GEOLOGIC MAP OF THE DAGGS TANK 7.5' QUADRANGLE, MARICOPA COUNTY, ARIZONA

by Philip A. Pearthree, Ann Youberg, John J. Field, Charles A. Ferguson and Jon E. Spencer

Arizona Geological Survey Digital Geologic Map 39 (DGM-39), version 1.0

November, 2004

Citation for this map: Pearthree, P.A., Youberg, A., Field, J.J., Ferguson, C.A., and Spencer, J.E., 2004, Geologic Map of the Daggs Tank 7.5' Quadrangle, Maricopa County, Arizona: Arizona Geological Survey Digital Geologic Map 39 (DGM-39), 1 sheet, scale 1:24,000.

Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under USGS award #03HQAG0114. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. government.

Introduction

The Daggs Tank 7.5' quadrangle is located approximately 40 miles (60 km) northwest of downtown Phoenix, Arizona, on the east side of Hassayampa Plain. The map area is dominated by deposits of the south-flowing Hassayampa River, a major regional drainage in central Arizona. The surficial geology depicted in this map is substantially modified from Field and Pearthree (1991b), and includes new field mapping and aerial photograph interpretation using high-resolution digital images provided by Maricopa County. Tertiary volcanic rocks were mapped for this study, but much of the rest of the bedrock was mapped by Barret (1976) and modified locally based on new field mapping, and on mapping and examination of rock units in the adjacent Wagner Wash Well 7.5' quadrangle (Ferguson et al., 2004).

This map is one of six 1:24,000 scale geologic maps that cover much of the Hassayampa Plain area and that were produced for this study. Mapping was done as part of a multiyear mapping program directed at producing complete geologic map coverage for the Phoenix-Tucson metropolitan corridor, and was done under the joint State-Federal STATEMAP program specified in the National Geologic Mapping Act of 1992.

Surficial Geology

Surficial geology was mapped primarily using aerial photos taken in 1979 for the Bureau of Land Management. Unit boundaries were spot-checked in the field, and mapping was supplemented by field observations during spring, 2004. The physical characteristics of Quaternary alluvial surfaces (channels, alluvial fans, floodplains, stream terraces) evident on aerial photographs and in the field were used to differentiate their associated deposits by age. This mapping was transferred to a digital orthophotoquad base from 2002 provided by the Flood Control District of Maricopa County. Mapping was compiled in a GIS format and the final linework was generated from the digital data. Surficial deposits of the map area were then correlated with regional deposits to roughly estimate their ages. The mapping of Field and Pearthree (1991b) was incorporated into this map, but contacts were modified extensively in some parts of the map based on reinterpretation of geologic relationships and the higher-quality digital aerial photo base that is currently available.

Variations in the distribution of surfaces of different ages and in dissection across the quadrangle provide evidence regarding the recent geologic evolution of this area and the distribution of flood hazards. Generally, areas near the Hassayampa River are moderately to deeply dissected, and middle and upper piedmont areas are variably dissected. Very old terraces (unit Qor and $Qi_{(r)}$ that are perched high above the modern Hassayampa River record past locations of the river bed. Qor terraces cap a substantial aggradational sequence that was deposited during late Tertiary to early Quaternary. At that time the river was not entrenched and probably was depositing sediment across a fairly broad floodplain across most of the quadrangle. Since then the Hassayampa River has downcut 30 to 45 m, with dissection increasing dramatically to the north. The former gradient of the Hassayampa River as preserved by Qor terraces was 1%(?) steeper than the modern channel, probably reflecting the deposition of a large alluvial fan as the river exited the Vulture Mountains to the north. The effects of the river downcutting over the past several million years are expressed by incision of tributary drainages through much of the White Tanks piedmont. Pleistocene deposits are thoroughly dissected in the lower piedmont and Holocene deposits are quite extensive. Incision along Wagner Wash decreases rapidly to the northeast, so dissection is much less on the northern flank of the White Tank Mountains. In this area, several washes have major expansion reaches with distributary channel networks and extensive, thin young deposits. These areas are of particular concern because of the potential for widespread inundation and changes in channel positions during floods (Field and Pearthree, 1991a).

