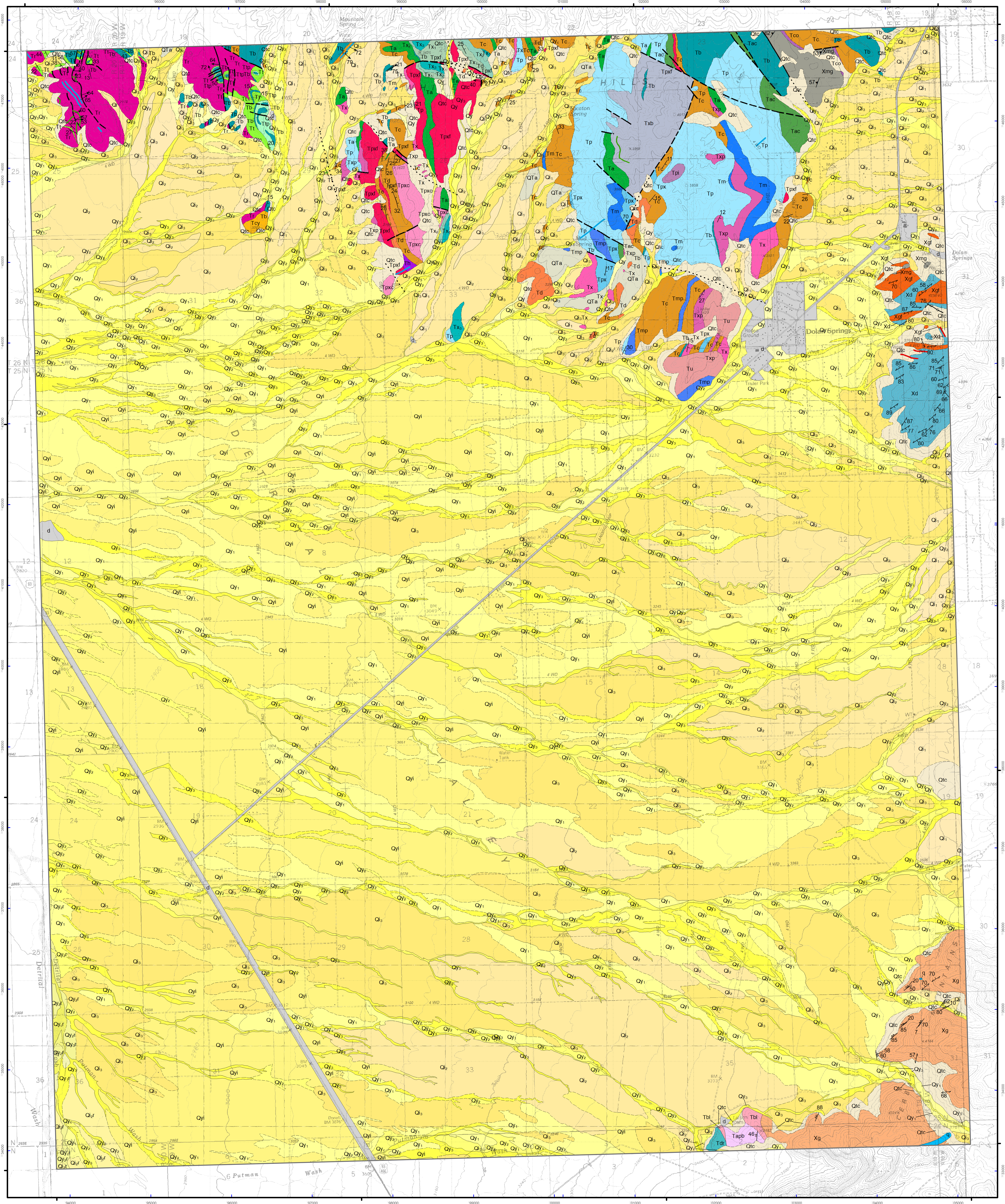
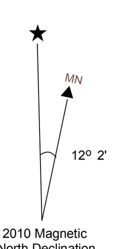


