U.S. DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

Geologic Map of the Romoland 7.5-minute Quadrangle, Riverside County, California

by

D.M. Morton[1]

U.S. Geological Survey

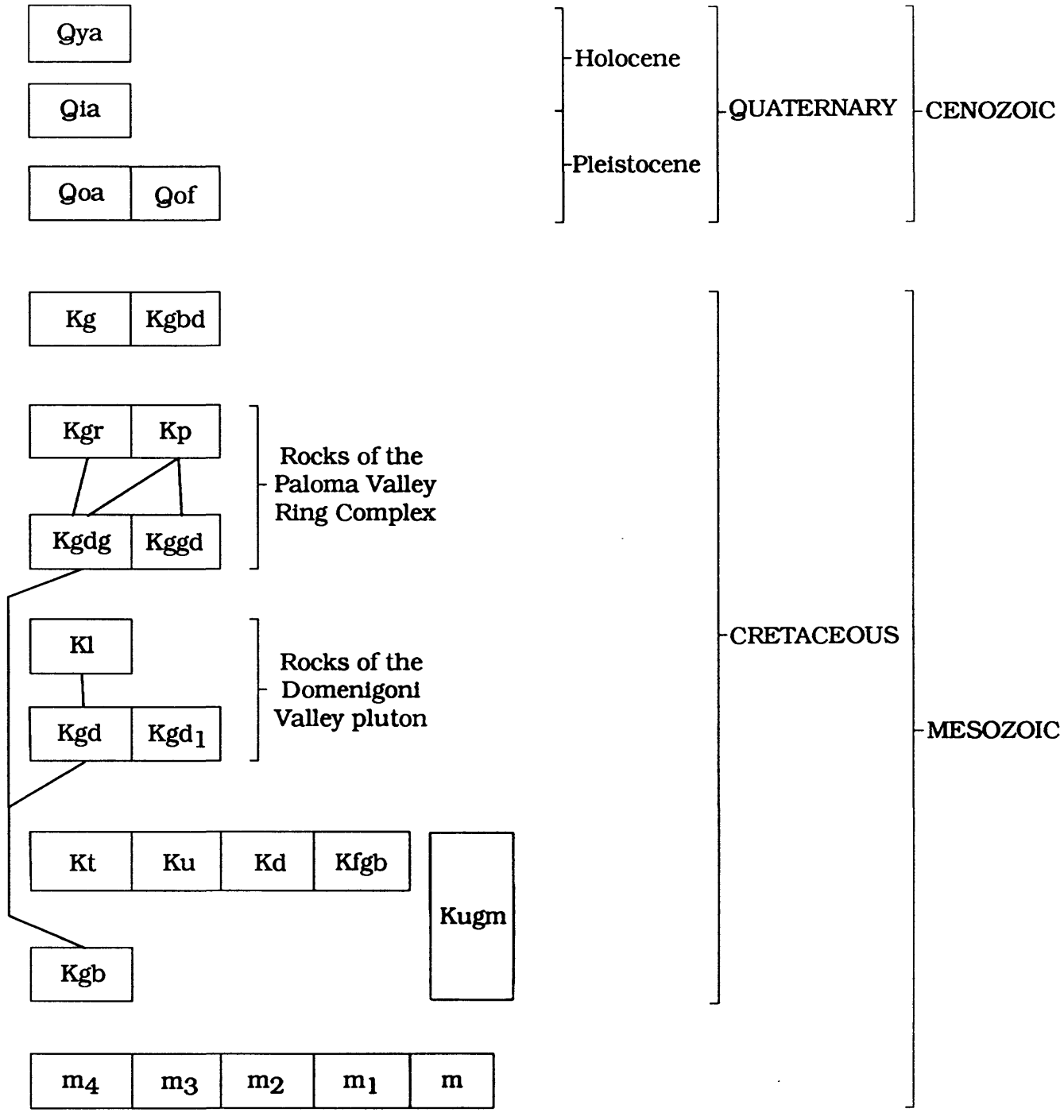
Open-file Report 90-701

Prepared in cooperation with The State of California, Division of Mines and Geology

