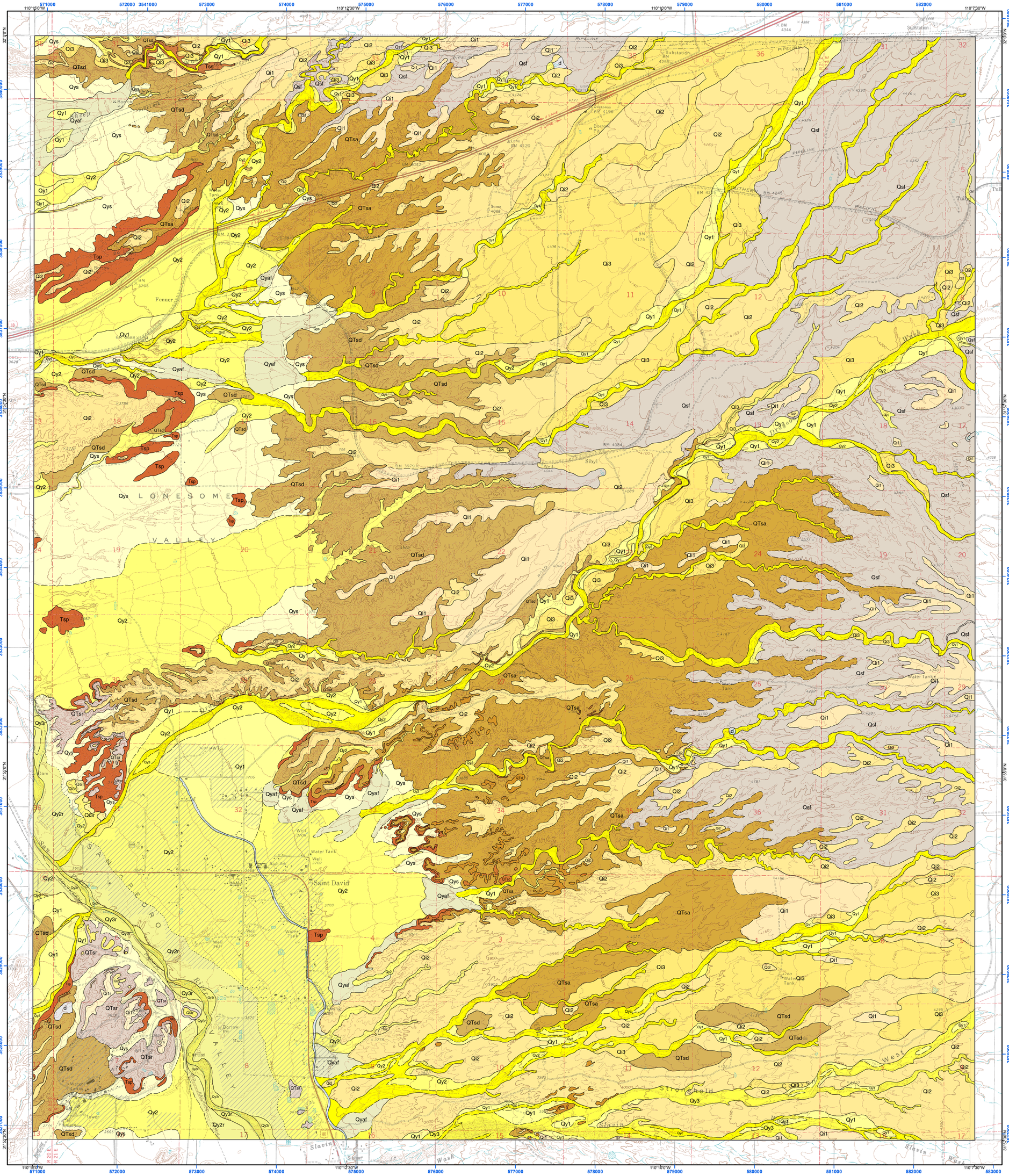

Geologic map of the Saint David 7 ½' Quadrangle, Cochise County, Arizona

Ann M. Youberg and Joseph P. Cook

Arizona Geological Survey

Digital Geologic Map 48 (DGM-48), version 3.0

September 2018

1:24,000 scale

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Map Unit Descriptions

San Pedro River deposits

- **Qycr** — **Active river channel deposits** - Unconsolidated, very poorly sorted sandy to cobbly beds in active river channels.
- **Qy_3r** — **Historical river terrace deposits** - Unconsolidated sand, gravel, and silt deposits on low terraces inset below the abandoned early historical floodplain.
- **Qy_2r** — **Latest Holocene to historical river terrace deposits** - Silt, clay, sand, and minor gravel deposits underlying the early historical floodplain.
- **Qy_1r** — **Late to early Holocene river terrace deposits** - Silt, clay, sand, and minor gravel terrace deposits slightly above the early historical floodplain.
- **Qi_5r** — **Late Pleistocene river terrace deposits** - Gravelly, sandy river terrace deposits from 5 to 20 m above the active river channel.
  - **Qi_5rb** — **Late Pleistocene river terrace deposits (younger member)**
  - **Qi_5ra** — **Late Pleistocene river terrace deposits (older member)**
- **$Qi_{5-3}r$** — **Middle to late Pleistocene river terrace deposits (undivided)** - Higher intermediate terraces composed of a mix of river gravel, sand, silt, and clay from 15 to 35 m above the active river channel.
- **$Qi_{1-2}r$** — **Early to middle Pleistocene river terrace deposits** - Isolated deposits covered with well-rounded river gravel from 30 to 60 m above the active river channel.
- **QTsr** — **Pliocene to early Pleistocene river deposits** - A moderately thick sequence of old San Pedro River deposits that underlies Qi2r terrace fan deposits. These deposits consist of river sand, silt, pebbles and cobbles. Hillslopes are generally covered with a course rounded pebble and cobble lag. Limited exposures of the deposit indicate a finer-grained sequence beneath the lag. Clasts within this unit typically have thin carbonate rinds. The soil is violently effervescent. This unit probably interfingers with the basin fill units.