SCALE 1:24 000

CONTOUR INTERVAL 40 FEET



2010 Magnetic North Declination

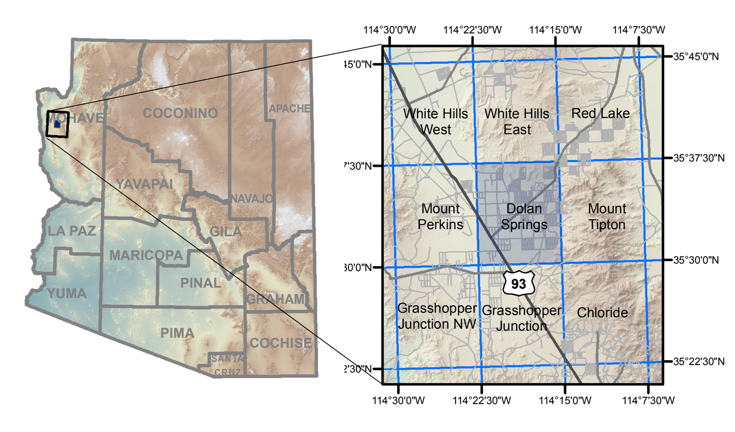
Arizona Geological Survey
416 W. Congress Street, Suite 100
Tucson, AZ 85701
(520) 770-3500
www.azgs.az.gov

Topographic base from USGS 1:24,000 Quadrangle Series.
Seamless basemap generated using iGage All Topo Pro software.
Hillshade generated from NED 10m Digital Elevation Model.

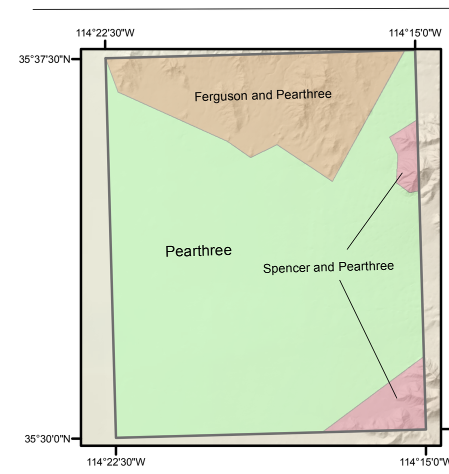
Projection Information:
North American Datum of 1983.
1000-meter Universal Transverse Mercator grid tics, zone 11N, shown in blue.

Location Map

Mapped Area Shown in Blue



Mapping Responsibility



Map Unit Descriptions

Piedmont Deposits

Qyc **Modern channel alluvium** - Unconsolidated, very poorly sorted sand, pebbles, cobbles and locally boulders in larger channels of piedmont washes. Channels may exhibit bar and swale microtopography with bars composed of coarser sediments. Qyc deposits are typically unvegetated and exhibit no soil development although small shrubs and grasses can be found on slightly elevated bars and trees line some channel reaches.

Qy3 **Latest Holocene alluvium** - Poorly sorted, unconsolidated sand, pebbles, cobbles, silt and boulders located in small channels, on floodplains and on low-lying terraces. Vegetation size and density is relatively large. Alluvial surfaces commonly exhibit bar and swale microtopography, but may be quite planar where deposits are fine. Soil development is generally absent on Qy3 deposits. Qy3 areas are active portions of the fluvial systems, and are susceptible to inundation during moderate to extreme flow conditions when flow exceeds channel capacity.

Qy2 **Late Holocene alluvium** - Poorly sorted, unconsolidated sand, pebbles, cobbles, silt and boulders low terraces, active floodplains, and sheetflood areas. Fan and terrace surfaces typically are gently undulating, with gravel bars and finer-grained swales. Desert pavement development is minimal and rock varnish is very light or nonexistent. Soil development is weak. Surfaces are minimally eroded with channel incision of less than 1.5 m. Channel patterns are variable, including linked anastamosing or distributary channels, discontinuous channels, and separate small tributary channels feeding into larger channels.

Qy1 **Early to late Holocene alluvium** - Poorly to very poorly sorted, weakly consolidated sand, silt, pebble, cobble and boulder deposits associated with low to intermediate terraces, abandoned drainageways, and inactive or rarely active alluvial fans. Bar and swale topography is common where deposits are gravelly. Soil development is weak, with minimal soil structure and visible carbonate accumulation, but gravelly surfaces appear darker brown than younger Qy2 surfaces due to moderate rock varnish accumulation.

Qy **Holocene alluvium, undivided** - Holocene alluvium, undivided

Qyi **Holocene to latest Pleistocene alluvium** - Sand, silt, and clay with some pebble and cobble concentrations in low-relief alluvial fan / sheetflood areas. Rock varnish on surface gravel is weak to moderate. Surface soil color typically is slightly orange to reddish brown, and soil development is weak to moderate, with some clay accumulation and stage I to II calcic horizon development. Washes typically are incised ~1 m below Qyi surfaces.

