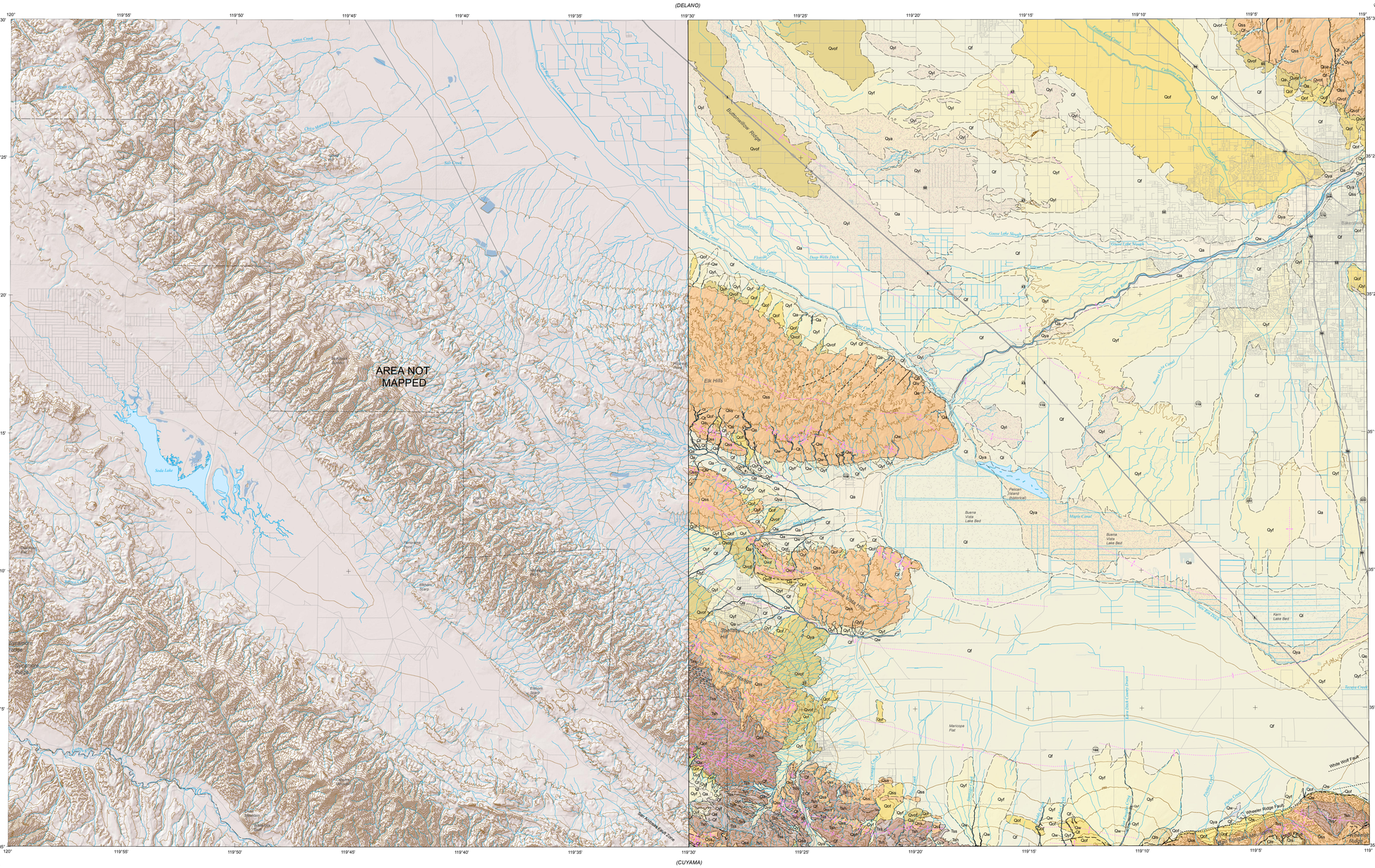
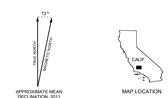


Projection: Universal Transverse Mercator, Zone 11 North, North American Datum of 1983.

