CALIFORNIA GEOLOGICAL SURVEY
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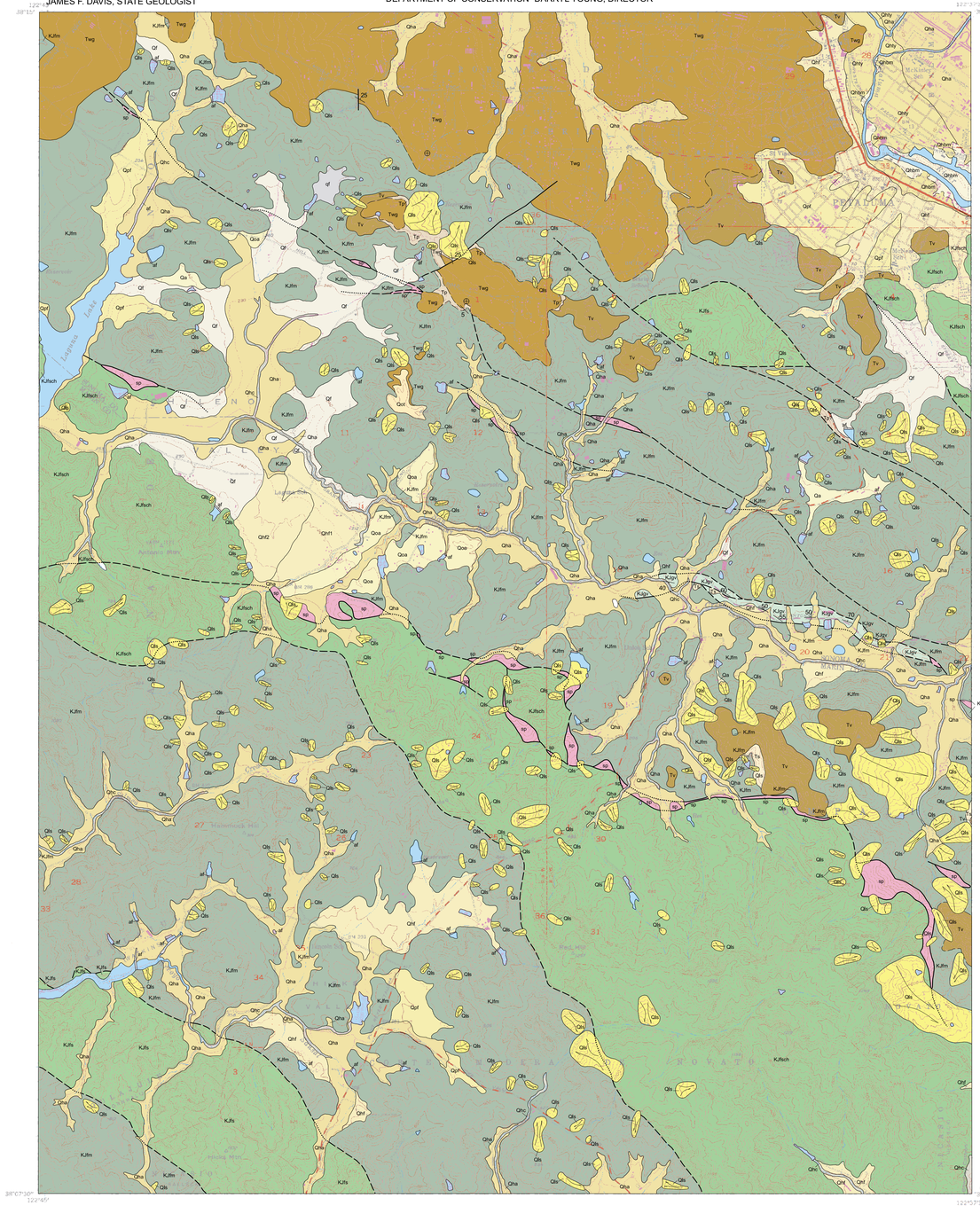
DEPARTMENT OF CONSERVATION- DARRYL YOUNG, DIRECTOR



GEOLOGIC MAP OF THE PETALUMA 7.5' QUADRANGLE SONOMA AND MARIN COUNTIES, CALIFORNIA: A DIGITAL DATABASE

VERSION 1.0

By

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Digital Database
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2002

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CALIFORNIA GEOLOGICAL SURVEY
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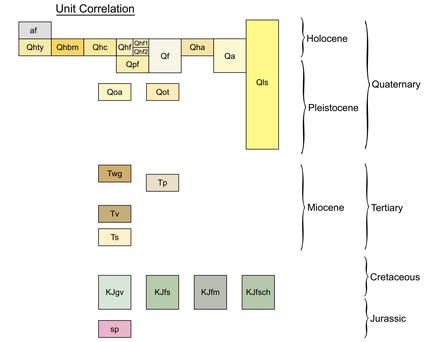
Unit Explanation