Qi3 **Late Pleistocene alluvium** - Very poorly sorted, weakly consolidated sand, pebbles cobbles, silt and some small boulders associated with inactive alluvial fans and higher terraces along washes. Surfaces are slightly to moderately dissected by tributary drainages that head on the surfaces and through-going distributary channels. Local surface topographic relief varies from about 1 to 5 m. Soil development is moderate, with some clay accumulation and soil reddening, and stage II calcic horizon development discontinuous and continuous clast coatings. Rock varnish on surface gravel is orange to dark brown.

Qi2 **Middle to late Pleistocene alluvium** - Very poorly sorted, weakly to moderately consolidated cobble, pebble, sand, boulder, silt and clay deposits associated with dissected relict alluvial fans. Surfaces are drained by extensive, incised tributary drainage networks. Surfaces are moderately to deeply dissected, with local topographic relief varying from about 1 to 10 m. Original depositional topography typically is modified by erosion along incised valleys, but surfaces commonly are quite smooth between valleys. Deposits are typically coarser than younger deposits, with relict boulder trains evident on the surface far out from mountain source areas. Well-preserved surfaces are typically reddish brown, with some orange to black varnish on cobblesand boulders. Soils have moderate clay accumulation and calcic horizons typically are stage II to III with continuous coatings on gravel clasts and some whitening of the soil matrix.

Qi1 **Early to middle Pleistocene alluvium** - Very poorly sorted, weakly to moderately consolidated sand, pebbles, cobbles and boulders associated with deeply dissected relict alluvial fans. Locally surfaces are reddened, but more commonly they are light gray due to common calcic fragments. Soil development is variable, but weakly cemented petrocalcic horizons (stage IV) are common. Surfaces are moderately to deeply dissected, with local topographic relief varying from about 2 to 10 m. Original depositional topography has been extensively modified by erosion, and surfaces are rounded and seldom planar. Surfaces are higher and are much more eroded than adjacent Qi2 surfaces.

Qi **Middle to late Pleistocene alluvial deposits, undivided** - Middle to late Pleistocene alluvial deposits, undivided

QTa **Pliocene to early Pleistocene alluvium** - Very poorly sorted, moderately consolidated cobbles, pebbles, boulders and sand associated with alluvial fan deposits underlying the highest alluvial ridges in the valley. Ridgelines typically are 5 to 10 m above active washes. Soil development is moderate and variable, and dominated by calcium carbonate accumulation. Surfaces typically are light in color because they are covered with debris churned up from indurated petrocalcic horizons and unvarnished to lightly varnished gravel.

Axial Stream Deposits

Qycr **Modern channel deposits** - Unconsolidated, very poorly sorted sandy to cobbly beds exhibiting bar and channel microtopography. Clasts are typically subangular to subrounded, with mixed lithologies including fine-grained volcanics, granite and metamorphic rocks. Deposits are typically unvegetated to lightly vegetated and exhibit no soil development. These deposits are the first to become submerged during moderate to extreme flow events and can be subject to deep, high velocity flow and lateral bank erosion.

Qy3r **Flood channel and low terrace deposits** - Sand, pebble, cobble and silt deposits in recently active flood channels and lightly vegetated in-channel bars and small planar fluvial terraces less than 1 m above active channel. These deposits do not exhibit soil development but commonly have a light vegetation cover of small trees and bushes and grasses due to their relatively frequent inundation. These surfaces are commonly inundated under moderate to extreme flow events and can be subject to deep, high velocity flow and lateral bank erosion.

Qy2r **Latest Holocene to historical river deposits** - Sand, silt, clay, pebbles and cobbles associated with low river terraces. In roughly the southern 1/2 of the quadrangle, these terraces were probably the floodplain prior to historical channel entrenchment. Qy2r deposits are associated with broadly planar surfaces that locally retain the shape of the historical valley bottom. Qy2r surfaces are up to 2 m above modern Qycr deposits and are the most extensive river terraces in the valley. Qy2r sediments were deposited when the Detrital Wash was a widespread, shallowly-flowing river system and are dominated by fine grained floodplain deposits. These surfaces appear predominantly fine grained at the surface due in part to shallow flood inundation, but are composed of interfingering coarse sandy to pebbly braided channel and fine sand to silty floodplain deposits. Where Qy2r deposits are moderately to deeply incised they not subject to inundation by river floods, but they may be flood-prone in areas with less channel incision. Qy2r deposits are subject to catastrophic bank failure due to undercutting and lateral erosion during flow events.