Acknowledgements

The authors wish to thank the Flood Control District of Maricopa County for providing high-resolution digital orthophotographs. Erin M. Moore designed the map layout.

References

Barrett, L.F., 1976, Geologic map of the northwestern White Tank Mountains: Unpublished map for Kennecott Exploration: Arizona Geological Survey file data, scale approximately 1:8,700.

Cooley, M.E., 1973, Map showing distribution and estimated thickness of alluvial deposits in the Phoenix area, Arizona: U.S. Geological Survey Miscellaneous Investigations Series Map I-845-C, 1 sheet, scale 1:250,000.

Ferguson, C.A., Spencer, J.E., Pearthree, P.A., Youberg, A., and Field, J.J., 2004, Geologic map of the Wagner Wash Well 7.5' Quadrangle, Maricopa County, Arizona: Arizona Geological Survey Digital Geologic Map 38 (DGM-38), scale 1:24,000.

Field, J.J., and Pearthree, P.A., 1991a, Geologic mapping of flood hazards in Arizona - An example from the White Tank Mountains area, Maricopa County: Arizona Geological Survey Open-File Report 91-10, 16 p., 4 sheets, scale 1:24,000.

Field, J.J., and Pearthree, P.A., 1991b, Surficial geology around the White Tank Mountains, central Arizona [Daggs Tank, White Tank Mts. NE, McMicken Dam, Wagner Wash Well, White Tank Mts. SE, Waddell, Buckeye NW, Valencia, and Perryville 7.5' quadrangles]: Arizona Geological Survey Open-File Report 91-08, 7 p., 9 sheets, scale 1:24,000.

Kruger, J.M., Faulds, J.E., Reynolds, S.J., and Okaya, D.A., 1998, Seismic reflection evidence for detachment polarity beneath a major accommodation zone, west-central Arizona, *in*, Faulds, J.E., and Stewart, J.H., eds., Accommodation Zones and Transfer Zones - The Regional Segmentation of the Basin and Range Province: Boulder, Colorado, Geological Society of America Special Paper 323, p. 89-113.

Reynolds, S.J., Florence, F. P., Welty, J. W., Roddy, M. S., Currier, D. A., Anderson, A. V., and Keith, S.B., 1986, Compilation of radiometric age determinations in Arizona: Arizona Bureau of Geology and Mineral Technology Bulletin 197, 258 p., 2 sheets, scale 1:1,000,000.

Reynolds, S.J., and Grubensky, M.J., 1993, Geologic map of the Phoenix North 30' x 60' quadrangle, central Arizona: Arizona Geological Survey Open-File Report 93-17, 1 sheet, scale 1:100,000.

Reynolds, S.J., Woods, S.E., Pearthree, P.A., and Field, J.J., 2002, Geologic map of the White Tank Mountains, central Arizona: Arizona Geological Survey Digital Geologic Map 14, 2 sheets, scale 1:24,000.

Shafiqullah, M., Damon, P.E., Lynch, D.J., Reynolds, S.J., Rehrig, W.A., and Raymond, R.H., 1980, K-Ar geochronology and geologic history of southwestern Arizona and adjacent areas, *in*, Jenny, J.P. and Stone, C., eds., Studies in Western Arizona: Arizona Geological Society Digest, v. 12, p. 201-260.

Spencer, J.E., Isachsen, C.E., Ferguson, C.A., Richard, S.M., Skotnicki, S.J., Wooden, J., and Riggs, N.R., 2003, U-Pb isotope geochronologic data from 23 igneous rock units in central and southeastern Arizona: Arizona Geological Survey Open-File Report 03-08, 40 p.

Unit Descriptions

Piedmont Alluvium

Qyc **Late Holocene active channel deposits of larger washes** — Poorly sorted to very poorly sorted sand, pebbles, and cobbles in channels of larger washes. Also includes minor bars and low terraces, where deposits are generally sand and silt with minor gravel.