Topographic contours derived from USGS 1/3 arc-second National Elevation Dataset (NED). Shaded topographic relief derived from USGS 1 arc-second NED. Base map of hydrography from National Hydrography Dataset Plus (NHDPlus) and California Department of Fish and Game. Base map of geographic names from USGS Geographic Names Information System (GNIS).



APPROXIMATE MEAN DECLINATION, 2011

MAP LOCATION

GEOLOGIC MAP OF QUATERNARY SURFICIAL DEPOSITS IN SOUTHERN CALIFORNIA
EAST HALF OF THE TAFT 30' X 60' QUADRANGLE

A Project for the Department of Water Resources by the California Geological Survey

by
Wayne D. Haydon, CEG and Cheryl A. Hayhurst, PG
Digital preparation by
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December 2011

MAP EXPLANATION

This map of Quaternary surficial deposits in the east half of the Taft 30' x 60' quadrangle was created by the California Geological Survey (CGS) for the Department of Water Resources (DWR) to assist in identifying where flooding and deposition of sediment occurred in the geologically recent past. The west half of the Taft quadrangle was not funded as part of the project at this time. The focus of this project is on Quaternary (Q) surficial deposits (less than 1.8 million years) on alluvial fans, floodplains, and in basins where such deposits are subject to a number of geologic hazards including flooding, amplification of seismic shaking, liquefaction, and collapsible soils. In general, areas of most recent deposition during Late Holocene time (within the last 500 years) have a greater potential to be areas of future flooding and deposition than those underlain by older surficial deposits.

Project Overview

The east half of the Taft 30' x 60' quadrangle represents one of several 100,000 scale quadrangles included in the detailed Geographic Information System (GIS) based geologic data set compiled by CGS from recent high resolution geologic mapping available for southern California. The GIS database merges more than 1400 geologic units from source maps published primarily by the U.S. Geological Survey (USGS) and by CGS (Source GIS Database) into a common format that depicts 40 derivative categories of surficial deposits and bedrock for the entire area (Derivative GIS Database). Because published source geologic mapping at the 100,000 scale was not available for the east half of the Taft quadrangle, CGS used the derivative map units as a basis for new Quaternary mapping within the quadrangle. Quaternary surficial deposits are divided into 28 categories modified from the methodology of Matti and Cossette (2007), the Southern California Areal Mapping Project (SCAMP, 2000), and the USGS and CGS (2000). While specific variations in age and physical properties exist within each unit, CGS retained the basic premise of Matti and Cossette (2007) that surficial deposits within each of the Quaternary map units formed during a particular range of geologic time, have a similar origin, and have generally similar physical properties. Within the 28 Quaternary surficial units, progressively older surficial deposits are typically better consolidated and more highly dissected by erosion, have more developed and/or eroded soil profiles with stronger degrees of weathering and surface armoring, and occupy a higher topographic position within alluvial fan and floodplain terrains. Geologic bedrock formations are divided into 12 categories, based on age and rock type. The bedrock categories can be used to aid in a general understanding of the relative erodibility of the upland materials and the general character of the derived sediments. CGS also rectified inconsistencies along the boundaries of mapped areas to create a seamless Derivative GIS Database with other 30' x 60' quadrangles previously compiled under CGS Special Report 217. Correlation of equivalent deposits across the whole southern California project area is represented in the GIS table entitled Correlation of Derivative and Source Geologic Map Units.