Qy1r **Late to early Holocene terrace deposits** - Sand, silt, pebble, clay and cobble deposits associated with slightly higher terraces that represent remnants of older Holocene aggradation periods. Soil development is moderate and surface color typically is gray. Incipient stage I calcium carbonate accumulation is evident on the undersides of some buried clasts. Qy1r surfaces are up to 3 meters above the active channel in highly incised locales and typically are less than 1.5 m higher than adjacent Qy2r surfaces.

Qi3r **Late Pleistocene terrace deposits** - Sand, silt, clay, pebble and minor cobble deposits associated with the late Pleistocene axial valley floor. Surfaces are slightly dissected by tributary drainages that head on the surfaces and through-going channels. Local washes are incised by about 1 to 5 m, and Detrital Wash in incised 2-5 m below Qi3r surfaces. Soil development is moderate, with some clay accumulation and soil reddening and stage II calcic horizon development with soft nodule development.

Qi1r **Middle to late Pleistocene river terrace deposits** - Sand, silt, clay, pebbles and cobbles associated with an older relict basin floor. Deposits are compositionally similar to Qi3r deposits, but relict alluvial surfaces occupy higher positions in the landscape. Terrace surfaces are slightly to moderately rounded. Vegetation is sparse, consisting of small shrubs and grasses. Soil development is moderate, with weak soil reddening and stage II to III calcic horizon development. Qi2r surfaces are typically found as high-standing surfaces abutted by distal fan alluvium or as small remnants surrounded by younger axial valley deposits.

Other Surficial Units

d **Disturbed areas** - Areas profoundly disturbed by human activity. Road embankments, stockponds, and mining disturbance.

Qtc **Talus and colluvium** - Angular to subangular, locally derived, weakly bedded to unbedded, moderately to steeply dipping slope deposits associated with bedrock hills and mountains. Most deposits are colluvium, consisting of very poorly sorted cobbles, boulders, sand and clay. Local coarse framework deposits (talus) have little or no fine material at the surface.

Tertiary rock units of the southern White Hills

Tcy **Younger conglomerate** - A single exposure of mixed andesitic and felsic volcanic and Proterozoic gneissic clast conglomerate in the northwest part of the map area. The conglomerate is dominated by boulder-sized sub-angular to sub-rounded Proterozoic clasts and appears to overlie a sequence of east-tilted felsic tuff and basaltic lava with angular unconformity.

Tr **Rhyolite lava** - Rhyolitic lavas containing 3-15% <2mm feldspar (typically plagioclase), and <1-3% <2mm biotite and/or hornblende. In the field database, some of the rhyolite flows are classified as phenocryst-rich (Trx) if they contain over 12-15% phenocrysts, but since it is difficult to evaluate the phenocryst content of the vitric portion of many flows, this classification was not used to define map units.

Tt **Felsic tuff** - Nonwelded lithic lapilli-rich, and locally pumice lapilli-rich ash-flow tuff and ash-fall tuff, typically thin- to thick-bedded in tabular sets. The tuffs form fairly thick sequences interleaved with rhyolitic lava flows that locally include minor amounts of pumiceous sandstone and felsic volcanic-clast dominated conglomerate.

Ttp **Ash-flow tuff** - Massive, poorly welded peach-colored felsic ash-flow tuff containing up to 40% phenocryst-poor to aphyric rhyolitic pumice lapilli and up to 7% 1-4mm plagioclase and sparse biotite phenocrysts. The ash-flow tuff forms an important marker unit in the northwest on a ridge where it is interbedded with nonwelded tuff (Tt) and basaltic lava (Tby).

Tb **Basalt** - Basaltic lava containing up to 15% mafic phenocrysts, but typically <5%, including 1-6mm green pyroxene (probably clinopyroxene) and <1-2mm iddingsite after olivine. Plagioclase phenocrysts are typically very sparse or absent, although plagioclase microlites typically constitute significant proportions of the matrix. In the northeast, this unit is represented by relatively thin flows interbedded with andesitic lavas. In several instances, the basaltic flows are very thin and occur at the contact between relatively thick sequences of the various andesitic lava units. Only a few of these were mapped. In the northwest, where the basalt is interbedded with felsic tuffs and lava, the flows are typically more phenocryst-rich (>10%) and coarser grained (pyroxene up to 6mm).

