

EXPLANATION OF MAP UNITS

- SUPERJACENT ROCKS**
- Cenozoic sedimentary and volcanic rocks; locally present but not shown in much of central Sierra Nevada
 - Upper Cretaceous sedimentary rocks of Great Valley sequence (Chico Fm.) at NW border of Sierra Nevada
- SUBJACENT ROCKS**
- Northern Sierra terrane, divided into:**
- Jurassic volcanic arc units; Early to Middle Jurassic; includes Kettlerock and Mt. Jura sequences, and Tuttle Lake and Sailor Canyon Fms.
 - Permian volcanic arc sequence; includes Goodhue, Arlington, and Reeves Fms.; locally overlain by Late Triassic Pt. Fm. and Hosselink Limestone (small uncolored area at E locality)
 - Taylorville sequence; Late Devonian to Pennsylvanian; depositional on Shoo Fly complex; includes Grizzly, Sierra Buttes, Taylor and Peale Fms.
 - Shoo Fly complex; post-Cambrian to pre-Late Devonian; chiefly volcanic arc deposits; includes Sierra Fm. melange, Culbertson Lake allochthon, Duncan Peak allochthon, and Lang sequence
 - Lake Tahoe sequence; middle Paleozoic(?) quartz-rich and carbonate rocks overlain by Jurassic(?) rocks
 - Butt Valley subterrane; thrust block of Taylor Fm. and Late Triassic conglomerate and limestone
 - Soda Ravine subterrane; slaty argillite with tectonic blocks of Permian and Late Triassic limestone
- Feather River terrane; Includes--**
- Feather River peridotite, mostly serpentinized, and related ultramafic and mafic rocks
 - Red Ant Schist and Devils Gate ophiolite
- Calaveras terrane; late Paleozoic and/or Triassic chert-argillite melange**
- Don Pedro terrane; pre-Jurassic melange overlain by Jurassic volcanic and sedimentary rocks**
- Central belt; Includes Fiddle Creek terrane (FC), Slate Creek terrane (SC), Lake Combie terrane (LC), American River terrane (AR), Mount Ararat terrane (MA), Cool Quartz terrane (CQ), French Creek terrane (FC), Mother Lode terrane (ML), Tuolumne ophiolite melange (TOM), and unassigned serpentinitic melange**
- Foothills belt; Includes--**
- Smartville complex (including Pine Hill complex (PH))
 - Jurassic volcanic and sedimentary rocks
- Mainly slaty sedimentary rocks of the Upper Jurassic Mariposa Fm and similar rocks; upper Oxfordian and lower Kimmeridgian; interfingers with and overlies upper part of Logtown Ridge Fm and similar volcanics; depositional on older Jurassic volcanic formations and melange(?); generally folded and faulted into rocks of Central belt and western Foothills belt.**
- Roof pendants in Sierra Nevada batholith**
- Kings-Kaweah ophiolite melange of Saleeby and Sharp (1980)**
- Mesozoic to Precambrian sedimentary, volcanic, and metamorphic rocks east and south of Sierra Nevada**

PLUTONIC ROCKS, divided into:

- Sierra Nevada batholith; mainly 125 Ma to 82 Ma; mid-Early Cretaceous (Hauterivian) to mid-Late Cretaceous (Campanian)
- ~130 Ma (U/Pb); mid-Early Cretaceous (Valanginian-Hauterivian)
- ~140 Ma (U/Pb); early Early Cretaceous (Berriasian)
- ~150 Ma (U/Pb); late Late Jurassic (Tithonian)
- ~160 Ma (U/Pb); early Late Jurassic (Oxfordian)
- ~170 Ma (U/Pb); late Middle Jurassic (Bathonian-Callovian)
- ~200 Ma (U/Pb); mid-Early Jurassic (Sinemurian)
- Greater than ~370 Ma (U/Pb); Late Devonian or older
- U/Pb date not available, or conflicting data
- Plutonic rocks east and south of Sierra Nevada
- Dated intrusive (color coded) of small or unknown extent, or east of Sierra Nevada
- 58-151 Sample locality, with locality number followed by U/Pb age (Ma)
- Note: U/Pb dates are correlated with geologic time scale of Palmer (1983)

- Terrene boundary
- X = Late Jurassic (late Callovian to early Kimmeridgian) fossil locality (Inlay, 1961); red localities are from S. A. Paterson (written commun., 2001)
- If = Ichthyosaurus fossil (Triassic)
- T = Tethyan fossil fauna (Permian)
- Mc = McCloud fossil fauna (Permian)

