DEPARTMENT OF THE INTERIOR

U. S. GEOLOGICAL SURVEY

Geological Map of the Gilroy 7.5 Minute Quadrangle, California

by

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Open-File Report 91-278

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1991

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INTRODUCTION

The Gilroy 7.5 minute quadrangle is located in the southern part of Santa Clara Valley, California. This valley is part of a northwest-southeast trending structural depression in the Central Coast Range between the San Andreas fault to the west and the Calaveras fault to the east. Unlike the northern Santa Clara Valley the south valley drains to the south, eventually reaching the sea at Monterey Bay. The Gilroy 7.5 minute quadrangle lies in the lowermost tier of quadrangles in the San Jose 100,000 scale quadrangle (Index Map) and lies between 37°00'-37°7'30" north latitude and 121°30'-121°37'30" west longitude. This quadrangle is bounded on the northeast by the Diablo Range and on the southwest by the Coast Ranges. More than half of the quadrangle is valley floor with two main drainage systems. The larger and more lengthy is Llagas Creek, which enters the quadrangle near the northwest corner and exits near the southeast corner. The other important drainage is Uvas Creek which enters the quadrangle at the extreme southwest corner and exits the quadrangle within a few miles to the southeast. Very little drainage enters the valley from the east except for Live Oak and Animas Creeks because the Calaveras and Coyote Creek faults have beheaded almost all water courses. The man-made Coyote Lake occupies a valley eroded along the Calaveras fault zone. This water course is the only one in the quadrangle that flows northward, eventually draining into San Francisco Bay.

Upland surfaces occupy the northeast corner of the quadrangle rising 2,000 feet (610 meters) above the valley floor. This relief is due to tectonic activity along the Coyote Creek fault which displays predominantly dip slip offset (down to the west) and also activity along the principally strike slip Calaveras fault. Both faults are presently active.

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Landslides are abundant and some can be as large as one square mile (2.6 square kilometers) along the eastern uplands. Landslides are common to all upland map units; however, the largest slides are in the Santa Clara Formation (QTsc).

The low scattered hills along the western margin of the quadrangle are underlain by Franciscan assemblage (Kjf) and undifferentiated Miocene sandstones (Tm) (Dibblee 1973).

Mapping Methods

Geologic contact mapping methods were used to delineate much of the quadrangle. Additionally, the contact mapping was supplemented with 1:12,000- and 1:24,000-scale black and white and color aerial photographs flown in 1965 and 1974, respectively. Map units were delineated on the photos by: 1) landform morphology, 2) relative topographic position, 3) relative degree of preservation of surface morphology, 4) spectral signature of rock units on aerial photographs, 5) relative soil profile development (compiled from U.S. Soil Conservation Service, 1974), and 6) other features such as differences in vegetation density and type. The index map shows additional sources of data used to construct this map. Therefore, the reader is referred to the published work of Dibblee, 1973; Nakata, 1980; Helley and Lajoie, 1979.

Description of Map Units

Qhaf ALLUVIAL FANS AND STREAM DEPOSITS (Holocene)--Brown, tan or gray, medium dense, gravelly sand or sandy gravel that tends to grade upward to sandy or silty clay. The largest outcrop is in the northwest corner of the quadrangle extending 2-1/2 miles (4.0 km) into the quadrangle. These stream deposits bear little if any relation to modern drainage and suggest that Coyote Creek may have flowed southward in the past. Other exposures can be related to modern drainages.

Qhsc STREAM CHANNEL DEPOSITS (Holocene)--Poorly to well sorted sandy silt, silty sand or sandy gravel with minor cobbles. Stream channel deposits become finer grained downstream. For example, Llagas Creek is coarse-grained sand and gravels where it enters the quadrangle but at its intersection with Highway 152 its carrying mostly silt. Most stream channels are, at most, only a few meters deep.

Qhl LEVEE DEPOSITS (Holocene)--Fine-grained sands and silt in deposits sloping away from active stream channels. These sediments are unconsolidated and moderately- to well-sorted. Distinct levees border Llagas Creek.