Tc **Volcaniclastic conglomerate** - Clast-supported and matrix-supported volcaniclastic conglomerate, pebbly sandstone and sandstone. The conglomerate is typically very poorly exposed and is characteristically thick-bedded to massive and very coarse-grained, commonly containing boulders in excess of 5m. Clasts are angular to sub-rounded and dominantly andesitic. Locally, dacitic clast varieties are closely associated with the dacite lava map unit (Td), but these were not mapped separately, although outcrops were classified separately in the field database (Tcd). Along the north edge of the map area, significant amounts of Proterozoic garnet gneiss and diorite (Xmd and Xd) clasts are present. The conglomerate, for the most part appears to be intimately interbedded with the andesitic volcanic rocks, forming fairly thick successions and lenses that appear to be broadly conformable with the volcanic rocks.

Tx3 **Pyroxene series 3 lava** - Andesitic lava containing 10% green pyroxene up to 1cm, 1-5mm biotite.

Tx2 **Pyroxene series 2 lava** - Andesitic lava containing 2-5% 1-6mm plagioclase, 1-3mm green pyroxene, 1-2% <1mm olivine, 2-4% 2-5mm biotite.

Td **Dacitic lava** - Plagioclase phenocryst-rich dacitic lava containing biotite, +/-hornblende, +/- pyroxene phenocrysts. Dacitic lava occurs in several areas, typically associated with volcaniclastic units.

Tp **Plagioclase-porphyritic andesitic lava** - Andesitic lavas containing 2-25%, 1-10mm plagioclase phenocrysts with little or no other phenocryst-forming phases. Varieties of this unit not recognized at individual stations (in the field station database), but not mapped separately include fine-grained plagioclase-porphyritic andesite (Tpf) containing abundant <2mm plagioclase with little or no other phenocryst phases, and a plagioclase phenocryst-rich andesite (Tpp) which contains less than 2% 1-5mm plagioclase phenocrysts and little or no other phases.

Tpi **Fine-grained diorite** - Fine-grained diorite, locally sparsely plagioclase-porphyritic. The diorite forms a single stock in the northeast that contains 20-30% biotite, pyroxene +/- hornblende.

Tmp **Two mafic phenocryst, plagioclase-porphyritic andesitic lava** - Andesitic lavas containing two obvious mafic phases, either two pyroxenes or pyroxene and hornblende. From study in thin-section, the two pyroxene varieties contain roughly equal amounts of dark green blocky clinopyroxene and bladed black orthopyroxene, both ranging between 1-6mm. Hornblende, which is virtually indistinguishable from orthopyroxene in hand specimen is also black with a bladed habit, but is also typically mantled with dark rims of opaque mineral less than 0.3mm thick. Plagioclase phenocrysts are also present in fair abundance (generally >5%), ranging in size from 0.5-10mm.

Tm **Two mafic phenocryst andesitic lava** - Andesitic lavas containing two obvious mafic phases, either two pyroxenes or one pyroxene and hornblende. From study in thin-section, the two pyroxene varieties contain roughly equal amounts of dark green blocky clinopyroxene and bladed black orthopyroxene, both ranging between 1-6mm. Hornblende, which is virtually indistinguishable from orthopyroxene in hand specimen is also black with a bladed habit, but is also typically mantled with dark rims of opaque mineral less than 0.3mm thick. Sparse plagioclase phenocrysts are also present. Lavas of this type containing significant plagioclase phenocrysts are classified as Tmp.

Txb **Andesite-basalt lava complex** - Complex of interleaved pyroxene-porphyritic andesite (Tx) and phenocryst-poor basaltic (Tb) lavas.

Tpxf **Fine-grained andesitic lava** - Andesitic lavas containing plagioclase > pyroxene phenocrysts with the ratio ranging between 2:1 and 5:1 and with the plagioclase phenocrysts characteristically <2mm and typically <1mm. The small size of the plagioclase phenocrysts distinguishes this lava from the Tpx and Tpxc units. The lavas occur in at least two intervals in the ridge of section 28 in the western part of the map area. Plagioclase constitutes 10-20% of phenocrysts in the lava, whereas green blocky pyroxene phenocrysts (probably clinopyroxene), although larger (1-5mm), are far less abundant, making up 2-5%.

