall is well-sorted. Generally devitrified, pale grayish yellow. May be locionately intercalated with rhyolite and rhyodacite lava flows. 500 ft thick

Tr UPPER RHYOLITE (TERTIARY)—Lava flows, generally less than 10 percent phenocrysts that include chiefly quartz, feldspar, and biotite; matrix dark medium gray, reddish gray, pinkish gray. Distinct to consistent glass and breccia common at base and margins, some zones strongly devitrified. Maximum thickness about 1,800 ft. Flows issued from several discrete vents. Unit as mapped also contains rhyodacite and tuff. Devitrified rhyolite and rhyolite vents mapped separately

Trz Devitrified rhyolite

Trv Rhyolite vents

Tmv MIXED VOLCANIC ROCKS (TERTIARY)—A complex intermixed unit of lava flows of different compositions, ranging from rhyolite to andesite, and tuff. 500 ft thick

Tp PORPHYRITIC DIKES (TERTIARY)—Dikes of chiefly rhyodacite and rhyolite composition; well-formed phenocrysts of feldspar, quartz, and mafic minerals. Locally highly brecciated; locally altered. Some dikes as much as 200 ft wide

Tdfl LOWER ASH-FLOW TUFF (TERTIARY)—Ash flows, with 25 to 60 percent phenocrysts of plagioclase, quartz, sanidine, and biotite in a matrix that varies from densely welded to nonwelded. Some sections have several cooling units, others only a single cooling unit. Vitrophyre near base in deposits in northeastern section, lacking elsewhere. 2,000 ft thick

Tqm QUARTZ MONZONITE (TERTIARY)—Phenocrysts of plagioclase, potassium feldspar, and quartz in a very fine grained groundmass of feldspar and quartz; accessory biotite, epidote, opaque oxides, sphene apatite. Phenocrysts and groundmass extensively hydrothermally altered; stauroliti cavities lined with quartz

Td DACITE (TERTIARY)—Lava flows, generally 35 to 50 percent phenocrysts of variable composition. Plagioclase generally present, widely variable amounts of quartz, sanidine, biotite, hornblende, sphene, and epidote. Matrix varies from light gray to dark gray; composition locally includes not only dacite but latite, andesite, and rhyolite. Phenocrysts commonly altered to clay, sericite, and other products. Forms thick flows of local extent, possibly domes. Upper part locally interlayered with basal units of overlying ash-flow tuff. 800 ft thick

Ta ANDESITE (TERTIARY)—Lava flows and volcanic flow breccia of andesitic fragments. Small to large phenocrysts of plagioclase, pyroxene, and olivine in a medium-gray matrix of plagioclase, pyroxene, and opaque oxides. Commonly partly altered to clay, and chlorite. 300 ft thick

Trl LOWER TUFF (TERTIARY)—Includes air-fall and water-laid tuff, bedded to nonbedded, fine to coarse-grained, poorly to well-sorted. Commonly devitrified, ranges from pale-grayish yellow to brown to dark gray. Commonly intercalated with contemporaneous lava flows. 200 ft thick

Tbl LOWER BASALT (TERTIARY)—Lava flows, locally grading to volcanic flow breccia of basaltic fragments. Small phenocrysts of plagioclase, pyroxene, and olivine in dark to medium-gray matrix of chiefly plagioclase, pyroxene, and opaque oxides. Locally vesicular or amygdaloidal. Commonly partly altered to clay, and chlorite. 600 ft thick

Trl LOWER RHYOLITE (TERTIARY)—Lava flows, sparse to 15 percent phenocrysts of plagioclase, sanidine, quartz, and biotite; matrix light to medium gray. Flow structures typically highly contorted; glass, breccia, and devitrified facies common. 800 ft thick

Tw WHITETAIL CONGLOMERATE (OLIGOCENE)—Angular to subrounded pebbles and cobbles in coarse-grained arkosic matrix, poorly to well-consolidated. Bedding generally indistinct, but locally well bedded. Fragments derived from all older rocks; diabase, quartzite, limestone are most common. Maximum thickness about 800 ft

Tvd PORPHYRY AND FELSITE DIKES (TERTIARY OR CRETACEOUS)—Generally dikes, but locally sides to small elongated plutons. Mostly felsic in composition, but generally so altered that specific rock name cannot be applied. Phenocrysts of quartz and feldspar, locally originally plagioclase and one or more mafic minerals. Felsite and the matrix of the porphyry are generally light gray and are extensively altered to clay and possibly other products. Associated with mineralized rocks near the JF Ranch. As mapped, includes aplitic dikes of Proterozoic age

Fss SEDIMENTARY ROCKS, UNDIVIDED (PALEOZOIC)—Consists of units not shown separately on map:

Escabrosa Limestone (Mississippian)—Limestone coarse- to fine-grained, pale- to medium-gray. Most prominent outcrops are massive thick-bedded cliff-forming beds, though upper part of formation includes thin and medium beds. Commonly fossiliferous with bare corals, brachiopods, and crinoids. Thickness 300 ft

