

GEOLOGIC MAP OF THE PETALUMA RIVER 7.5' QUADRANGLE

MARIN AND SONOMA COUNTIES, CALIFORNIA: A DIGITAL DATABASE

VERSION 1.0

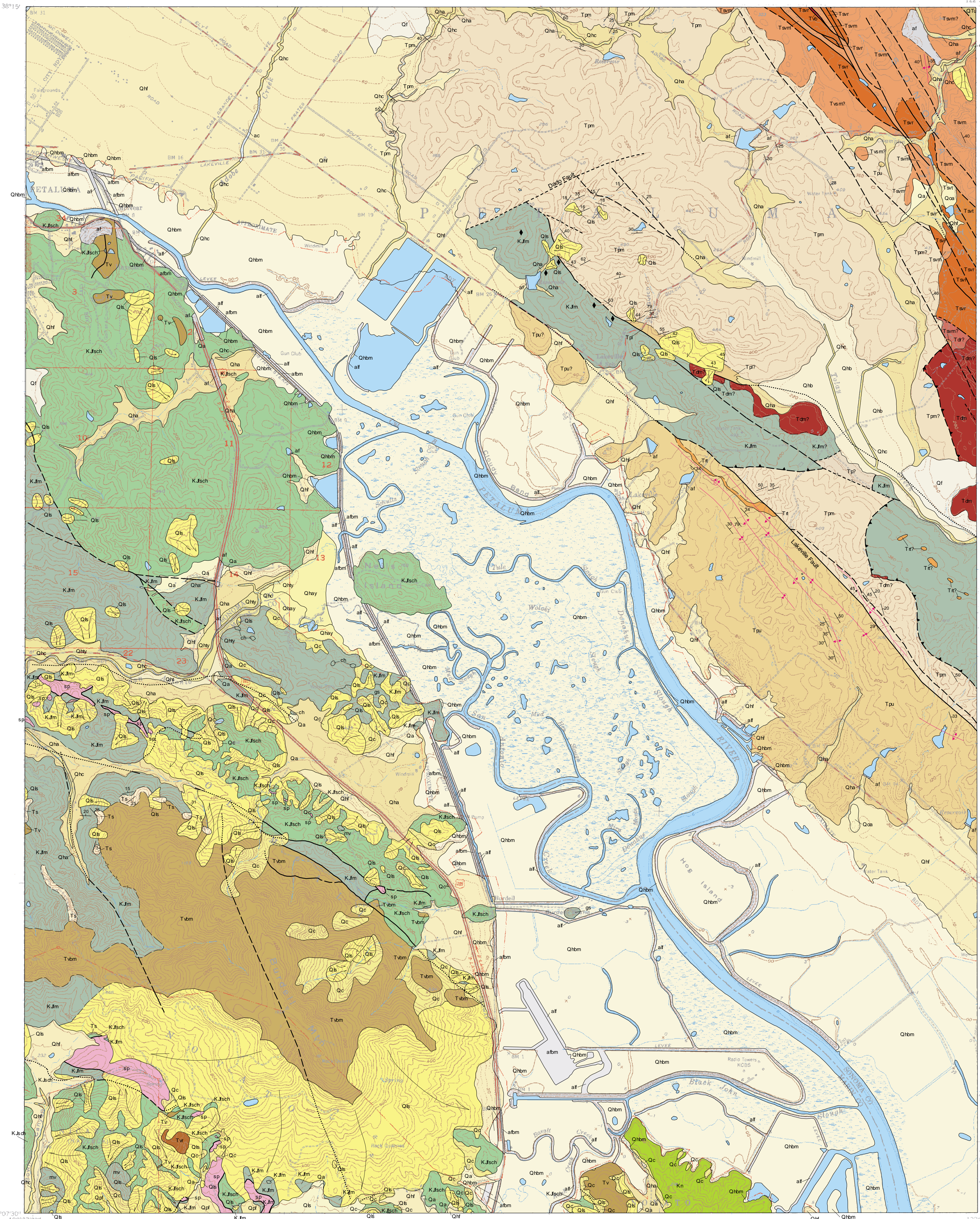
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Digital Database

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Unit Explanation

(See Knudsen and others, 2000, for more information on Quaternary units).