Ta **Plagioclase-pyroxene porphyritic andesitic lava** - Andesitic lavas containing roughly equal proportions (with each phase making up at least one third of the total) plagioclase and pyroxene phenocrysts. Pyroxene phenocrysts are invariably dark green, blocky (probably clinopyroxene) and range from 0.5 to 6mm. Plagioclase is typically subhedral to euhedral and ranges in size from 0.5 to 10mm.

Tac **Coarse-grained plagioclase-pyroxene porphyritic andesitic lava** - Coarse-grained (with a significant proportion of phenocrysts larger than 4mm) andesitic lava containing roughly equal proportions (with each phase making up at least one third of the total) of plagioclase and pyroxene phenocrysts. Pyroxene phenocrysts are invariably dark green, blocky (probably clinopyroxene) and range from 0.5 to 6mm. Plagioclase is typically subhedral to euhedral and ranges in size from 0.5 to 10mm.

Txp **Pyroxene > plagioclase porphyritic andesitic lava** - Andesitic lavas containing pyroxene > plagioclase phenocrysts with the ratio ranging between 2:1 and 5:1.

Tpx **Plagioclase > pyroxene porphyritic andesitic lava** - Andesitic lavas containing plagioclase > pyroxene phenocrysts with the ratio ranging between 2:1 and 5:1.

Tx **Pyroxene-porphyritic andesitic lava** - Andesitic lavas containing 2-15%, 1-6mm green blocky (probably clinopyroxene) pyroxene phenocrysts with little or no other phenocryst-forming phases.

Tpxc **Coarse-grained andesitic lava** - Andesitic lava containing 15% 2-6mm plagioclase, 3% 1-3mm iddingsite (after olivine) and 2-5% 1-3mm green blocky pyroxene (probably clinopyroxene). This is a distinctive unit that caps the ridge in section 28 in the western part of the map area.

Th **Hornblende andesite** - Andesitic lava containing up to 15% 1-4mm needle-shaped hornblende phenocrysts with 5-10% 2-4mm plagioclase.

Tu **Unmapped Tertiary bedrock** - Areas unmapped

Tco **Older conglomerate** - A thin, Proterozoic-clast, strongly silica-cemented conglomerate (a probable silcrete interval) that directly overlies Proterozoic crystalline rocks in the northeast corner of the map area. The conglomerate forms a ledge that contrasts sharply with the overlying, recessive weathering volcaniclastic conglomerate (Tc).

Tertiary rock units of the northwestern Cerbat Mountains

Tdr **Phenocryst-rich dacitic to andesitic lava** - Unit contains <2%, <4 mm biotite, ~7-9%, <2 mm pyroxene, and ~25%, <6 mm plagioclase. Pyroxene also occurs in clots up to 6mm diameter. This unit, exposed near Larson Dam in the southeastern corner of the map area, is probably the same unit as mapped to the south in the Grasshopper Junction Quadrangle (map unit Tdr of Ferguson et al., 2009).

Tapb **Pyroxene - biotite andesite** - Medium to dark gray lava with ~1%, <1 mm biotite, ~2-4%, <2 mm pyroxene. Weathers reddish brown to black and is weakly vesicular to non-vesicular. This unit is exposed in the southeastern corner of the map area near Larson Dam.

Tbl **Basalt of Larson Dam** - Vesicular, black-weathering basalt near the southeastern corner of the map area. Unit contains 5-8%, <2 mm, black to greenish black pyroxene, 2-4%, <2 mm plagioclase, and 8-12%, <1 mm iron-oxide spots inferred to be oxidized olivine. Red scoriaceous zones separate lava flows. Contact with granite at base of basalt is covered over 2 m interval but rocks on either side of the contact are not crushed or significantly fractured - the contact is inferred to be depositional.

Proterozoic crystalline rocks

q **Vein quartz** - Vein quartz over a large area in the southeastern corner of the map area consists of numerous, variably amalgamated veinlets. Unit contains inclusions between veinlets of host granite that is foliated and appear to extend into 1-10-cm-long iron-oxide-rich mineral selvages within the vein quartz. Lack of deformation in vein quartz suggest that vein is post-deformation and that it was emplaced along foliation surfaces, incorporating mineral selvages from host granite within veins. It is possible that vein quartz is older than foliation and that foliation within quartz is obscure and only visible in screens and selvages, but this alternative is less favored because the foliation in vein quartz was not observed.

