

Landslides, Geomorphology and Geology – Iaqua Buttes 7.5-Minute Quadrangle, Humboldt County, California

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EXPLANATION

LANDSLIDE DEPOSITS

- Rock slide:** Slope movement with bedrock as its primary source material. This class of failure includes rotational and translational landslides; relatively cohesive slide masses with failure planes that are deep-seated in comparison to those debris slides of similar areal extent. The slide plane is curved in a rotational slide. Movement along a planar joint or bedding surface may be referred to as translational. Complex versions with combinations of rotational heads and translational movement or earthflows downslope are common. The cross-hatch pattern indicates a scarp; boundary is solid \square where the presence of the slide is definite, dashed \square where probable, and dotted \square where questionable; shading is light \square where the slide is dormant and dark \square where historically active. Arrows point downslope. The arrow \Rightarrow indicates that the landslide type is a rock slide.
- Earthflow:** Slow to rapid movement of mostly fine-grained soil with some rocky debris in a semiconsolid, highly plastic state. After initial failure, the mass may flow or creep seasonally in response to changes in groundwater level. These types of slope failures often include complexes of nested rotational slides and deeply incised gullies; boundaries are usually indistinct. The cross-hatch pattern indicates a scarp; boundary is solid \square where the presence of the slide is definite, dashed \square where probable, and dotted \square where questionable; shading is light \square where the slide is dormant and dark \square where historically active. The arrow \Rightarrow indicates that the landslide type is an earth flow.
- Debris slide:** Mass of unconsolidated rock, colluvium, and coarse-grained soil that has moved slowly to rapidly downslope along a relatively steep, shallow, translational failure plane. Debris slides form steep, un-vegetated scars in the head region and possibly irregular, hummocky deposits in the toe region. Scars commonly level and remain un-vegetated for several seasons depending on slope aspect. Boundary is solid \square where the presence of the slide is definite, dashed \square where probable; shading is light \square where the slide is dormant and dark \square where historically active. Arrows point downslope. In addition to debris slide, a polygon with a \Rightarrow may also indicate a soil fallside/topple.
- Debris flow/rockfall track:** Long stretches of bare ground that have been scoured and eroded to bedrock by extremely rapid movement of water-laden debris. Debris flows are commonly triggered by debris sliding in the source area during high intensity rains. Debris is often deposited downslope as a tangled mass of organic material in a matrix of rock and soil; debris may be reworked and incorporated into subsequent events; lack of vegetation indicates recent activity. Depicted as a line when too narrow to map as a polygon at scale of map; point symbol (▲) represents areas too small to delineate (typically less than 0.25 acre at 1:24,000).
- Other small landslide deposit:** Landslide deposit too small to delineate (typically less than 0.25 acre in area at 1:24,000 scale). Includes small debris slides, earthflows, rock or soil falls/slides/ spreads/ topples.
- Scarp:** The steeply inclined failure surface with exposed soil and rock that marks the top of a landslide. Includes scarps for rock slides/falls, earth flows, and debris slides/flows. Multiple scarps may occur within a landslide and are referred to as secondary scarps.

LANDSLIDE SOURCES AND GEOMORPHOLOGY

- Disrupted ground:** Irregular ground surface that may be caused by complex landsliding processes resulting in features that are indistinguishable or that may be too small to delineate individually at 1:24,000; also may include areas affected by downslope creep, expansive soils, and/or gully erosion; boundaries are usually indistinct.
- Debris slide slope/source area:** A geomorphic feature characterized by steep, usually un-vegetated slopes that appear to have been sculpted by numerous debris slides and debris flows. Upper reaches (source areas) of these slopes are often tightly concave and very steep. Soil and colluvium atop bedrock may be disrupted by active debris slides and debris flows. Slopes near the angle of repose may be relatively stable except where weak bedding planes, bedrock joints, and fractures parallel the slope.
- Inner gorge:** A geomorphic feature consisting of steep slopes adjacent to channels. The gorge typically is created by accelerated downcutting in response to regional uplift. It is defined as an area of embankment between the channel and the first break in slope. Line represents long narrow features less than 150 feet wide and is broken into segments to represent a stretch of discontinuous inner gorge too small to accurately represent at 1:24,000 scale; points are used for features covering less than 0.25 acres. Slopes near the angle of repose may be relatively stable except where weak bedding planes, bedrock joints, and fractures parallel the slope.
- Gully:** Distinct, narrow channel formed by erosion of soil or soft rock material by running water. Channels are larger and deeper than rills and usually carry water only during and immediately after heavy rain or following the melting of ice or snow. Arrows point downstream. Line represents long narrow features less than 150 feet wide; points represent areas too small to map (typically less than 0.25 acre at 1:24,000).