- **QTcr** — **Ancestral San Pedro River channel conglomerates** - Ancestral San Pedro River channel deposits consisting of consolidated moderately to well-sorted, rounded pebbles and cobbles. Diverse lithology reflects the larger drainage area of the San Pedro River as compared to local tributary streams. These channel conglomerates exhibit trough cross-bedding with a north-south trend. On the west side of the river these deposits are located below Qi2r within unit QTsr. East of the river these units sit directly on the lowest basin fill unit, Tsp. Smith (1994) places this unit in Deposition Interval II; it correlates to the middle St. David Formation of Grey (1967).

Piedmont deposits

- **Qyc** — **Modern stream channel deposits** - Active channel deposits composed of very poorly-sorted sand, pebbles, and cobbles with some boulders to moderately-sorted sand and pebbles
- **Qy_3** — **Latest Holocene alluvium** - Unconsolidated, very poorly sorted silty to cobbly low terrace and overflow channel deposits.
- **Qyaf** — **Late Holocene alluvium, active fan deposits** - Active portions of young fan deposits exhibiting distributary drainage patterns
- **Qy_2** — **Late Holocene alluvium** - Young deposits in floodplains, low terraces and small channels that are part of the modern drainage system.
- **Qy_1** — **Older Holocene alluvium** - Planar to undulating terrace deposits standing higher than adjacent Qy2 surfaces found mostly along the margins of incised drainages.
- **Qys** — **Fine-grained Holocene alluvium derived from the Saint David Formation** - Holocene alluvium derived from distal Saint David basin fill deposits.
- **Qi_3** — **Late Pleistocene alluvial fan and terrace deposits** - Slightly dissected, fairly smooth terraces and alluvial fans consisting of pebbles, cobbles, and finer-grained sediment exhibiting weak rock varnish.
- **Qi_2** — **Middle to late Pleistocene alluvial fan and terrace deposits** - Moderately dissected relict alluvial fans and terraces with moderate to strong soil development and moderately varnished surface clasts.
- **Qi_1** — **Early to middle Pleistocene alluvial fan and terrace deposits** - Moderately to deeply dissected relict alluvial fans with strong soil development and moderately to strongly varnished surface clasts.