Qy_2 **Late Holocene deposits in active stream channels, low terraces, and alluvial fans** — Very young deposits associated with active or recently active fluvial systems. Channel deposits typically consist of sand and pebbles with some cobbles and small boulders in middle and upper piedmont areas, and sand and some pebbles lower on the piedmont. Terrace and fan deposits typically consist of sand and silt with some gravel lenses. Fan and terrace surfaces typically are planar where deposits are fine and gently undulating where deposits are coarser, with gravel bars and finer-grained swales. Desert pavement development is minimal and rock varnish is very light or nonexistent. Soil development is weak. Surface dissection is minimal and is associated with channels that are incised up to 1.5 m below adjacent fans or terraces. Channel patterns are variable, including anastamosing or distributary linked channels and separate small tributary channels feeding into larger channels.

Qy_1 **Holocene deposits on alluvial fans and terraces** — Young deposits associated with recently active alluvial fans and terraces. In middle and upper piedmont areas, deposits are poorly sorted, consisting of sand, silt, pebbles, and cobbles; in lower piedmont areas, deposits are typically sand and silt with minor gravel. Surface relief varies with particle size, with relict bar and swale topography where deposits are gravelly and relatively smooth surfaces where sand and silt predominate. Soil development is weak, with some soil structure and minor carbonate accumulation. Surfaces typically are brown to gray, with common gravel litter but minimal desert pavement or rock varnish.

Qy **Holocene alluvial deposits, undifferentiated**

Qyf **Fine-grained Holocene alluvium** — Thin, fine-grain, Holocene alluvial deposits formed in swales on early to mid-Pleistocene fan deposits. These deposits are very thin, typically less than 0.5 m, but locally may be up to 1 m thick. Sediment is mainly silt and sand, with occasional deposits of open, unvarnished, fine gravel lag. Soil development is minimal. Where it has developed, soil is a sandy loam and strongly effervescent from Pleistocene-aged material, but with no visible carbonate accumulation.

Qyi **Holocene and late Pleistocene alluvial deposits** — Unit Qyi is composed of broadly rounded alluvial fans and terraces and scoured benches along smaller tributary washes. Qyi surfaces are less than 1 m above active channels. They are primarily covered by a thin (< 1 m) veneer of Holocene fine-grained alluvium (Qy_2 and Qy_1) over Holocene alluvium (Qi_3, Qi_2 or Qi_1) or eroded basin-fill deposits (QTs). The older units are exposed in scoured, eroded benches adjacent to active channels and in cut banks of washes. Holocene soils vary in development with color ranging from yellow brown (10YR) to slightly reddened (7.5YR) with no to weak subangular blocky structure and no to minor carbonate accumulation, although soils strongly effervesce due to source material. Coarse clasts within these deposits are typically reworked from older deposits and often exhibit carbonate coats or rinds.

Qi_3 **Late Pleistocene alluvial fan and terrace deposits** — Younger intermediate deposits associated with inactive alluvial fans and terraces along washes. Deposits typically are poorly sorted mixtures of silt, sand, pebbles and cobbles with few small boulders. Surfaces are moderately dissected by tributary drainages that head on the surfaces and through-going distributary channels. Local surface topographic relief ranges from about 1 to 2 m. Soil development is moderate, with minimal to some clay accumulation and soil reddening and weak to moderate calcic horizon development. Desert pavement development typically is moderate, and rock varnish varies from light to dark brown.

Qi_2 **Middle Pleistocene alluvial fan deposits** — Older intermediate deposits associated with extensive relict alluvial fans. Deposits are poorly sorted, including sand, pebbles and cobbles, with minor silt and clay. Surfaces are moderately to deeply dissected; with local topographic relief varying from about 1 to 6 m. Original depositional topography typically is not preserved, and surfaces are quite smooth where not eroded. Qi_1 surfaces are drained by extensive tributary drainage networks. Interfluve areas between drainage vary from quite flat to broadly rounded. Soils have weak to moderate clay accumulation and slight reddening in the upper 30 cm beneath the surface, and calcic horizons show obvious visible carbonate accumulation.