Qhfp FLOOD PLAIN DEPOSITS (Holocene)--Medium to dark brown and gray, sandy to silty clay. Lenses of coarser material (silt, sand, and even pebbles) may be present. Floodplain deposits are best developed flanking the channel of Uvas Creek in the southwest corner of the quadrangle. Floodplain deposits are also found discontinuously along Llagas Creek alternating from left bank to right bank in the west central part of the quadrangle. A long, narrow, isolated floodplain deposit is located in the southwest corner of the quadrangle; possibly representing an abandoned course of Llagas Creek.

Qhb FLOOD BASIN DEPOSITS (Holocene)--Organic-rich clay to very silty clay deposits occupying the lowest topographic positions between levees, floodplain and older alluvial fans. Generally very dark brown to black. Best developed along the lower course of Llagas Creek from about the center of the quadrangle to the southern border. Another significant basin deposit lies along the border of the western foothills and probably resulted from an ancient overflow of Llagas Creek.

Qls LANDSLIDE DEPOSITS (Holocene and/or Pleistocene)--Jumbled, poorly sorted mixtures of clay, silt, sand, gravel and boulders (direction of movement shown by arrows). Landslide deposits mapped only in the upland areas were taken from Dibblee (1973), Nakata (1980), Nilsen and Brabb (1972).

Qpaf ALLUVIAL FANS AND STREAM DEPOSITS (Pleistocene)--Tan to reddish brown, densely gravelly and clayey sand, or clay clast supported gravel that tends to grade upward to sandy clay. Deposits are both incised by and overlapped by all Holocene deposits, and have little relation to modern drainage.

Qpoaf OLDER ALLUVIAL FANS AND STREAM DEPOSITS (Pleistocene)--Brown to reddish brown, deeply weathered, locally-derived, clast-supported gravels. Two cone-shaped older alluvial fans are highly dissected and unconnected to any drainage basin. They have been beheaded from their source by movement on the Calaveras fault.

QTsc SANTA CLARA FORMATION (upper Pliocene and lower Pleistocene)--Deformed, highly eroded and weathered, poorly sorted, poorly consolidated boulder-gravel conglomerate with poorly sorted beds of sandstone, siltstone and clay. Contains minor calcareous beds as well as magnesite clay beds.

Tv VOLCANIC ROCKS (PLIOCENE)--Flows, breccias and tuffaceous rocks. Divided into:

Tv_1 OLIVINE BASALT FLOWS--Vesicular to massive olivine basalt containing small mafic and ultramafic xenoliths. Relatively resistant to erosion, and helps maintain much of the high relief along the eastern side of the quadrangle.

Tv_2 FLOW AND TUFF BRECCIA--Angular ejecta ranging from scoriaceous to massive fragments of basaltic rock (QTv1).

Tv_3 TUFFACEOUS ROCKS--Fine grained (<4 mm) volcanic fragments of various lithologies, and showing basaltic or andesitic affinities.

Tm UNDIFFERENTIATED MARINE SANDSTONE (Miocene)--(Dibblee, 1973)

KJf FRANCISCAN ASSEMBLAGE (Jurassic and Cretaceous)--(Dibblee, 1973) (Nakata, 1980).

KJqv GREAT VALLEY SEQUENCE (Jurassic and Cretaceous)--(Dibblee, 1973) (Nakata, 1980).

Sp SERPENTINE (Dibblee, 1973; Nakata, 1980)

Locally altered to silica-carbonate. Occurs between Calaveras and Coyote Creek faults and in association with Franciscan assemblage at west edge of map.