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

- **af** — Artificial fill.
- **Qhbm** — Holocene (<10,000 years) estuarine deposits (bay mud). Holocene sediments deposited in a tidal marsh, estuary, delta, or lagoon. Sediments are silts, fine sands, peats, and clays.
- **Qhc** — Late Holocene to modern (<150 years) stream channel deposits in active, natural stream channels. Consists of loose alluvial sand, gravel, and silt.
- **Qhf** (Qhf1, Qhf2) — Holocene fan deposits. Holocene alluvial fan sediments, deposited by streams emanating from the mountains as debris flows, hyperconcentrated mudflows braided stream flows. Sediments include sand, gravel, silt and clay, that are moderately to poorly sorted, and moderately to poorly bedded. In Chileno Valley Holocene fan deposits are subdivided into Qhf1 (younger), and Qhf2 (older).
- **Qha** — Holocene alluvium, undifferentiated. Alluvium of Holocene age, deposited in fan, terrace, or basin environments. The unit is mapped where separate types of deposits could not be delineated either due to complex interfingering of depositional environments or the limited size of the area.
- **Qhty** — Latest Holocene terrace deposits. Stream-terrace deposits judged to be latest Holocene (<1,000 years) in age based on records of historical inundation, the presence of youthful meander scars and braid bars, or geomorphic position very close to the stream channel. Stream terraces are deposited as point bar an overbank deposits along the Petaluma River. Although very young terrace deposits are also found along smaller streams, these may be too small in size to be shown at this map scale and therefore are often included in Qhc or Qht mapping units. Terrace sediments include sand, gravel, silt, with minor clay, moderately to well-sorted, and moderately to well-bedded.
- **Qf** — Late Pleistocene (<~30,000 years) to Holocene fan deposits. Gently sloping, fan-shaped, relatively undissected alluvial surfaces where late Pleistocene or Holocene age was uncertain or where the deposits of different age interfinger such that they could not be delineated at the map scale. Sediments include sand, gravel, silt, and clay, that are moderately to poorly sorted, and moderately to poorly bedded.
- **Qa** — Late Pleistocene to Holocene alluvium, undifferentiated. Alluvium deposited in small valleys where separate fan, basin, and terrace units could not be delineated at the map scale, and where Holocene or Pleistocene age was uncertain. The unit includes flat, relatively undissected fan, terrace, and basin deposits, and small active stream channels.
- **Qpf** — Late Pleistocene fan deposits. Gently sloping, fan-shaped alluvial surfaces where late Pleistocene age is indicated by slight dissection and/or the development of alfisols.
- **Qoa** — Early to middle Pleistocene fan or terrace deposits. Moderately to deeply dissected alluvial deposits capped by alfisols, ultisols, or soils containing a silica or calcic hardpan.
- **Qot** — Early Pleistocene terrace deposit. Moderately indurated, iron-stained, cobble to boulder gravel. Clasts consist mostly of Franciscan lithologies but also include Tertiary volcanic boulders.
- **Qls** — Landslide deposits. Holocene and Pleistocene landslides.
- **Twg** — Wilson Grove Formation (Miocene). Light gray to light yellow-brown marine sandstone. The sandstone is fine grained, well sorted, and massive to poorly bedded. Locally contains thin lenses of pebble conglomerate.
- **Tp** — Petaluma Formation (Miocene). Nonmarine conglomerate along Spring Hill Road. The gravels interfinger with marine sandstone of the Wilson Grove Formation. Along Point Reyes-Petaluma Road south of Petaluma a fault bounded exposure of mudstone with thin beds of siltstone and sandstone with limestone concretions is thought to be Petaluma Formation.
- **Tv** — Volcanic rocks (Miocene). Basalt flows, andesite breccias, and rhyolite. A potassium-argon age of 11.76+44 was obtained from a basalt flow along Spring Hill Road (Fox and Others, 1985).
- **Ts** — Sandstone (Miocene). Fine- to medium-grained, poorly bedded marine sandstone, locally fossiliferous with pelecypod casts and barnacle plates.
- **KJgv** — Great Valley Sequence, undivided (Jurassic-Cretaceous). Sandstone, siltstone and shale with thick beds of pebble to cobble conglomerate. Clasts in the conglomerate are metavolcanic rocks, black chert, and minor granitic rocks.
- **KJfm** — Franciscan melange (Jurassic-Cretaceous). A tectonic mixture consisting predominantly of a matrix of sheared graywacke and shale and to a lesser extent serpentinite enclosing blocks of less sheared graywacke and graywacke interbedded with shale. The unit is characterized by hard, resistant tectonic blocks of chert, greenstone, and exotic high-grade metamorphic rocks.
- **KJfsch** — Francican metamorphic rocks (Jurassic-Cretaceous). Tectonic mixture of metamorphic rocks containing blueschist. The unit is predominantly metagraywacke with weak to moderate foliation, metashale, and metagreenstone. Tectonic inclusions of coarse-grained metamorphic rocks and metachert are common.
- **KJfs** — Franciscan graywacke (Jurassic-Cretaceous). Thick-bedded graywacke with minor interbedded shale. The graywacke is moderately to intensely sheared but lacks tectonic blocks characteristic of Franciscan melange.
- **sp** — Serpentinite

Unit Correlation



Symbol Explanation

- Contact between map units - solid where accurately located, dashed where approximately located; short dash where inferred; dotted where concealed.
- 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.

Strike and dip of sedimentary beds:

- Inclined
- Horizontal
- Landslide - arrows indicate principal direction of movement. Queried where questionable.

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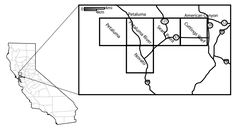
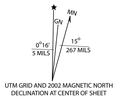
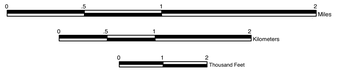


Topographic base from the U.S. Geological Survey Polyconic Projection



UTM GRID AND 2002 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



Contour Interval: 40 feet

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