Martin Limestone (Devonian)—Thin bedded limestone 15 to 24 ft thick. Marls 20 ft thick; thin-bedded, finely colorenus, limestone and dolomite 100 to 260 ft thick; thin- to medium-bedded, some pure, some with abundant clastic grains, including frosted quartz sand; some silty limestone beds contain abundant brachiopods and corals. Marls and limestone beds contain abundant Conglomerate 1.6 to 20 ft thick; angular pebbles of quartzite, schist, and granite in a coarse-grained matrix. Total thickness 150 to 350 ft

Bolsa Quartzite (Cambrian)—Incorrectly identified as Troy Quartzite by Peterson, 1962). Mostly thin to medium beds of arkosic quartzite, interbedded locally with siltstone, mudstone, and shale, and a basal layer of conglomerate with angular pebbles of quartzite, schist, and granite in a coarse-grained arkosic sandstone. Thickness 200 ft

YXd DIABASE (MIDDLE PROTEROZOIC)[1]—Dikes and dikes. Diabase composed of subhedral and euhedral plagioclase and pyroxene with ophitic and subophitic texture; minor amphibole, biotite, and opaque oxides. Generally medium grained; locally ranges from coarse grained to aphanitic. Weathers dark brown and olive green

Ya APACHE GROUP (MIDDLE PROTEROZOIC)[1]—Consists of units not shown separately on map:

Basalt—Aphanitic basalt; microscopic plagioclase partly altered to clay, and calcite; microscopic pyroxene and olivine largely altered to chlorite, iddingsite, and opaque oxides. Dark gray to dark brown; locally vesicular and amygdaloidal. Some layers autobrecciated. Thickness 130 ft

Mescal Limestone—Dolomite and limestone, generally thin bedded with undulating to even bedding planes; texture generally aphanitic or fine grained, locally grades to coarse grained. Medium gray to light brown to white. Interbedded black to light-brown chert occurs as uneven layers or individual nodules. Near top an algal member contains wavy concentric stromatolite structures. Thickness 330 ft

Dripping Spring Quartzite—divided into:

Siltstone member—Alternating beds of very fine grained quartzite and siltstone; thin bedded, locally crossbedded, some light gray to light brown on fresh surfaces; strong shades of brown, red, yellow on weathered surfaces. Thickness 165 to 400 ft

Arkose member—Medium- to coarse-grained feldspathic quartzite and arkose, medium to thick bedded, locally crossbedded; some pebbles of quartz and quartzite. Weathers pale yellowish gray, pale reddish brown. Thickness 150 to 260 ft

Barnes Conglomerate Member—Well-rounded siliceous pebbles and cobbles of gray and brown quartzite, white quartz in matrix of medium- to coarse-grained poorly sorted arkosic quartzite. Thickness 3 to 20 ft

Pioneer Formation—Divided into:

Siltstone member—Siltstone, shale, and fine-grained arkose; dusky purple and dusky red, speckled by light-brown to greenish-yellow spots; thin bedded. Thickness 100 to 230 ft

Arkose member—Arkose, feldspathic quartzite, and sandstone; light brown, dark brown, dusky red purple, medium to thin bedded; sandy beds separated by thin beds of siltstone and shale. Thickness 115 to 180 ft

Scanlan Conglomerate Member—Well-rounded to subangular pebbles of quartz and quartzite and angular pebbles and granules of schist and granite in coarse-grained poorly sorted matrix of arkose; firmly cemented. Outcrop medium to dark gray and reddish gray. Thickness 0.5 to 15 ft

Yr RIOD GRANITE (MIDDLE PROTEROZOIC)—Coarse-grained, porphyritic quartz monzonite to granite; euhedral phenocrysts 0.5 to 1 in. of perthite; pink microcline in holocrystalline, coarse-grained, hypidiomorphic granular groundmass of plagioclase, microcline, quartz, biotite; accessory sphene, iron oxides, zircon, apatite. Grades to fine-grained varieties; includes scattered bodies of aplite, pegmatite, pegmatite, white quartz. Outcrops light brown, light gray, grayish yellow

YXm MAZATZAL QUARTZITE (MIDDLE OR EARLY PROTEROZOIC)[1]—Medium- to fine-grained, holocrystalline, hypidiomorphic granular. Essential mineralogy—plagioclase and quartz; varietal mineral—potassium feldspar, amphibole, and biotite; and accessory mineral—iron oxides, sphene, apatite, and garnet. Rock is granodiorite or tonalite. Locally foliated (gneissic). Outcrops light to medium brown to grayish yellow

YXmp MAZATZAL QUARTZITE AND PINAL SCHIST, UNDIVIDED (MIDDLE AND EARLY PROTEROZOIC)[1]

Xp PINAL SCHIST (EARLY PROTEROZOIC)[1]—Quartz-muscovite schist and quartz-muscovite-chlorite schist, with feldspar. Strong to indistinct foliation, locally highly contorted. Pods, stringers, and veins of white quartz locally abundant. Generally light to dark gray; in some places weathers brown

CONTACT, APPROXIMATELY LOCATED

FAULT, APPROXIMATELY LOCATED—Dotted where concealed. Bar and ball on downthrown side

STRIKE AND DIP

Bedding in sedimentary rocks

Layered structures in volcanic rocks

APPROXIMATE BOUNDARY OF DESIGNATED WILDERNESS

APPROXIMATE BOUNDARY OF ROADLESS AREA