[1] Riverside, California

1991

CORRELATION OF MAP UNITS



Lines connecting boxes indicate observed intrusive realtionships

DESCRIPTION OF MAP UNITS

Qya — **Younger alluvium (Holocene)** -- Unconsolidated, grayish to brownish, medium-to coarse-grained sandy alluvium, in part derived from Qoa

Qia — **Alluvium of intermediate age (Holocene and Pleistocene)** -- Unconsolidated to well indurated, brownish, sandy alluvium which in large part appears intermediate in age between Qya and Qoa. Includes some areas underlain by Qya and Qoa. Generally grayer in color in the vicinity of the San Jacinto River and browner in color in the vicinity of gabbro occurrences

Qoa — **Older Alluvium (Pleistocene)** -- Mostly dissected, moderately to well indurated brownish coarse-grained sandy alluvium. Conglomeratic in the vicinity of Paloma Valley. Includes colluvium on slopes of hills underlain by quartz rich metasedimentary rocks east of Cottonwood Canyon

Qof — **Older alluvial Fan Deposits (Pleistocene)** -- Mostly thoroughly dissected, older alluvial fan deposits topographically above adjacent Qoa deposits. Consists of well indurated brownish coarse-grained conglomeratic to sandy alluvium adjacent to basement hills. Mostly conglomeratic in vicinity of Menifee Valley and Paloma Valley where adjacent hills contain quartzite. Mostly coarse-grained sand west of Paloma Valley where the alluvium is mainly derived from granitic rocks

Kg — **Granite (Cretaceous)** -- Small pluton composed of white mica bearing leucogranite at Bell Mountain

Kgbd — **Gabbro to diorite (Cretaceous)** -- Dike of medium grained, dark grau to black, biotite bearing hornblende gabbro to diorite which cuts granodiorite of the Domenigoni Valley pluton south of Romoland

ROCKS OF THE PALOMA VALLEY RING COMPLEX (CRETACEOUS)

Kgr — **Granophyre** -- Very fine grained, porphyritic, with phenocrysts of altered plagioclase in a groundmass of granophyric intergrowths of quartz within microcline and sodic plagioclase. Pyrite is an ubiquitous accessory, and its weathering turns the outcrops a characteristic red-brown color

Kp — **Pegmatite and granite dikes** -- Linear to arcuate dikes mostly 0.3 to 1 m thick. Most dikes are texturally and compositionally zoned. Outer

zones consist of coarse-grained granite composed of quartz, perthite, and sodic plagioclase, with or without biotite, and minor magnetite. Inner or core zones consist of pegmatitic-textured perthite, sodic plagioclase, quartz, biotite, and (or) muscovite, with accessory magnetite, schorl, garnet, and epidote. Vugs lined with crystals of quartz and muscovite, and rare masses of pyrite as much as 10 cm in diameter, occur in bulbous pegmatite dikes with massive quartz cores. Graphic intergrowths of quartz and perthite are common in rock transitional between granite and pegmatite. Dikes that lack pegmatitic cores consist entirely of coarse-to extremely coarse-grained granitoid-textured rock, with or without graphic intergrowths

Kgdg **Granodiorite and granite** -- Light colored, medium grained, hypidiomorphic-granular textured granite and granodiorite. Most of the rock is biotite granite; hornblende-biotite granodiorite is less common. Plagioclase (an_{20-35}) occurs as subhedral tabular crystals. Quartz and K-feldspar, largely microcline, occur as anhedral masses. Subhedral to irregular sheaves of biotite and ragged hornblende crystals make up less than 10 percent of the rock, with biotite much more widespread than hornblende

Kggd **Undivided granodiorite and gabbro** -- Mixture of granodiorite with hornblende gabbro in about equal amounts

ROCKS OF THE DOMENIGONI VALLEY PLUTON (CRETACEOUS)

Kl **Quartz latite dikes** -- Light to dark gray, fine grained, massive to well foliated, biotite quartz latite dike rock. Most of the dike rock is foliated with well aligned biotite. Some dike rock contains small needles of hornblende. Dikes cut both metamorphic rocks and granodiorite-tonalite. Most of these dikes are more resistant to erosion than the enclosing rock. Dikes in the Romoland quadrangle are the western part of an extensive dike swarm