Qi **Middle and late Pleistocene alluvial fan and terrace deposits, undifferentiated**

Qi_1 **Middle to early Pleistocene alluvial fan deposits** — Old relict alluvial fans with moderately strong soil development. Deposits are poorly sorted, including sand, pebbles, cobbles, and small boulders with minor silt and clay. Surfaces typically are moderately dissected with up to 6 m of local relief, but interfluve surfaces are quite smooth and have dark, strongly developed pebble-cobble desert pavements. Soils have moderate clay accumulation and obvious reddening and abundant carbonate accumulation resulting in weak cementation.

Hassayampa River Alluvium

Qycr **Active river channel deposits** — Moderately to poorly sorted sand, gravel and minor silt in active channels of the Hassayampa River. Gravel includes subangular to well-rounded clasts.

Qy_2 f **Late Holocene to modern floodplain deposits** — Sand, silt, and gravel deposits associated with slightly higher terraces along the Hassayampa River. Terrace surfaces typically are smooth and are less than 3 m above the active channel. Terrace surfaces typically are covered with fine-grained floodplain deposits, but relict gravel bars and lenses are common.

Qi_2 f **Middle to late Pleistocene river deposits** — Older terrace deposits of very limited extent found in a few places along the Hassayampa River. Deposits are gravelly with some sand, silt and clay. Soil development is moderate with some clay accumulation where terrace surfaces are well preserved. Terrace surfaces range from 10 to 15 m above the active river channel.

Qi_1 f **Middle Pleistocene river deposits** — Deposits associated with a set of high terraces along the Hassayampa River. Terrace surfaces are fairly flat or slope gently toward the river where well-preserved, but terrace surfaces are dissected by tributary drainages. Deposits typically are quite gravelly at the surface but limited exposures indicate that they also contain sand and silt. Qi_1r terrace surfaces are much more extensive than younger Pleistocene terraces (Qi_2f). Terrace surfaces range from about 20 to 30 m above the active river channel.

Qor **Early Pleistocene river deposits** — Deposits associated with the high terraces along the Hassayampa River that record the maximum aggradation of the river. Terrace surfaces are fairly flat or broadly rounded, but all terrace surfaces are moderately to deeply dissected by tributary drainages and the river and have been substantially modified by erosion. Exposures are poor, but well-rounded gravel is evident at the surface. Terrace surfaces are also typically covered with litter from underlying petrocalcic soil horizons. Qor terrace surfaces are more extensive than any of the younger Pleistocene terraces (Qi_2r). Terrace surfaces range from about 30 to 45 m above the active river channel, and rise to the north across the quadrangle. In addition, the preserved Qor remnants in the northern part of the quadrangle define a rough fan shape that widen to the south, suggesting that Qor deposits may represent a very large alluvial fan deposited by the Hassayampa River several million years ago.

QTsr **Pliocene to early Pleistocene river deposits** — A moderately thick sequence of old Hassayampa River deposits that underlies the river terrace/fan deposits. These deposits consist of river sand, gravel and silt with a substantial component of tributary sand and gravel. Local zones of substantial carbonate accumulation may represent moderately to strongly developed buried soils. Labels are queried (QTsr?) where exposures are poor.

Other Units

Qtc **Holocene and Pleistocene colluvium and talus** — Very poorly sorted hillslope deposits mantling bedrock slopes.

d **Disturbed areas** — This unit designation is used in areas of substantial excavation, in sand and gravel quarries, and in areas excavated or otherwise disturbed along the Central Arizona Project Aqueduct.