- af** Artificial fill
- afbm** Artificial fill placed over bay mud.
- alf** Artificial levee fill
- ac** Artificial stream channel
- Qhc** Late Holocene to modern (<150 years) stream channel deposits in active, natural stream channels. Consists of loose alluvial sand, gravel, and silt.
- Qhty** Latest Holocene stream terrace deposits. Stream terraces are deposited as point bar and overbank deposits.
- Qhay** Latest Holocene alluvial deposits. Fluvial sediment deposited on the modern flood plain.
- Qhbm** Holocene (<10,000 years) bay mud. Silt, clay, peat, and fine sand deposited at or near sea level in San Pablo Bay.
- Qhf** Holocene alluvial fan deposits. Sand, gravel, silt, and clay deposited by streams emanating from canyons onto alluvial valley floors. Sediment is poorly to moderately sorted and bedded.
- Qht** Holocene stream terrace deposits. Sediment deposited in point-bar and overbank settings. Includes sand, gravel, silt, and minor clay. Moderately to well-sorted and bedded.
- Qha** Holocene alluvium, undivided. Alluvium deposited on fans, terraces, or in basins. Sand, gravel, and silt that are poorly sorted.
- Qhb** Holocene basin deposits. Fine-grained alluvium with horizontal stratification. May have interbedded peat.
- Qf** Latest Pleistocene (<~30,000 years) to Holocene alluvial fan deposits. Sand, gravel, silt and clay mapped on gently sloping, fan-shaped, relatively undisectioned alluvial surfaces.
- Qa** Latest Pleistocene to Holocene alluvium, undivided. Flat, relatively undisectioned fan, terrace, and basin deposits.
- Qpf** Latest Pleistocene fan deposits. Sand, gravel, silt, and clay that is moderately to poorly sorted and bedded. Mapped on alluvial fans where greater dissection indicates latest Pleistocene age.
- Qc** Colluvium. Unconsolidated and unsorted weathered rock fragments accumulated on or at the base of slopes.
- Qls** Landslides. Includes debris flow and block slump landslides. Arrows indicate direction of movement.
- Qoa** Early to late Pleistocene alluvial deposits, undivided. Alluvial fan, stream terrace, basin, and channel deposits. Topography is gently rolling with little or no original alluvial surfaces preserved; moderately to deeply dissected.
- QTu** Gravel, sand, reworked tuff and clay of unknown age. Sediments derived mostly from Sonoma Volcanics.

Petaluma Formation. A predominantly lacustrine and fluvial deposit with estuarine and transitional marine horizons consisting of siltstone, sandstone, shale, conglomerate, with minor silicified tuff, chert, lignite, and limestone. Divided into three subunits:

- Tpu** - Upper Petaluma Fm. Massive, well sorted sandstone, siltstone, and conglomerate. Conglomerate is rich in laminated siliceous shale (Monterey Fm.) fragments and Tertiary volcanics, with Franciscan clasts. The Robler Tuff (Trt), dated at 6.26 Ma (Robert Fleck, written communication) is interbedded with the Upper Petaluma.
- Tpm** - Middle Petaluma Fm. Siltstone and sandstone with interbedded conglomerate. Clasts in conglomerate are mostly pebbles derived from the Franciscan, but clasts of Cretaceous and Tertiary sandstone as well as Tertiary volcanics are present. Minor siliceous shale fragments from the Monterey Formation are also present.
- Tpl** - Lower Petaluma Fm. Dominantly bluish to green clayey siltstone and shale with interbeds of silicified tuff, siliceous limestone, lignite, and rare bituminous chert. Laminated siltstone near the base in places. Localities near Tolly Creek and elsewhere have yielded transitional marine and estuarine horizons in a predominantly lacustrine and fluvial deposit.

Sonoma Volcanics. Mafic lava flows, breccias, agglomerate tuff, tuff breccia with interbedded tuffaceous sediments; also includes dacitic to rhyolitic lava flows, debris flows, tuff, and tuffaceous sediment. The age range for the Sonoma Volcanics on this quadrangle is 8.65 to 3.80 Ma (Fox and others, 1985; Youngman, 1989). The Sonoma Volcanics are divided into the following subunits.

