

EXPLANATION

**Qm**  
Bay mud  
Soft water-saturated clay and silt; locally contains lenses of sand and shells, and layers of organic (peaty) matter on tidal flats. Thickness ranges from 0 to 60 feet

**Qal**  
Alluvium  
Gravel, sand, silt, and clay; unconsolidated and undisturbed. 0 to 10 feet thick

**Qol**  
Older alluvium  
Gravel, sand, silt, and clay in lenticular beds; moderately consolidated and deeply dissected. Stands in vertical cuts 20 feet high. Lenses of compressible clay are present throughout outcrop area. Deposits near Palo Alto are predominantly sandy gravel and gravelly sand and are an important source of groundwater; deposits near Redwood City are predominantly sand, silt, and clay. Includes interbedded marine and estuary deposits. 0 to 700 feet thick

**Ql**  
Landslide deposits  
Active and/or unstable; composition depends upon geologic setting. Active landslides may be present nearby in similar topographic and geologic settings

**Qf (Ts)**  
Artificial fill  
Gravel, sand, silt, and clay as well as marmade and organic debris. Source material, where known, shown in parentheses. Dikes bordering site supporting ponds almost wholly composed of materials dredged from adjacent tidal flats. Thickness indicated where known. Many small fills not shown; shielding fill (Ts) 25 feet thick over the Stanford Linear Accelerator not shown

**Qol**  
Old landslide deposits  
Apparently inactive and/or stabilized; composition depends upon geologic setting. Inactive landslides may be present nearby in similar topographic and geologic settings. No evidence of recent movement observed

**Qt**  
Terrace deposits  
Flat-lying, poorly-sorted, unconsolidated stream terrace deposits of clay- to cobble-size material. Contains well-rounded small boulders of very well indurated exotic conglomerate of Cretaceous(?) age (cf. Cummins, 1968). Locally as much as 40 feet thick

**UNCONFORMITY**

**WEST SIDE OF SAN ANDREAS FAULT**

**Qsc**  
Santa Clara Formation  
No outcrops in map area. Hummocky slopes presumably underlain by deposits of gravel, sand, silt, and clay. Cobbles of hard rocks of Cretaceous and Tertiary age occur as float on slopes. Probably less than 15 feet thick in map area. Equivalent to the Corte Madera facies of Cummins (1968)

**Qsc**  
Santa Clara Formation  
Moderately well consolidated subaerial deposits of gravel, sand, silt, and clay in lenticular beds. Almost wholly composed of Franciscan rock debris. Marine conglomeratic sand, as much as 3 feet thick, locally present at base that may represent upper part of the Merced Formation or marine tongues in the subaerial deposits. Weathers to reddish-brown to black moderately expansive soil 1 to 2 feet thick. Maximum thickness about 500 feet. Equivalent to the Searsville and Arastradero facies of Cummins (1968)

**Upper Pliocene**

**Tma**  
Merced Formation  
Poorly consolidated marine sandstone, conglomeratic sandstone, and silty sandstone. Natural exposures rare. Abundantly fossiliferous locally. Maximum thickness probably less than 100 feet

**Lower(?) Pliocene**

**Tpt**  
Purisima Formation  
Poorly consolidated marine sandstone and silty sandstone. May represent Tahama member of Cummins, Touring, and Brabb (1962). More than 500 feet thick

**Td**  
Dike  
Altered rhyolitic(?) dike composed almost wholly of buddingtonite (ammonium feldspar) and quartz. Surrounded by halo of amonitium alteration

**UNCONFORMITY**

**Tm**  
Monterey(?) Shale  
Highly fractured, soft to hard semisiliceous shale, diatomaceous shale, and diatomaceous vitric tuff. Southeast of Felt Lake a diatomaceous vitric tuff bed, near top of section, contains ammonium-rich glass shards. Maximum thickness about 1800 feet

**Ts**  
**Tab**  
Unnamed sandstone  
Ts; clean, well-sorted, medium- to fine-grained friable marine sandstone. Includes some thin beds of yellow-brown dolomitic claystone and white to light-gray porcelaneous shale. Sandstone is about 1500 feet thick; dolomitic claystone and porcelaneous shale total less than 100 feet.  
Tab; hard, well-cemented barnacle shell sandstone. Includes some chert granule barnacle shell sandstone beds. Cement is calcium carbonate. Interfingers with overlying sandstone. Thickness ranges from 0 to 150 feet

**UNCONFORMITY**

**Tm**  
Monterey Shale  
Highly fractured diatomaceous shale, mudstone, laminated siliceous shale, and dolomitic claystone. More than 500 feet thick

**Tpb**  
**Tq**  
Page Mill Basalt  
Tpb; interbedded columnar jointed flows, agglomerate, and tuffaceous beds, all moderately fractured and weathered. Pyritiferous in part; hydrothermally altered in southernmost Page Mill Road quarry, near presumed vent. Includes interbeds of silty to clayey sandstone in and near Page Mill Road quarries. Thickness ranges from 0 to about 200 feet.  
Tq; fossiliferous chert granule quartzite as lenticular beds in and under volcanic rocks