Bedrock map units

Bedrock in the Daggs Tank 7.5' quadrangle is restricted to the southeastern corner of the map at the foot of the White Tank Mountains. Bedrock can be divided into three structural units. The easternmost of these units consists of medium-grained biotite granite of Late Cretaceous or early Tertiary age. This unit forms the footwall of the Wagner fault, a west dipping normal fault that is associated with chloritic alteration and brecciation in footwall rocks and had been thought to be part of a detachment fault system in the White Tank Mountains (Reynolds and Grubensky, 1993; Kruger et al., 1998). Bedrock to the west of the Wagner fault and in its hanging wall consists of a variety of granitic and shallow intrusive rocks that were mapped by Barrett (1976). New mapping in the adjacent Wagner Wash Well 7.5' quadrangle clarified the nature of Barrett's map units, and some were lumped together for this map. Detailed descriptions, not given by Barrett (1976), are given here based largely on examination of rocks in the adjacent Wagner Wash Well 7.5' quadrangle (Ferguson et al., 2004). Because similar rocks are present in the hanging wall and footwall of the Wagner fault, it does not seem likely that this fault has large displacement or that it should be correlated with any detachment fault. The third structural unit consists of volcanic rocks above the concealed trace of the White Tank detachment fault. This gently west-dipping fault, which is exposed to the south in the Wagner Wash Well 7.5' quadrangle (Ferguson et al., 2004), separates middle Tertiary volcanic rocks from structurally underlying granitic and shallow intrusive rocks. It is thought to have many kilometers of top-to-the-ENE displacement, to have uncovered the crystalline rocks of the White Tank Mountains, and to have been arched over the range by isostatic uplift during and following denudation (Kruger et al., 1998).

Rocks in the hanging wall of the White Tank detachment fault

Tt **Pyroclastic rocks (middle Tertiary)** — Massive to thick-bedded, mostly matrix-supported, nonwelded felsic tuff with abundant lithic lapilli. Lithic clasts are dominantly andesite and rhyolite, but locally, granitic and metamorphic clasts are also abundant. Samples: CAF-27271, 7569.

Trq **Phenocryst-poor, quartz-phyric rhyolite lava (middle Tertiary)** — Rhyolite lava containing 1-10%, 1-3 mm feldspar and quartz phenocrysts. The flows are typically pink to lavender in color and preserve massive flow-foliated and autobreccia textures. Samples: CAF-2-7476, 7564, 7565.

Rocks in the footwall of the White Tank detachment fault

Age assignments for plutonic rocks in the northwestern White Tank Mountains are based primarily on their age relative to an early Tertiary to Late Cretaceous (56.2 ± 14 Ma) complex of medium-grained granite (map unit TKg) and comagmatic heterogeneous mafic plutonic rocks. Hypabyssal rocks of map unit TKq that are intruded by this complex are also assigned an early Tertiary to Late Cretaceous age, whereas those that intrude the complex are assigned a Tertiary age (map units Tqm, Tmp, Tb). Undeformed coarse-grained granite (map unit YXg) is assigned a Middle to Early Proterozoic age, and tectonically foliated plutonic rocks intruded by the undeformed coarse grained granite are assigned to the Early Proterozoic (map unit Xgd).

Tqm **Quartz monzonite porphyry (Tertiary)** — Fine-grained, typically dark greenish matrix porphyry containing 5-20%, 0.5-30 mm, subhedral to euhedral plagioclase, 1-10%, 2-50 mm, subhedral to euhedral potassium feldspar, 1-10%, 1-5 mm, anhedral to subhedral, deeply embayed quartz phenocrysts, and 1-5%, 1-3 mm, chloritically altered biotite. The porphyry also contains sparse 0.2-1 mm clinopyroxene, and sparse opaque minerals. In some areas, the quartz monzonite porphyry has a light gray matrix and is similar to the rhyolite porphyry of map unit TKq. The quartz monzonite porphyry is distinguished from the rhyolite porphyry and other quartz-phyric porphyry units based primarily on cross-cutting relationships. The quartz monzonite porphyry is one of the youngest intrusive units in the area and clearly intrudes the medium-grained granite of map unit TKg and a swarm of basaltic dikes (map unit Tb) that consistently intrude rhyolite porphyry of map unit TKq. The quartz monzonite porphyry correlates with Barrettt's (1976) quartz monzonite porphyry.