East Half of Taft Quadrangle

The east half of the Taft quadrangle lies at the southern end of the San Joaquin Valley. The Quaternary age alluvial deposits are dominated by the Holocene Kern River alluvial fan. This fan emanates from dissected bedrock uplands in the northeast corner of the quadrangle near Bakersfield and spreads out to the west and south, toward the valley center. Holocene alluvial valley and wash deposits form along the modern streams on the Kern River alluvial fan. Holocene alluvial fan, alluvial valley, and minor eolian deposits mapped in the valleys and flats along the western and southern boundary of the quadrangle spread to the east and north, also toward the valley center. These deposits include local historic debris-flow deposits. Along the edges of these fans, the valley center is underlain by lacustrine deposits of the Buena Vista and Kern lake beds, with alluvial valley deposits in the interconnecting sloughs. Pleistocene alluvial fan and alluvial valley deposits are present along the margins of the flatlands and along the subdued Buttonwillow Ridge in the northwest corner of the mapped area. The alluvial deposits within the mapped area are surrounded on three sides by tectonically active mountains that are experiencing deformation such as uplift, folding and faulting. Bedrock deformation in the Temblor Range in the west half of the area, in the San Emigdio Mountains to the south, and in the Sierra Nevada east of the mapped area results in uplift, local tilting or folding, and erosion of the older Quaternary sediments at the margins of the basin, narrowing the San Joaquin Valley and forcing younger deposition toward the valley centers.
A portion of the NW-trending San Andreas Fault passes through the extreme southwest corner of the area, while the Wheeler Ridge, Pleito, and White Wolf faults form a complexly interrelated series of EW to SW-trending faults in the southeast corner.

In preparing this map of the east half of the Taft 30' x 60'quadrangle, CGS primarily used the soil surveys of Anderson and others (1942), Cole and others (1945), and the U.S. Department of Agriculture (USDA, 1988 and 2009) to aid in mapping the Quaternary deposits. CGS grouped the soils into Quaternary geologic units, in part, using descriptions of soil physiography, geomorphology, dissection, texture, slope, relief, parent material, and profile development. In some places, CGS retained the soil unit boundaries as contacts between Quaternary surficial deposits; in other places, the distribution of Quaternary surficial deposits was mapped using a combination of the soil survey data and the geomorphic interpretation of units based on topography and available digital imagery (North West Geomatics Ltd. and Fugro Earthdata, Inc., 2005; USDA, 1994 and 2009). In addition, CGS remapped the contact between bedrock and Quaternary surficial deposits throughout much of the study area. Quaternary surficial deposits on this map are represented by 13 of the 28 generalized project derivative units. Bedrock geology was taken primarily from Dibblee and Minch (2005a, 2005b, 2005c, 2005d, and 2005e), Maher, Carter, and Lantz (1975), and Bartow, (1984). Bedrock units identified in the study area are represented on this map by 3 of the 12 project derivative bedrock units (see Map Units and Correlation of Map Units). Quaternary faults were mapped using the USGS and CGS (2011) Quaternary fault and fold data base.

This map, along with others in the Geologic Compilation of Quaternary Surficial Deposits in Southern California Derivative GIS Database, is regional in nature and should not be used as a substitute for detailed geologic studies in any specific area. It is intended only for rapid identification of areas subject to previous and potential future flooding and other geologic hazards on alluvial fans and floodplains.

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MAP UNITS

Late Holocene (Surficial Deposits)

Qls **Landslide Deposits** - may include debris flows and older landslides of various earth material and movement types; unconsolidated to moderately well-consolidated

Qw **Alluvial Wash Deposits** - unconsolidated sandy and gravelly sediment deposited in recently active channels of streams and rivers; may contain loose to moderately loose sand and silty sand

Qf **Alluvial Fan Deposits** - unconsolidated boulders, cobbles, gravel, sand, and silt recently deposited where a river or stream issues from a confined valley or canyon; sediment typically deposited in a fan-shaped cone; gravelly sediment generally more dominant than sandy sediment

Qa **Alluvial Valley Deposits** - unconsolidated clay, silt, sand, and gravel recently deposited parallel to localized stream valleys and/or spread more regionally onto alluvial flats of larger river valleys; sandy sediment generally more dominant than gravelly sediment

Qt **Terrace Deposits** - includes marine and stream terrace deposits; marine deposits include slightly to moderately consolidated and bedded gravel and conglomerate, sand and sandstone, and silt and siltstone; river terrace deposits consist of unconsolidated thin- to thick-bedded gravel