Xgf **Fine-grained biotite granite** - Fine-grained biotite granite with highly variable mafic content (2-20%). This granite intrudes host coarse dioritic granitoid concordant to foliation and is itself foliated. Weak lithologic layering is defined by quartz veinlets and vague compositional layering. The unit is recrystallized so that biotite is randomly oriented. Could be syngenetic with coarse dioritic granitoid as seems intimately associated and grades into fine grained dioritic rock with ~20% mafic minerals.

Xd **Coarse-grained dioritic granitoid** - Dioritic granitoid consists of ~35% mafic minerals and ~65% feldspar and quartz, most or all of which is probably plagioclase. Mafic minerals consist of felted aggregates with individual, unidentified minerals <1 mm diameter. Plagioclase is recrystallized and locally forms augen up to 2 cm long. This unit locally contains abundant fine-grained biotite granite injections, so much so that locally this unit resembles a gneiss. Foliation in dioritic granitoid also affects pegmatites.

Xg **Foliated porphyritic granite** - Recrystallized granite with spotted, relict pink K-feldspar up to 3 cm that are generally obscured by strong recrystallization. Foliation is weak and inconsistent in orientation (wavy to swirled). High-temperature mylonitic foliation is apparent locally, but substantial recrystallization obscures mylonitic fabric. It is possible that mylonitization occurred at such high temperature that recrystallization almost kept pace with grain-size reduction during shearing.

Xmg **Garnet gneiss** - Quartz-biotite-garnet gneiss – Banded to laminated gneiss, with <1 mm quartz and biotite, and 0-10% garnet up to 8 mm diameter. Unit is slightly pegmatitic. Lithologic layering varies from swirled to irregular to planar.

Map Symbol Descriptions

- Tectonic foliation defined by preferred mineral orientation with or without compositional layering. This fabric includes strongly annealed mylonitic foliation.
- Mylonitic foliation, slightly to moderately annealed.
- Bedding, inclined
- Generic foliation
- Flow foliation, inclined
- Generic lineation
- Slickenside striae lineation
- Dip of fault, dike, or contact
- Cumulate foliation
- Contact, accurate
- Contact, approximate
- Fault, approximate
- Fault, accurate
- Intraformational Contact
- Fault, concealed
- Quartz vein
- Mafic dike
- Debris-flow levee

GEOLOGIC MAP OF THE DOLAN SPRINGS 7 ½' QUADRANGLE, MOHAVE COUNTY, ARIZONA

by

Pearthree, P.A., Ferguson, C.A., and Spencer, J.E.

November 2010

Arizona Geological Survey Digital Geologic Map 81 (DGM-81), version 1.0

Citation for this map:
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Geologic map of the Dolan Springs 7½' Quadrangle,
Mohave County, Arizona: Arizona Geological Survey
Digital Geologic Map DGM-81, version 1.0, scale 1:24,000.