Kgd **Granodiorite and tonalite** -- Gray, massive medium grained biotite-hornblende granodiorite and tonalite. Contains common to abundant equant mesocratic inclusions. Inclusions are sparse to lacking at and near the margin of the pluton

Kgd_1 **Granodiorite and tonalite with common inclusion of quartzite** -- An apophysis of the Domenigoni Valley pluton intruding mostly quartzite is well exposed in a highway cut of U.S. 395 (now U.S. 215) on the east side of Menifee Valley. This granodiorite-tonalite contains common to abundant inclusions of contact metamorphosed impure quartzite. Originally carbonate-bearing inclusions, are metamorphosed to pyroxene hornfels mineral assemblages including wollastonite, diopside, and grossularite

Kt — **Tonalitic and granodioritic rocks (Cretaceous)** -- Heterogeneous assemblage of biotite-hornblende tonalite and granodiorite. Most rock is foliated and contains oriented flat, mesocratic inclusions within the foliation plane

Ku — **Undivided granitic rocks (Cretaceous)** -- Very heterogeneous assemblage of granitic rocks ranging from granite to dioritic composition. Ranges in color from off white to dark gray. Most of the rock is massive

Kd — **Diorite (Cretaceous)** -- Two small bodies composed of medium grained, near black hornblende diorite. One body, a north trending dike, cuts quartzite on the east side of Menifee Valley. The second body, located west of Menifee Valley (near the San Jacinto River), is a small tabular mass within granodiorite-tonalite of the Domenigoni Valley pluton

Kfgb — **Fine grained gabbro (Cretaceous)** -- Series of dikes and small bodies of fine-grained gabbro cutting quartz rich metasediments north of Quail Valley

Kugm — **Undivided granitic rock containing quartzite (Cretaceous and older Mesozoic)** -- Granitic rock, mainly of granodioritic composition but includes tonalitic and dioritic rocks with considerable admixed metamorphic rock, which is mostly quartzite and quartz rich metasediments. Occurs west of Menifee Valley

Kgb — **Gabbro (Cretaceous)** -- Massive, medium-to coarse-grained hornblende gabbro consisting of plagioclase (An about 50) and green-brown hornblende, with accessory epidote, sphene, chlorite, opaque minerals, and, in some places minor quartz. In the southern part of the quadrangle it weathers readily to smooth slopes. East of Menifee Valley the gabbro weathers to produce rubble covered slopes

METAMORPHIC ROCKS OF MENIFEE VALLEY (MESOZOIC)

m_4 — **Phyllitic Rock** -- Well foliated, mostly near black, phyllitic rock with lesser amounts of quartzite and quartz rich metasandstones; locally some rock is slate. Extremely fine grained white mica is commonly megascopically visible imparting a lustrous sheen to the phyllite. Locally contains rare, small chiastolite crystals or aggregates of white mica pseudmorphs after chaistolite. Most bedding has been transposed and obliterated, but locally cross-bedding is preserved in the more sandy parts of this unit

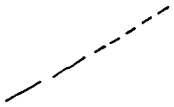
m_3 **Quartzite** -- Mostly impure, off white massive to indistinctly layered fine grained quartzite with lesser amounts of quartz-rich metasandstones, metagrawacke, and phyllite. Minor amounts of carbonate is common in the quartzite. Gives rise to rubble slopes covered with angular fragments of quartzite

m_2 **Quartz-rich metasediments** -- Mostly quartz-rich metasandstones with common impure quartzite and phyllite. Flaggy layering common in the metaquartzite

m_1 **Quartzite and metagrawacke** -- Admixed impure quartzite and metagrawacke. Much of the rock is indistinctly layered. Most of the quartzite is massive appearing; carbonate is a widespread minor constituent of the quartzite. Most of the metagrawacke is a lithic metagrawacke with lithic clasts of phyllite

m **Layered quartzite and phyllite-schist** -- Rock consists of alternating layers of quartzite and phyllite or fine grained biotite schist. Most quartzite layers are 1 to 3 cm thick and most phyllite layers are 0.25 to 1 cm thick

CONTACT - Solid where accurately located, long dashed where well located, short dashed where approximately located, dotted where gradational