STRUCTURE

- Fault:** Solid where location is certain, dotted when concealed.
- Contact:** Solid where location is certain, dotted where concealed
- Lineament, photo lineament, topo lineament

GEOLOGY

- Alluvium (Holocene):** unconsolidated sand, silt, gravel, and clay deposited by streams in stream channels.
- River Terrace Deposits (Holocene):** unconsolidated poorly sorted, pebbly, gravelly sands, and sandy pebble to boulder conglomerates with occasional silt interbeds; steep slopes subject to debris sliding and small-scale translational/rotational slides; terraces increase in age with increasing elevation above river channel.
- Alluvial Fan Deposits (Holocene):** alluvial sand and gravel deposited in characteristic fan-cone shape at the mouths of eroding stream canyons
- Older River Terraces (Pleistocene?):** slightly consolidated, poorly sorted, silty and clayey gravelly sands, and sandy, silty conglomerates with occasional silt interbeds, subject to debris sliding on steep slopes.
- Undifferentiated Wildcat Group (Miocene-Late Pleistocene):** moderately to poorly indurated, massive (no apparent bedding) to poorly bedded, folded, blue-gray, clayey siltstones with smaller amounts of sandstone, glauconitic and pebbly sandstone, conglomerate, and thin volcanic ash beds; unconformably overlies the Yager Terrane.
- Scotia Bluffs Sandstone (Pleistocene-Pliocene):** folded, very compact, massive, fine-grained, shallow marine sandstone with minor amounts of siltstone and mudstone, unit generally forms cliffs, more resistant to landsliding and erosion than other members of the Wildcat Group.
- Franciscan Complex**
 - Yager Terrane (Eocene to Paleocene?):** a subunit of the Franciscan Complex composed of rhythmically bedded shale and sandstone, massive to thickly bedded sandstone with minor shale, and minor lenses of pebbles and boulder conglomerate; sandstone typically contains prominent detrital muscovite; sandstone and conglomerate is moderately well consolidated; siltstone, mudstone and shale tend to be highly sheared in places; silty shale and mudstone often disintegrate rapidly by slaking when wetted; sandstone units generally are massive; finer-grained layers often are well bedded. Large, deep-seated rock slides and earthflows are common in this portion of the unit.
 - Central Belt Franciscan Complex (Jurassic-Cretaceous):** melange, includes massive to highly sheared sandstone and shale, and large areas of pervasively sheared, shaly matrix containing exotic blocks of chert, greenstone, and glauconitic shale; the entire unit appears to be prone to large-scale earthflows and debris slides.
 - Sandstone (Jurassic-Cretaceous):** undifferentiated sandstone with minor amounts of siltstone and shale, probably correlative with Yager Terrane and Coastal Belt sandstones.