Ql **Lacustrine, Playa, and Estuarine (Paralic) Deposits** - mostly unconsolidated fine-grained sand, silt, mud, and clay from fresh water (lacustrine) lakes, saline (playa) dry lakes that are periodically flooded, and estuaries; deposits may contain salt and other evaporites

Qe **Eolian and Dune Deposits** - unconsolidated, generally well-sorted wind-blown sand; may occur as dune forms or sheet sand

Holocene to Late Pleistocene (Surficial Deposits)

Qyf **Young Alluvial Fan Deposits** - unconsolidated to slightly consolidated, undissected to slightly dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Qya **Young Alluvial Valley Deposits** - unconsolidated to slightly consolidated, undissected to slightly dissected clay, silt, sand, and gravel along stream valleys and alluvial flats of larger rivers

Qyl **Young Lacustrine, Playa, and Estuarine (Paralic) Deposits** - unconsolidated to slightly consolidated, undissected to slightly dissected fine-grained sand, silt, mud and clay from lake, playa, and estuarine deposits of various types

Late to Middle Pleistocene (Surficial Deposits)

Qof **Old Alluvial Fan Deposits** - slightly to moderately consolidated, moderately dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Qoa **Old Alluvial Valley Deposits** - slightly to moderately consolidated, moderately dissected clay, silt, sand, and gravel along stream valleys and alluvial flats of larger rivers

Middle to Early Pleistocene (Surficial Deposits)

Qvof **Very Old Alluvial Fan Deposits** - moderately to well-consolidated, highly dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Quaternary (Bedrock)

Qss **Coarse-grained formations of Pleistocene age and younger** - primarily sandstone and conglomerate

Tertiary (Bedrock)

Tss **Coarse-grained Tertiary age formations** - primarily sandstone and conglomerate

Tsh **Fine-grained Tertiary age formations** - includes fine-grained sandstone, siltstone, mudstone, shale, siliceous and calcareous sediments

SYMBOL EXPLANATION

For geologic line symbols: lines are solid where location is accurate, long-dashed where location is approximate, short-dashed where location is inferred, dotted where location is concealed. Queries added where identity or existence may be questionable.

Geologic Contact
Fault -- Includes strike-slip, normal, reverse, oblique, and unspecified slip
Folds -- Showing direction of plunge where appropriate
Anticline
Syncline
Stream
Spring
Road
County boundary

CORRELATION OF MAP UNITS*

	Landslide Deposits	Alluvial Wash Deposits	Alluvial Fan Deposits	Alluvial Valley Deposits	Terrace Deposits	Lacustrine, Playa, and Estuarine Deposits	Eolian and Dune Deposits
	Alluvial Deposits						
Quaternary Surficial Deposits: Late Holocene	Qls	Qw	Qf	Qa	Qt	Ql	Qe
Holocene to Late Pleistocene			Qyf	Qya		Qyl	
Late to Middle Pleistocene			Qof	Qoa			
Middle to Early Pleistocene			Qvof				

	Coarse-grained	Fine-grained
Quaternary (Bedrock)	Qss	
Tertiary (Bedrock)	Tss	Tsh

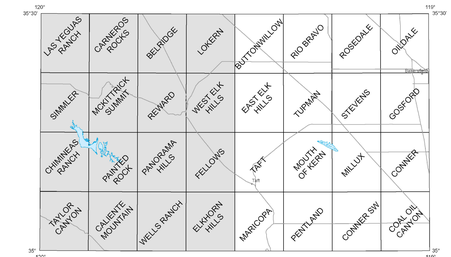
* Boundaries of Quaternary units are gradational and time transgressive in a regional sense.

SCALE 1:100,000

5 2.5 0 5 MILES
5000 0 5000 10000 15000 20000 25000 30000 35000 40000 45000 50000 FEET
5 2.5 0 5 10 KILOMETERS
5000 0 5000 10000 METERS

CONTOUR INTERVAL 50 METERS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

INDEX TO USGS 7.5' QUADRANGLES



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Information on this map is not sufficient to serve as a substitute for the geologic and geotechnical site investigations required under Chapters 7.5 and 7.8 of Division 2 of the California Public Resources Code.