TABULATION OF U/Pb ISOTOPIC DATES

Map No. New / Pub	U/Pb Age(Ma)	Sample Number	Reference	Lithology	Map No. New / Pub	U/Pb Age(Ma)	Sample Number	Reference	Lithology
1	378	--	Saleeby and others, 1987a	Granite of Wolf Creek stock intrudes Sierra Butte Formation	177	114	W10	Chen and Moore, 1982	Unnamed pluton, quartz diorite
2	314	--	TRB	Metaplagiograntic crossite Feather River ultramafics	178	2	W12	--	Unnamed pluton, quartz diorite
3	140	CC3	--	Hornblende biotite granodiorite, Bucks Lake pluton	179	3	W22	--	Unnamed pluton, quartz diorite
4	140	CC2	--	Hornblende biotite granodiorite, Grizzly pluton	180	6	W11	--	Unnamed pluton, quartz diorite
5	204	CB12a	--	Blasomylonitic leucodiorite, central belt	181	7	W12	--	Unnamed pluton, quartz diorite
6	196	CB13a	--	Leuco quartz diorite dike, central belt	182	8	W12	--	Unnamed pluton, alaskite
7	164	SC5	--	Plagioclase phytic diorite, Smartville complex	183	9	W28	--	Unnamed pluton, quartz monzonite
8	193	CB11	--	Quartz-albite? phytic keratophyre tuft, central belt	184	10	W11	--	Aplite dike in Yucca Point pluton
9	140	CC1	--	Biotite granodiorite, Bald Rock pluton	185	11	W10	--	Yucca Point pluton, quartz diorite
10	168	CC6	--	Hornblende biotite granodiorite, Scales pluton (cuts fault)	186	12	W6	--	Dike, quartz monzonite of Brush Canyon pluton
11	205	CB10	--	Hornblende diorite, central belt	187	14	W11	--	Tombstone Creek pluton, granodiorite
12	162	SC4	--	Fine grained plagiogranite screen, Smartville complex	188	15	W10	--	Lightning Creek pluton, granodiorite
13	162	SC1a	--	Hornblende tonalite screen, Smartville complex	189	16	W11	--	Lookout Creek pluton, granodiorite
14	159	CC5	--	Hornblende biotite tonalite, Yuba Rivers pluton	190	17	W11	--	Lookout Creek pluton, granodiorite
15	159	CC4	--	Biotite hornblende tonalite, Yuba Rivers pluton	191	24	W11	--	Lookout Creek pluton, granodiorite
16	423	--	Saleeby and others, 1987a	Tuff in Shoo Fly Complex	192	25	W10	--	Dragon pluton, quartz monzonite
17	388	FR5a	--	Oriental Mine granite, Feather River belt	193	26	W16	--	Woods Lake, Tinemaha granodiorite
18	409	--	Girty and others, 1986	Granitic phase of Bowman Lake batholith	194	27	W12	--	Independence pluton, granite
19	385	--	Hanson and others, 1988	Bowman Lake batholith	195	31	W26	--	Unnamed pluton, quartz diorite
20	368	4	--	Rhyolite sill in Sierra Butte Fm	196	42	W12	--	Big Meadow pluton, granodiorite
21	385	--	--	Bowman Lake batholith	197	43	W12	--	Big Meadow pluton, granodiorite
22	385	--	--	Bowman Lake batholith	198	46	W10	--	Alaskite, within Big Meadow pluton
23	164	CC7	Saleeby and others, 1989c	Hornblende pyroxene quartz-diorite, Emigrant Gap pluton	199	47	W11	--	Mitchell Peak pluton, granodiorite
24	163	--	--	Two pyroxene diorite	200	49	W12	--	Whitney pluton, porphyritic granodiorite
25	162	SC3	Saleeby and others, 1989c	Foliated hornblende leucotonalite dike	201	50	W11	--	Lone Pine pluton, granodiorite
26	120	--	--	Rattlesnake Creek pluton, hbl-biotite granodiorite	202	51	W12	--	Alabama Hills pluton, quartz monzonite
27	163	PD51	Saleeby, 1982	Plagiogranite/quartz diorite screen in basaltic sheeted dikes	203	54	W18	--	Unnamed pluton, quartz diorite
28	165	PD52	--	Plagiogranite dike in deformed mafic sheeted dikes	204	55	W12	--	Unnamed pluton, quartz diorite
29	162	PH1	--	Plagiogranite dike in gabbro	205	57	W12	--	Omo Ranch pluton
30	166	PH2	--	Pyroxene diorite phase of pluton	206	58	W12	--	Pino Grande pluton
31	304	CB4	Saleeby and Behrmann, 1979	Meta-plagiogranite block in serpentinite melange	207	59	W12	--	N.Y. Ranch pluton
32	286	BMO-1	--	Meta-plagiogranite	208	86	W12	--	Post Peak pluton
33	177	OGP-1	Saleeby and Sharp, 1979	Granodiorite	209	98	W12	--	Jacksack pluton
34	126	SL-1	--	Blasomylonitic granite	210	97	W12	--	Red Rock pluton
35	170	CC3a	--	Pyroxene diorite	211	97	W12	--	Timber Knob pluton
36	162	CC-37	--	Granodiorite	212	94	W12	--	Norris Creek pluton