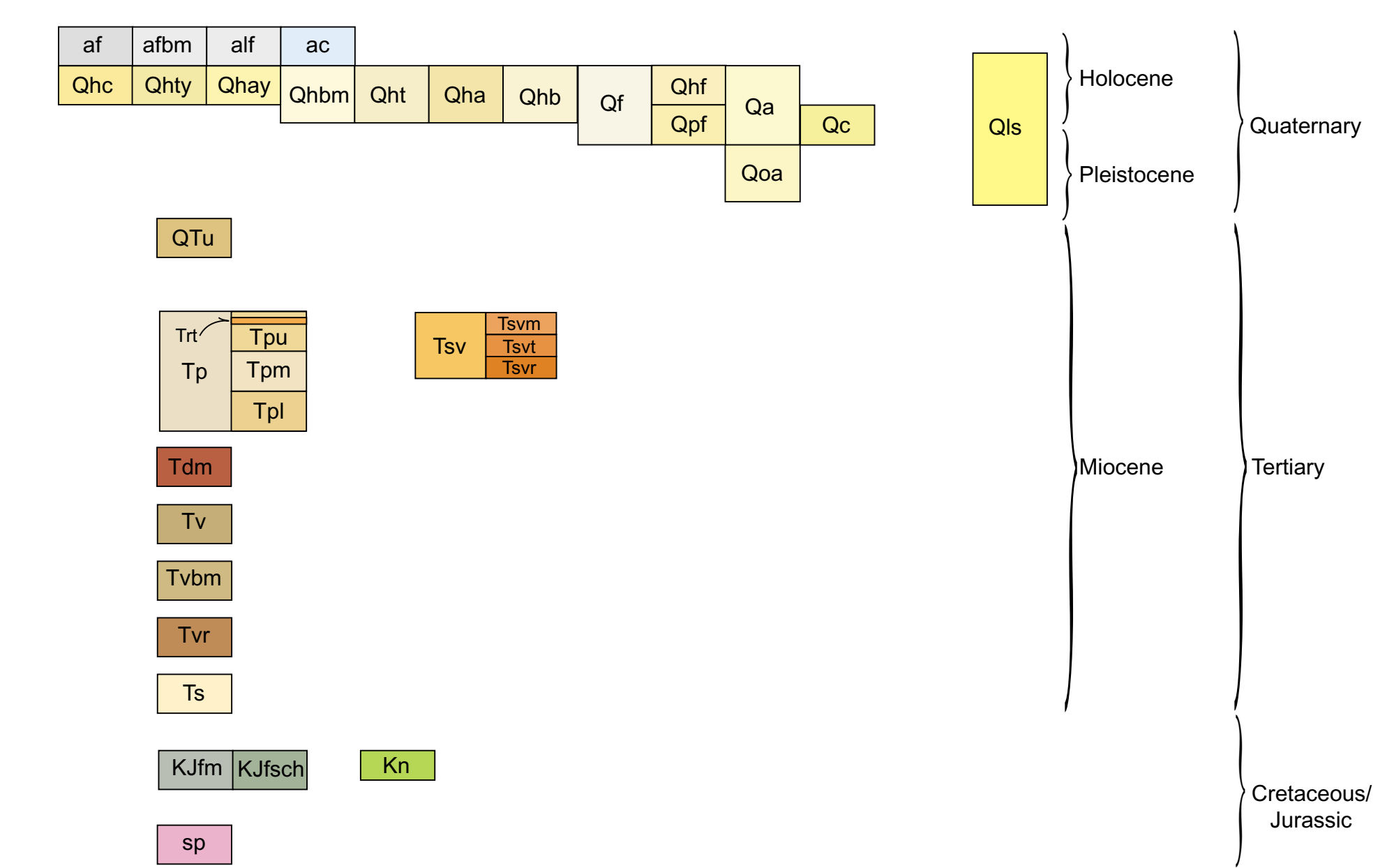
- Tsvm** - Mafic flows and breccias. Andesite and basaltic andesite. Age range is 7.28 to 3.80 Ma (Youngman, 1989).
- Tsvt** - Silicic tuff and interbedded tuffaceous sediments. Interbedded sand and gravel is similar to the Middle Petaluma Formation.
- Tsvr** - Rhyolitic to dacitic flows, breccias, and sediments. Pink, white, gray, brown flow banded rhyolite in flows, debris flows and breccia. Interbeds of sand, gravel, and tuff. Dates (Ar/Ar) range from 7.36 to 8.11 Ma (Youngman, 1989).