**UNCONFORMITY**

**Tbu**  
**Tbu**  
Butano(?) Sandstone  
Tbu; poorly to very well cemented poorly sorted, coarse-grained, thick-bedded, feldspathic marine sandstone and interbedded silty claystone, glauconitic sandstone, calcareous claystone, and tuffaceous siltstone. Claystone-sandstone ratio about 3:1. Expansive (montmorillonite) clay common in claystones and sandstones of east-central outcrop area; probably common in yet undeveloped areas underlain by this unit. Chaotic mixture of sandstone blocks enclosed in sheared claystone near west end of the Stanford Linear Accelerator. Hard, tough, spherical and lenticular masses of sandstone cemented with calcium carbonate present locally in unoxidized zone. Greenstone-pebble conglomerate at apparent base of section on north side of Jasper Ridge. Total thickness exceeds 3000 feet; greenstone conglomerate is 10 to 30 feet thick.  
Tbu; coarse cobble conglomerate interbedded in base of section on south side of Jasper Ridge. Matrix is argillaceous-cemented feldspathic sandstone; clasts are well rounded siliceous volcanic rocks and Franciscan rocks. Thickness ranges from 0 to 200 feet.

**Ks**  
Unnamed shale  
Shale and silty shale with some thin calcareous lenses. Exposed only in bottom of San Francisco Creek at the Willow Road Bridge. Total thickness exposed is less than 20 feet

**sp**  
**sc**  
Serpentine  
sp; sheared and foliated serpentine and hard blocky serpentine in a sheared matrix.  
sc; silica-carbonate rock (hydrothermally altered serpentine). Hard, dense to spongy rusty-weathering rock composed of opaline to crystalline silica and magnesian carbonates. Occurs as relatively thin lenses in or along the margins of serpentine bodies. Locally contains lead, iron, and mercury sulfides

**KJa** **KJb** **KJc** **KJd** **KJe** **KJf** **KJg** **KJh** **KJi** **KJj** **KJk** **KJl** **KJm** **KJn** **KJo** **KJp** **KJq** **KJr** **KJs** **KJt** **KJu**

**Franciscan Formation**

**KJi**; graywacke with interbedded black shale. Commonly highly fractured and locally sheared. Well indurated where fresh. Includes some granule to pebble conglomerate in Jasper Ridge.  
**KJj**; greenstone, pillow basalt, amygdaloidal basalt, tuffaceous greenstone all fractured and weathered to depths of 40 feet or more. Includes some limestone lenses. p, pillow structure.  
**KJk**; radiolarian chert with shale partings, and recrystallized chert. Locally stained with manganese. Contains at least one concentration of iron formation (Fe) southeast of Felt Lake  
**KJl**; foraminiferal limestone (Calera type), cherty limestone, and limestone breccia. Usually associated with greenstone. Some bodies southeast of Felt Lake may be siltstone blocks in or on the Santa Clara Formation.  
**KJm**; metamorphic rocks of the blue schist facies. Small pods and lenses of hard, tough, foliated rocks.  
**KJu**; undifferentiated Franciscan Formation

**20**  
Contact, showing dip  
Dashed where approximately located; short dashed where inferred; dotted where concealed

**40**  
Fault, showing dip  
Dashed where approximately located; short dashed where inferred; dotted where concealed; quarried where probable. U, upthrown side; D, downthrown side; arrows indicate relative horizontal movement

**45**  
Fault or lineament from aerial photos  
Not all checked on the ground

**60**  
Shear zone, showing dip

**Anticline** **Syncline** **Overturned syncline**

**60**  
Fold axis, showing trace of axial plane  
Dashed where approximately located; dotted where projected through surficial deposits

**Inclined** **Vertical** **Overturned** **Horizontal**

Strike and dip of beds  
Dot indicates top of beds known from sedimentary structures

**60** **40**  
Strike and dip of foliation  
Inclined Vertical

Strike and dip of joints

**30** **60**  
Strike and dip of multiple joint systems and bedding

Sandstone bed  
Porcelaneous shale bed  
Dolomitic siltstone bed  
Vitric tuff bed

Nonflowing well with pumping plant

**375'**  
**(400')**  
Borehole to bedrock  
375' depth to bedrock  
(400)', total depth of hole

**375'**  
**(400')**  
Borehole for site investigation

**Landslide**  
Showing direction of movement

**References cited**

Cummins, J. C., Touring, R. M., and Brabb, E. E., 1962, Geology of the northern Santa Cruz Mountains, California in Geologic guide to the gas and oil fields of northern California: California Div. Mines and Geology Bull. 181, p. 179-220.

Cummins, J. C., 1968, The Santa Clara Formation and possible post-Pliocene slip on the San Andreas fault in central California, in Dickenson, W. R., and Grantz, Arthur, eds., Proceedings of conference on geologic problems of San Andreas fault system: Stanford Univ. Pubs. in Geol. Sci., v. XI, p. 191-207.

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.