Tmp **Monzonite porphyry (Tertiary)** – Porphyritic dikes characterized by the absence of quartz phenocrysts visible in hand specimen. Phenocryst content varies from 10-50%. Subhedral to euhedral plagioclase (0.5-5 mm) is by far the most abundant phase. Potassium feldspar is virtually absent, but sparse, microscopic (<0.2 mm) subhedral to anhedral quartz is ubiquitous. Mafic phenocrysts are strongly chloritically altered biotite (1-2% 0.4-1.5 mm), and 0.5-3% 0.5-1.5 mm glomeroporphyritic clinopyroxene. Traces of sphene (<0.3 mm) and opaques are associated with the biotite and clinopyroxene. Glomeroporphyritic clumps of clinopyroxene are commonly rimmed by euhedral plagioclase phenocrysts. The monzonite porphyry correlates with Barrett's (1976) monzonite porphyry and quartz latite porphyry units.

Tb **Basaltic dikes (Tertiary)** – Fine-grained, generally dark gray to purple, aphanitic-matrix basaltic dikes with sparse plagioclase (1-4 mm) and altered mafic (≤2 mm) phenocrysts. The basaltic dikes represent a wide-ranging swarm of dikes that consistently intrude the medium-grained granite of map unit TKg and are mostly intruded by the quartz monzonite of map unit Tqm and monzonite porphyry of map unit Tmp. Basaltic dikes are commonly intruded by parallel dikes of the quartz monzonite (map unit Tqm) and monzonite porphyry (map unit Tmp), and in some areas, overlapping relationships are present. The basaltic dikes correlate with Barrett's (1976) dacite porphyry dikes.

TKbx **Brecciated and mineralized rock (Tertiary)** – "Mineralized breccia" of Barrett (1976) that was the focus of exploration activity in the 1960s and 1970s. Pyrite and chalcopyrite comprise < 2% of the most mineralized rocks, which are associated with goethite and jarosite and peripheral, weak propylitic alteration. A shallow rotary drill hole encountered up to 0.14% copper and 185 ppm molybdenum (Arizona Geological Survey file data).

TKg **Medium-grained granite (early Tertiary – Late Cretaceous)** – Medium-grained to locally coarse-grained, equigranular to potassium-feldspar porphyritic granite with 3-15% ≤3 mm subhedral to euhedral biotite, up to 1% hornblende, and sparse opaques associated with the biotite and hornblende. The granite typically weathers into tors and rounded grus-covered hills, and is present on both sides of the Wagner fault. To the west, the granite is leucocratic (<7 % biotite), homogeneous, and porphyritic with up to 20% fine-grained crystalline matrix. On the east side of Wagner fault, the granite ranges from medium-grained, equigranular granite, monzogranite, and granodiorite to potassium-feldspar-porphyritic granite with potassium-feldspar phenocrysts up to 30 mm diameter and biotite content of 5-15%. Just south of the edge of the Daggs Tank 7.5' quadrangle, two samples of this granite were dated by the K-Ar method. One sample, collected to the west of the Wagner fault and mapped by Barrett (1976) as granite porphyry, yielded a K-Ar hornblende date of 88.2 ± 3.1 Ma (R.L. Armstrong, 1975, written communication, reported by Reynolds et al., 1986). The other sample, collected to the east of the Wagner fault and correlated with the granodiorite unit (TKgd) of Reynolds et al. (2002), yielded a K-Ar biotite cooling age of 19.6 ± 0.5 Ma (Shafiqullah et al., 1980). Another sample of this unit, from the White Tank Mountains NE 7.5' quadrangle, yielded a U-Pb zircon date of 56.2 ± 14 Ma (Spencer et al., 2003). Our late Cretaceous to early Tertiary age assignment for this unit is based on the interpretation that both the U-Pb and hornblende K-Ar dates reflect a Late Cretaceous to early Tertiary crystallization age, and the biotite K-Ar date is related to cooling during later extensional exhumation associated with displacement on the White Tank detachment fault, the Wagner fault, or both.