REFERENCES

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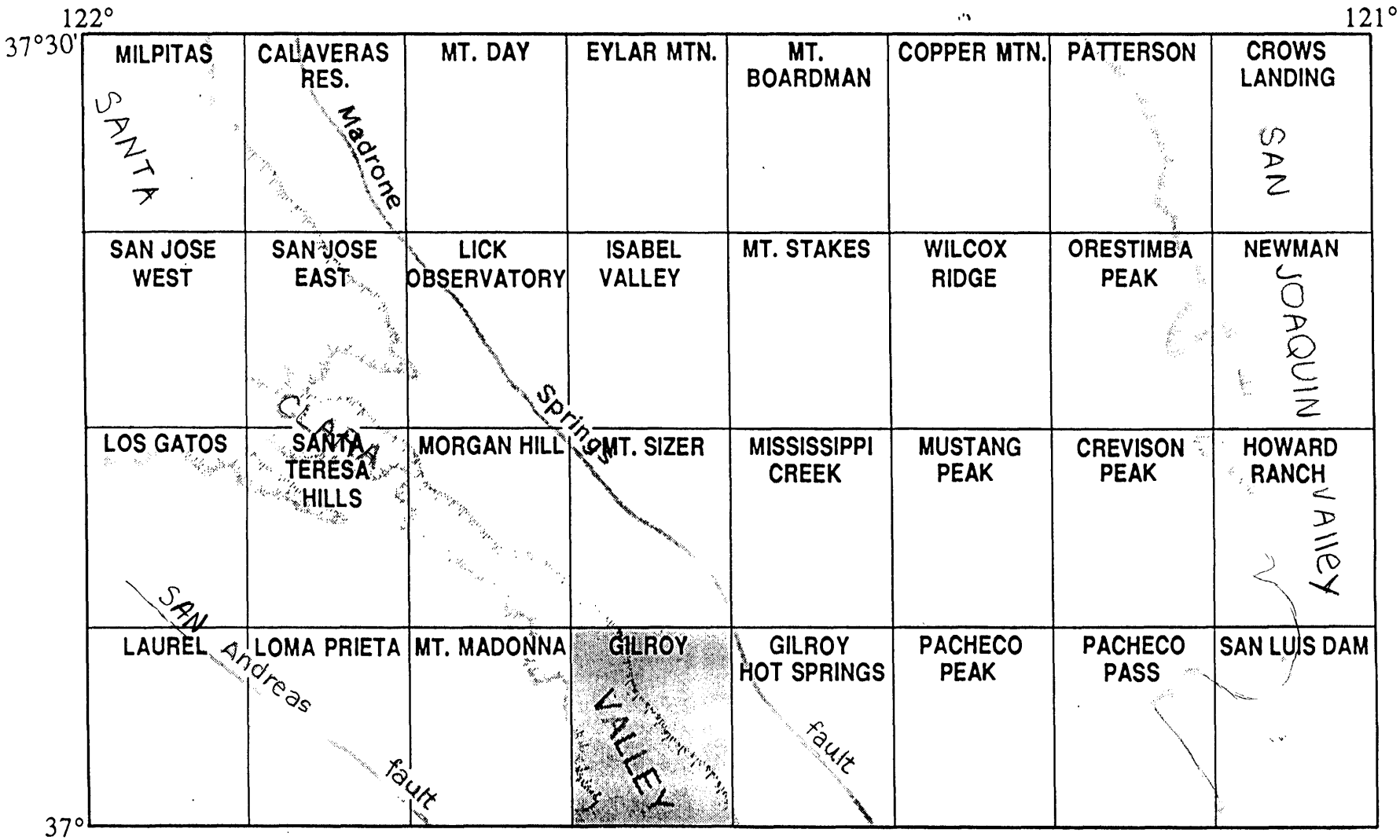
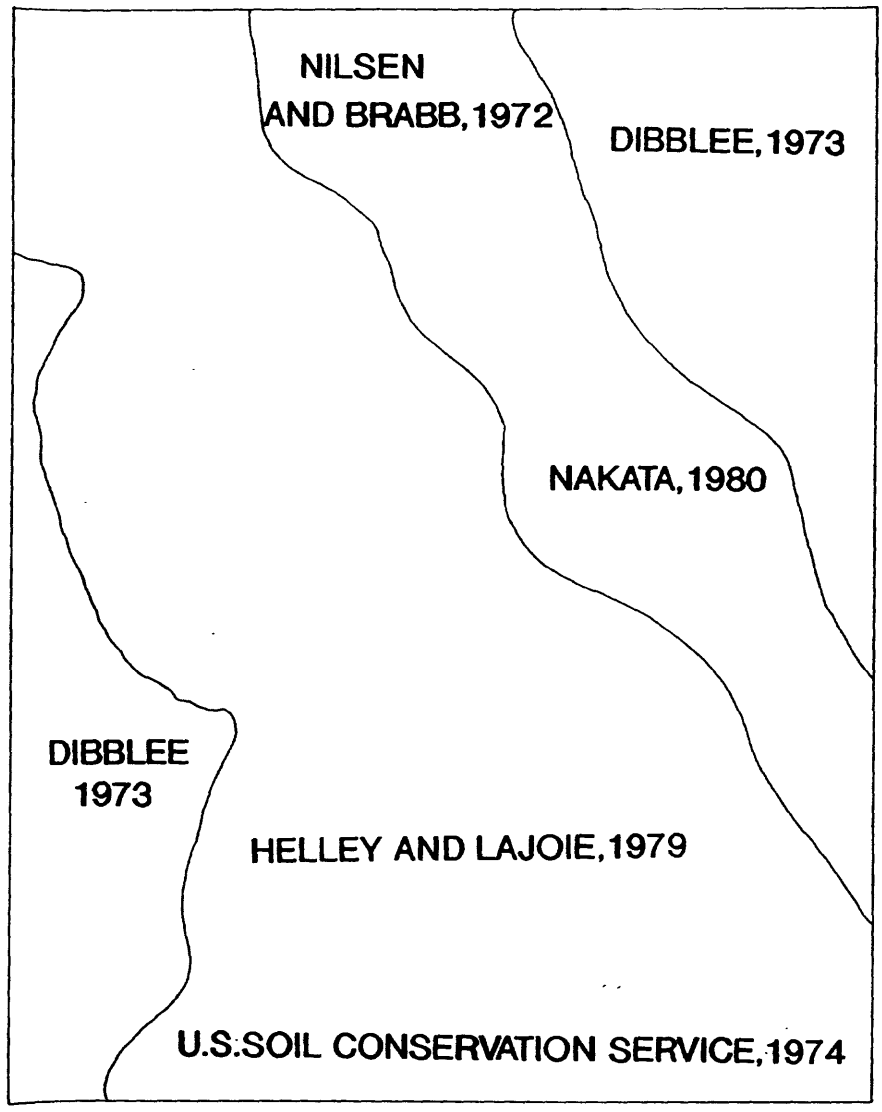
U.S. Soil Conservation Service, 1974, Soil survey of the eastern Santa Clara Area, California, Washington D.C., *U.S. Government Printing Office*, 90 p., scale 1:24,000.

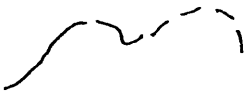


INDEX MAP OF 7.5' QUADRANGLES IN THE 1:100,000 SAN JOSE QUADRANGLE

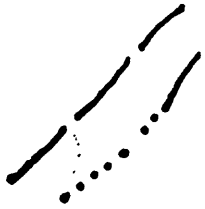


INDEX MAP SHOWING SOURCES OF GEOLOGIC DATA

EXPLANATION OF MAP SYMBOLS

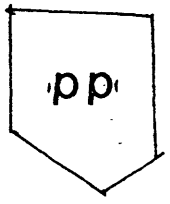


CONTACT – DASHED WHERE APPROXIMATE



FAULT--DASHED WHERE APPROXIMATE;
DOTTED WHERE INFERRED OR CONCEALED

LANDSLIDE



PERCOLATION PONDS

CORRELATION OF MAP UNITS