Donnell Ranch Volcanics of Youngman (1989). Basalt and basaltic andesite flows, breccia, and scoria. Cream colored tuff is interbedded with the mafic volcanics. The age range for the Donnell Ranch Volcanics is 10.64 Ma to possibly as young as 6.52 Ma (Youngman, 1989). Part of the Tolly Volcanics of Morse and Bailey (1935).

- Tdm** - Tertiary volcanic rocks - Mafic volcanic rocks, mostly basaltic andesite, similar to and probably part of Burdell Mt. Volcanics. Whole rock K/Ar dates of 12.26 +/- 0.38 and 12.47 +/- 0.74 were reported by Fox and others (1985) at quarry near Mc Nears in the northeast part of the quadrangle.
- Tvbm** - Volcanic rocks of Burdell Mountain. Andesite, basalt, rhyolite, and dacite.
- Tvr** - Rhyolite on the south slope of Burdell Mountain.
- Ts** - Tuffaceous, fossiliferous sandstone underlying the volcanics of Burdell Mountain.
- Kn** - Novato Conglomerate. Massive, well-cemented, coarse conglomerate, composed of rounded pebbles and cobbles of chert, rhyolite, granite and quartzite, in a coarse sandy matrix. (Part of the Great Valley Sequence).

- KJfm** Franciscan complex melange. Tectonic mixture of masses of resistant rock including sandstone, altered mafic volcanics (greenstone), chert, gabbro, exotic metamorphic rocks imbedded in a sheared shaly matrix. Blocks with melange large enough to be shown at this scale are denoted as:
ss - sandstone
mv - metavolcanic rock
ch - chert
gs - greenstone (altered mafic volcanic rocks)
◆ - Blueschist block
- KJsch** Franciscan Complex schist, phyllite, and semischist.
- sp** Serpentinized ultramafic rocks.

Unit Correlation



Symbol Explanation

- Contact between map units - solid where accurately located, dashed where approximately located; short dash where inferred; dotted where concealed.
- |27 Fault - solid where accurately located, dashed where approximately located; short dash where inferred; dotted where concealed. U = upthrown block, D = downthrown block. Arrow and number indicate direction and angle of dip of fault plane.
- Thrust Fault - solid where accurately located; dashed where approximately located; short dash where inferred; dotted where concealed. Barb located on upthrown block.
- Overturned Anticline - Dashed where approximately located.
- Anticline - Dashed where approximately located.
- Syncline - Dashed where approximately located.
- Strike and dip of sedimentary beds:
Inclined
Overturned
Horizontal
- Landslide - arrows indicate principal direction of movement. Queried where questionable.

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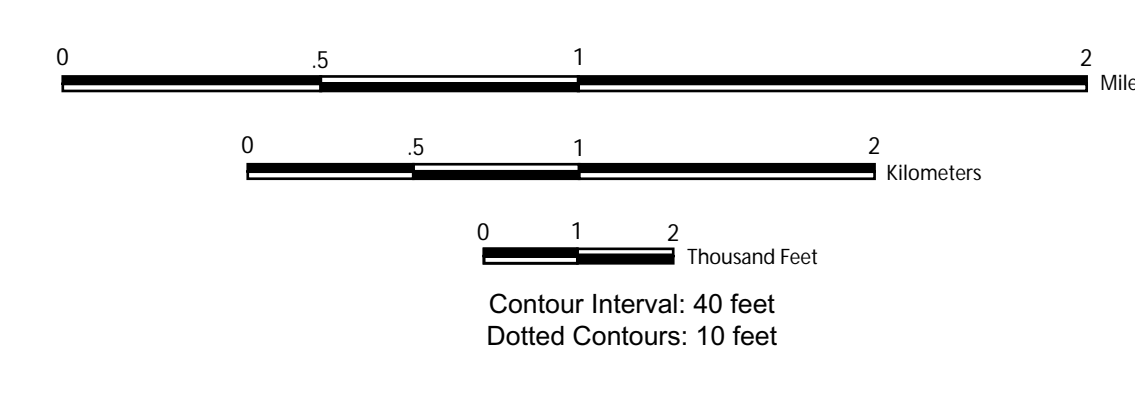
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Topographic base from the U.S. Geological Survey Polyconic Projection

UTM GRID AND 2002 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



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