TKq **Rhyolite porphyry (early Tertiary – Late Cretaceous)** – A composite unit of quartz-phyric rhyolite porphyry dikes and stocks with highly variable phenocryst content. The rhyolite porphyry is characterized by light gray, commonly flow-foliated aphanitic matrix and contains between 0.5% and 40% phenocrysts of 1-10 mm quartz, potassium feldspar, and plagioclase phenocrysts with sparse biotite, hornblende, and other mafics. In general, grain size and the abundance of accessory mafic minerals increases with phenocryst content. Contacts between the different varieties of this heterogeneous rock unit are sharp, and many of the dikes are occupied by more than one variety. The rhyolite porphyry and its phenocryst-poor to phenocryst-rich varieties represent a continuum of essentially contemporaneous felsic to intermediate hypabyssal rocks. The rhyolite porphyry has a lighter colored matrix than the quartz monzonite porphyry of map unit Tqm. The bulk of the rhyolite porphyry correlates with the older rhyolite and aplite porphyries of Barrett (1976) and the intrusive rocks unit (Ti) of Reynolds et al. (2002).

YXg **Coarse-grained granite (Middle or Early Proterozoic)** – Coarse-grained, potassium-feldspar porphyritic granite with 7-10% biotite. The coarse-grained granite correlates with Barrett's (1976) granite unit.

Xgd **Granodiorite (Early Proterozoic)** – Medium-grained, weakly to strongly foliated granitoid ranging from monzogranite to granodiorite and quartz monzodiorite, and containing 15-40% mafics. Mafic minerals in one sample from the adjacent Wagner Wash Well 7.5' quadrangle are hornblende (5-8% 1-3 mm) and clinopyroxene (2% <0.5 mm; Ferguson et al., 2004). The granodiorite correlates with the hornblende diorite, quartz diorite and diorite units of Barrett (1976).

Topographic base from USGS Daggs Tank 7.5' quadrangle, compiled from aerial photographs taken 1984; field checked in 1986; edited 1988. Transverse Mercator projection, NAD 27, UTM zone 12. Reprojected to NAD 83, state-plane feet. Magnetic declination 12.5° east of true north. Contour interval 20 feet.

SCALE 1:24,000

1 0.5 0 1 Miles

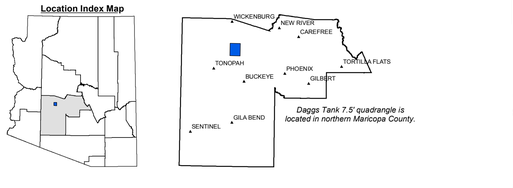
1,000 500 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

contour interval 20 feet

MN 12°30'

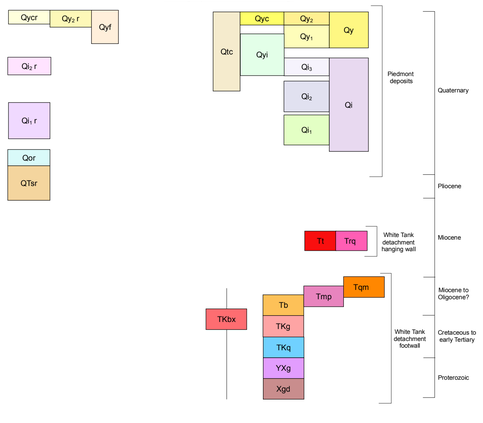
Location Index Map



Daggs Tank 7.5' quadrangle is located in northern Maricopa County.

N

Stratigraphic Correlation Diagram



Map Legend

- Contact, accurate
- Contact, approximate
- Fault, accurate (4↓)
- Fault, concealed
- White Tank detachment fault, concealed (barbs on hanging wall)
- Dacite porphyry dike (unit TKd)
- Bedding, accurate (25)
- Inclined flow foliation (65 70)

56.2 +/- 14 Ma U-Pb zircon Sample 981-21-1 Spencer et al., 2003

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