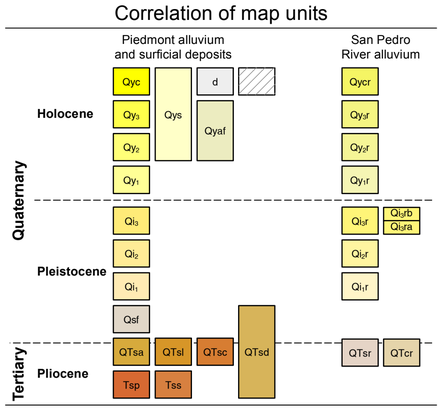
Basin fill deposits

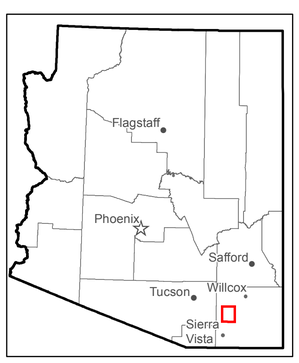
- **QTsd** — **St. David Formation, undivided** - Undivided St. David formation. Unit QTsd is composed of the following basin fill units.
  - **Qsf** — **Piedmont alluvial fan deposits of the St. David Formation** - Stacked, tabular, poorly sorted silty sandy conglomerate separated by thinner (typically < 1 m) beds of finer-grained deposits with reddish paleosols or pebbly sand beds to thinly bedded (< 0.5 m), stacked distal fan deposits of sands and gravels.
  - **QTsa** — **Piedmont alluvial deposits of the St. David Formation** - Alluvial fan and channels deposits that grade into floodplain and marsh deposits towards the basin center.Sandstone and sandy conglomerate interbedded with silty sand and vadose paleosols to hydromorphic paleosols interbedded with tuff, marl, limestone and mudstone.
  - **QTsl** — **Limestones and mudstones of the St. David Formation** - Pond and groundwater deposited limestone beds interbedded with red and green mudstone.
  - **QTsc** — **Piedmont channel conglomerates of the St. David Formation** - Consolidated, matrix supported, moderately to well-sorted, sub-angular to rounded pebble, cobbles and sand.
- **Tss** — **Sandflat deposits of the St. David Formation** - Massive to bedded, reddish brown (5YR to 10YR) sandstone, siltstone, and mudstone.
- **Tsp** — **Pliocene playa deposits of the St. David Formation** - Red (5 to 10 YR) clay and silt with minor interbedded sand and occasional gypsum deposits.

Other Units

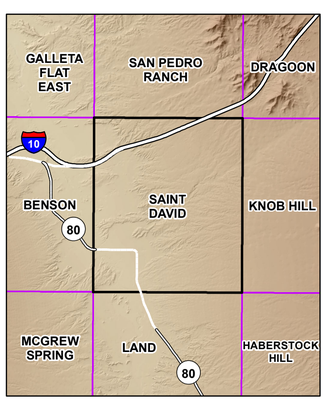
- **d** — **Disturbed ground** - Heavily disturbed ground due to agriculture, extensive excavation, or construction of earth dams.
- **Plowed areas** - Historically or actively plowed fields, irrigated pastures, and other lightly disturbed ground.

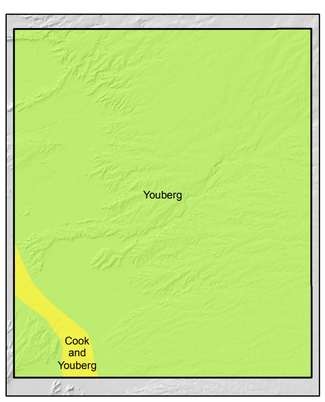
Correlation of map units





Location of map area





SCALE 1:24,000

1 0.5 0 1 Miles

1 0.5 0 1 Kilometers

0 1000 2000 3000 4000 5000 Feet

CONTOUR INTERVAL 20 FEET

Topographic base map derived from the Saint David 7.5' USGS topographic quadrangle map originally with NAD27 datum. Reprojected to UTM NAD83 datum (zone 12) using iGage All Topo Maps V9. UTM NAD 83 grid and lat-lon markers produced using ESRI ArcMap v. 10.4.

TRUE NORTH
MAGNETIC NORTH
9.5°

Approximate mean declination, 2018

Map Symbols

- Contact, accurate
- Contact, approximate
- Contact, concealed

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