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Introduction

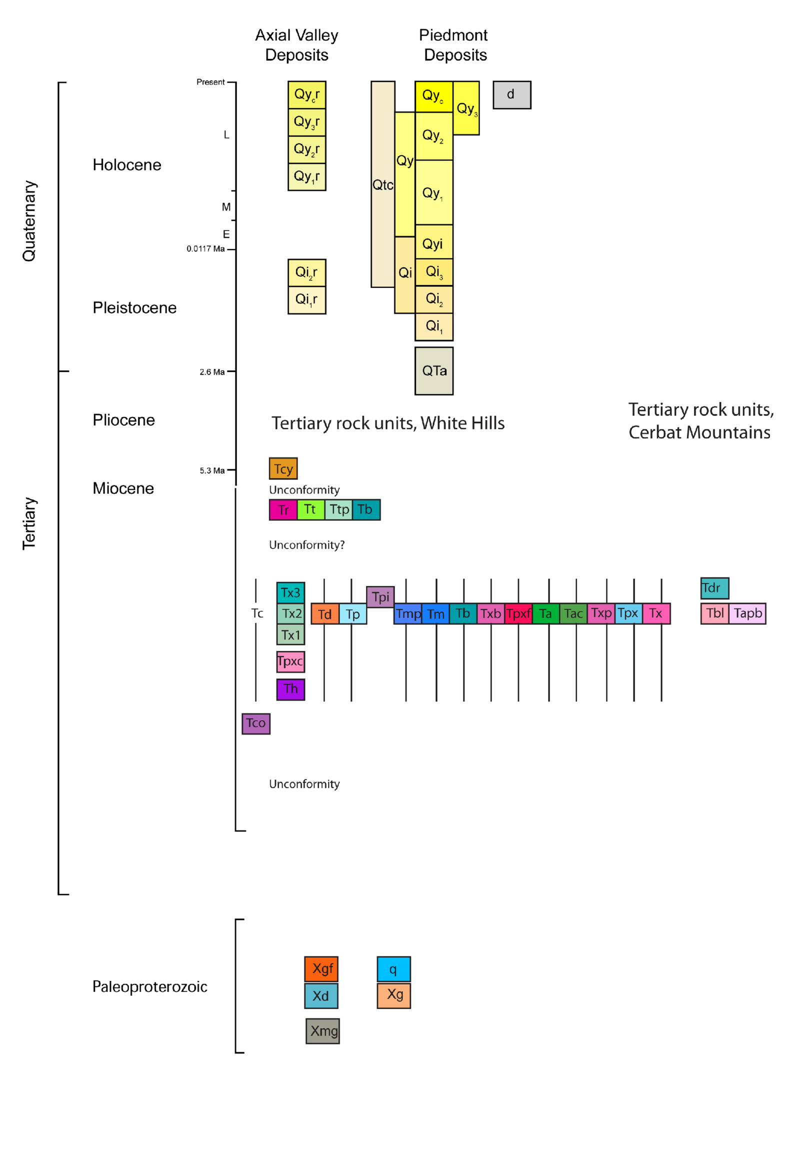
The Dolan Springs 7½' Quadrangle encompasses part of Detrital Valley, the southernmost White Hills, and the northernmost Cerbat Mountains in northwestern Arizona. This map depicts the Precambrian and Cenozoic bedrock in the mountains and late Cenozoic surficial deposits in the valley. Production of this new geologic map continues the Arizona Geological Survey mapping program in northwestern Arizona that includes the Grasshopper Junction 7½' Quadrangle immediately to the south (Ferguson et al., 2009) and several 7½' quadrangles farther southwest in the Colorado River Valley. This mapping was done under the joint State-Federal STATEMAP program, as specified in the National Geologic Mapping Act of 1992, and was jointly funded by the Arizona Geological Survey and the U.S. Geological Survey under STATEMAP Program Contract award number 08HQAG0093. Mapping was compiled digitally using ESRI ArcGIS software.

The map area is located in Detrital Valley in the Basin and Range Province of northwestern Arizona. Most of the Dolan Springs Quadrangle is underlain by late Cenozoic, valley-filling clastic sedimentary deposits that are as much as 3000 feet thick (Richard et al., 2007; Mason et al., 2007). These consist mostly of sandstone and conglomerate in alluvial fans that flank the valley and a fine-grained axial facies that locally includes halite (Mason et al., 2007). The surface of the valley is covered by relatively thin deposits of various ages ranging from late Pliocene to modern. In dramatic contrast to the Colorado River Valley to the west, Detrital Valley has undergone very little incision during the Quaternary, and thus the valley topography is relatively smooth. In general, upper piedmont areas are dominated by moderately coarse Pleistocene alluvial fan deposits, and young, relatively fine-grained deposits are prevalent on the lower piedmonts and along Detrital Wash. Extensive, complex distributary drainage systems in middle piedmont areas are outlined by the extent of late Holocene deposits. In these areas, this geologic map indicates areas of potential flood hazards due to complex flow paths and widespread sheetflooding.

Bedrock units of three types are present; Proterozoic metamorphic and plutonic rocks, and two suites of Miocene volcanics. Most of the volcanics are intermediate to mafic lavas with associated breccia and conglomeratic rocks. These rocks overlie crystalline basement along a fairly steeply west-dipping unconformity at the western foot of the Cerbat Range, and again in one area just north of Dolan Springs where the strata are gently east-dipping. A major down-to-the-west normal fault probably separates the Cerbats from the White Hills. Intermediate to mafic lavas are complexly interleaved and display no obvious stratigraphic sequence or regional markers. Stratigraphic relationships change abruptly along strike and between adjacent fault blocks.

An apparently younger bimodal sequence of basalt-rhyolite occurs in the northwest corner of the map area that is separated from the other volcanics by a poorly understood west-side-down fault. The bimodal sequence is tilted into a series of north-striking, extensional synforms and antiforms.

Stratigraphic Correlation Diagram



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