Other Map Symbols

- b blueschist
- ch chert
- g greenstone
- sp serpentine
- ss sandstone
- u undetermined
- v volcanic
- wet area

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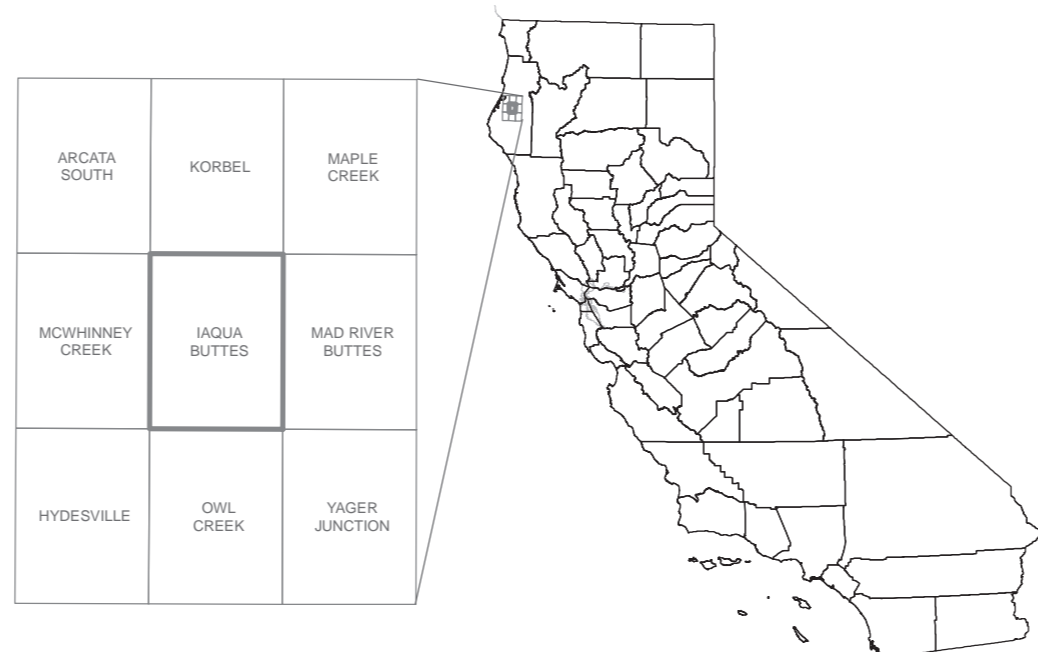
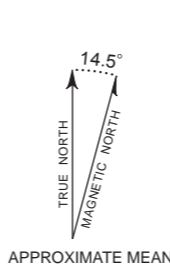
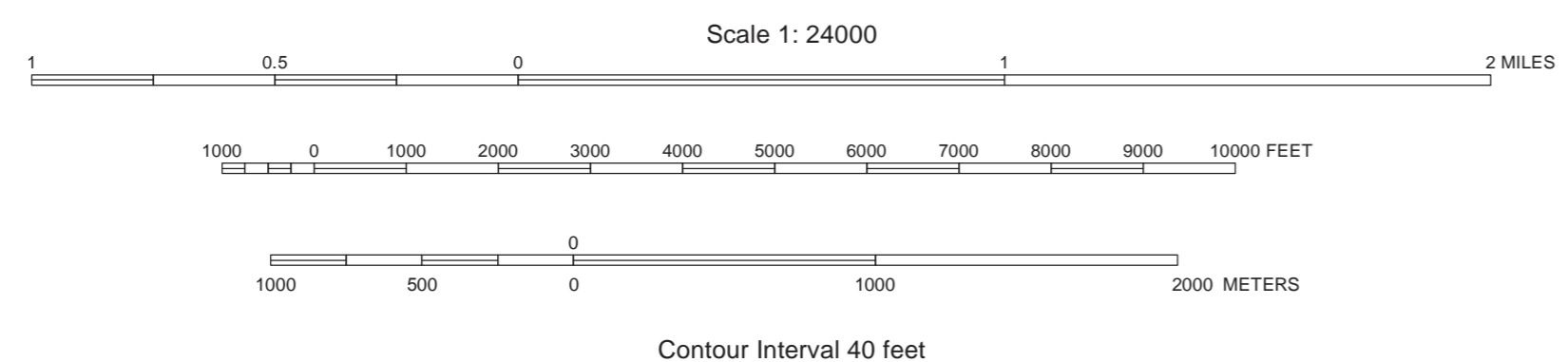
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