FAULT - Long dashed where well located, short dashed where approximately located

STRIKE AND DIP OF FOLIATION

Inclined

Vertical

STRIKE AND DIP OF JOINT

Inclined

Vertical

BEARING AND PLUNGE OF MINOR FOLD AXIS

DIKE - showing dip

GEOLOGIC SUMMARY

The Romoland quadrangle is located in the west-central part of the Perris block of the northern Peninsular Ranges of southern California. The Perris block is a stable structural block bounded on the west by the Elsinore fault zone and on the east by the San Jacinto fault zone. It is underlain by rocks of the Peninsular Ranges batholith of Cretaceous age and prebatholithic metasedimentary and metavolcanic rocks of probable Mesozoic age (Todd, and others, 1988). Poorly preserved fossils collected from a carbonate-bearing part of the phyllitc rocks south of Romoland are considered to be possibly Jurassic (Schwarcz, 1969). Metasedimentary rocks occur in northwest-striking pendants and septa within and between plutons. The metasedimentary rock is all essentially greenschist or subgreenschist grade. These rocks have been penetratively deformed with the bedding transposed into a well developed foliation in all but quartzites. Relic bedding occurs in isolated occurrences, especially in metasandstone lenses within phyllite. This structural transposition results in a near orthogonal relationship between foliation and a lithologic contact between phyllite and quartzite west of Menifee Valley. Quartzite and siliceous metasedimentary rocks are most common; phyllitic rocks are second most common. A layered rock consisting of alternating layers of quartzite and phyllite or biotite schist occurs south of Romoland. This rock appears to be the same as part of the French Valley Formation of Schwarcz (1969) which occurs in the Winchester quadrangle to the east.

The batholithic rocks range in composition from gabbro to granite. Much of the quadrangle is underlain by the poorly exposed Domenigoni Valley pluton. The part of the pluton exposed in the Romoland quadrangle consists of a massive biotite-hornblende granodiorite and tonalite. This pluton contains common to abundant equant-shaped mesocratic inclusions in all but the marginal parts of the pluton. Poorly exposed, but widespread outcrops of granodiorite within quartzite west of Menifee Valley may be the upper part of the westward extension of this pluton. An apophysis of this pluton is well exposed in a highway cut (formerly US 395, now US 215) on the east side of Menifee Valley. In contrast to other occurrences of this pluton, here are abundant stoped inclusions of recognizable country rocks, contact metamorphosed to the pyroxene hornfels facies.

South of the Domenigoni Valley pluton is the northern part of the Paloma Valley ring complex (Morton and Baird, 1976). This ring complex consists of an older ring structure consisting of granite and granodiorite emplaced within hornblende gabbro and contains large amounts of stoped gabbro fragments. This ring structure is interpreted to have been magmatically emplaced in an elliptical zone of ring fracturing in gabbro. A younger set of granitic pegmatite dikes, each 0.2 to 1 m in thickness, define an inner domal ring dike set. Bodies of fine-grained granophyre spatially associated with the younger dikes are interpreted to be pressure quenched pegmatite, formed through the escape of volatiles (Morton and Baird, 1976).

Menifee and Paloma Valleys are floored with Holocene and Pleistocene alluvium at an elevation of 1,400 to 1,500 feet. The interconnected valley floor surface has been termed

the Paloma surface (Woodford, and others, 1971).

REFERENCES CITED

Morton, D. M., and Baird, A. K., 1976, Petrology of the Paloma valley ring complex, southern California batholith: Jour. Research U. S. Geological Survey, v. 4, p. 83-89.

Schwarcz, H. P., 1969, Pre-Cretaceous sedimentation and metamorphism in the Winchester area, northern Peninsular Ranges, Califronia: Geological Society of America Spec. Paper 100, 63 p.

Todd, V.R., Erskine, B.G., and Morton, D.M., 1988, Metamorphic and tectonic evolution of the northern Peninsular Ranges batholith, southern California; in Ernst, W.G., ed., Metamorphism and crustal evolution of the western United States: Rubey Volume VII, Englewood Cliffsm New Jersey, Prentice-Hall, p. 894-937.

Woodford, A. O., Shelton, J. S., Doehring, D. O., and Morton, R. K., 1971, Pliocene-Pleistocene history of the Perris Block, southern California: Geological Society of America Bulletin, v. 82, p. 3421-3448.