37	280	TOM1	Saleeby, 1982	Metaplagiograntic in serpentinite melange	213	100	W12	--	Shellenberger pluton
38	173	ST-88&89	Saleeby and Sharp, 1979	Pyroxene diorite and quartz diorite	214	143	W12	--	Granodiorite to hornblende diorite, Coloma pluton
39	5	BMSD	Stern and others, 1981	Standard pluton, Jawbone sequence	215	150	--	--	Hornblende-plagioclase porphyry, unnamed pluton
40	160	BMC	--	Chinese Camp pluton	216	207	--	--	Foliated tonalite, plutonic unit of Slate Creek complex
41	199	CB1	Saleeby, 1982	Pyroxene diorite, intrudes Penon Blanco volcanics	217	209	--	--	Tonalite, plutonic unit of Slate Creek complex
42	198	MLB1	--	Pyroxenite cobble in conglomerate bed	218	168	--	--	Gabbro to tonalitic Scales pluton
43	148	PM-1	Stern and others, 1981	Page Mountain pluton	219	159	--	--	Gabbro to granodioritic Yuba Rivers pluton
44	151	LE-1092	--	Granodiorite of Cottonwood Creek	220	161	--	--	do
45	6	CC-1	--	Cobb Creek pluton, Jawbone sequence	221	158	--	--	do
46	166	LE-153	--	Qtz diorite of Granite Creek, Jawbone sequence	222	163	--	--	Tonalite dike cutting 198 Ma tonalite of Smartville complex
47	182	DPD-1	--	Don Pedro pluton	223	142	--	--	Tonalite, Penryn(?) pluton
48	200	CD-2	Saleeby, 1982	Hornblende diorite, small intrusive in Penon Blanco volcanics	224	133	--	--	Tonalite
49	196	CD-3	--	Pyroxene diorite, small intrusive in Penon Blanco volcanics	225	170	--	--	Granodiorite
50	116	LE-1036	Stern and others, 1981	Granodiorite of Sawmill Mountain	226	173	--	--	Granodiorite
51	8	163	LE-244	--	227	--	160	--	Granodiorite(?)
52	6	150	--	Biotite leucotonalite, Hornitos pluton	228	160	W-100	--	Jessie Maria pluton
53	147	--	--	Biotite hornblende tonalite, Santa Cruz Mountain pluton	229	166	--	--	Haynes Peak pluton
54	5	149	--	Biotite leucotonalite, La Palma pluton	230	141	19-00	--	Granodiorite, Concow pluton
55	48	TMC-173	Stern and others, 1981	Qtz diorite north of May Lake, Tuolumne sequence	231	142	1-11	--	Trochilite, Merriam pluton
56	41	TMB-164	--	Cathedral Peak Granodiorite, Tuolumne sequence	232	128	1-12	--	Trochilite stock
57	103	--	--	El Capitan Granite	233	159	1-13	--	Tonalite, Swede Flat pluton
58	2	146	--	Biotite hornblende diorite, Courthouse pluton	234	159	1-15	--	Granodiorite, unnamed pluton
59	3	138	--	Garnet-biotite tonalite, Courthouse pluton	235	159	1-17	--	Granodiorite, Grass Valley pluton
60	27	96	FM-12	Stern and others, 1981	236	142	--	--	Merriam, northern pluton
61	17	Y-682	--	Granodiorite of The Gateway, Fine Gold sequence	237	142	--	--	Merriam, southern pluton
62	8	151	--	--					
63	11	118	MA-1	--					
64	9	151	--	--					
65	31	112	Y-733	--					
66	26	97	--	--					
67	1	123	--	--					
68	36	98	MP-789	--					
69	5	100	MP-847	--					
70	32	100	--	--					
71	34	93	MP-846	--					
72	38	98	MP-520	--					
73	42	91	PT-66	--					
74	24	105	BL-4-3	--					
75	23	108	BL-4	--					
76	22	111	RD-58	--					
77	12	111	RD-1	--					
78	13	115	Nla-12	--					
79	45	76	DP-1	--					
80	43	99	DP-2	--					
81	18	114	MLB-69	--					
82	16	115	ML-154	--					
83	14	124	ML-10	--					
84	15	110	ML-51	--					
85	28	103	SL-1	--					
86	44	90	KTB-85	--					
87	19	113	SLB-64	--					
88	29	102	SLB-70	--					
89	20	112	ML-4-52	--					
90	21	116	JB-1	--					
91	37	93	SL-119	--					
92	39	93	KTB-72	--					
93	30	104	SL-1	--					
94	46	88	AB-1	--					
95	48	93	MT-12	--					
96	38	88	HC-1	--					
97	49	90	MCB-1	--					
98	199	KRO10	--	--					
99	54	214	CT-27	--					
100	98	161	CM-13	--					
101	51	90	BN-1	--					
102	47	89	MT-13	--					
103	57	169	MT-14	--					
104	53	207	MT-10	--					
105	52	202	MT-11	--					
106	59	161	MB-1	--					
107	60	172	MB-2	--					
108	62	168	SD-5	--					
109	61	167	SD-10	--					
110	50	95	BL-1	--					
111	56	167	BP-1	--					
112	55	155	BP-4	--					
113	1	198	--	--					
114	2	158	--	--					
115	3	163	--	--					
116	4	103	--	--					
117	5	164	--	--					
118	6	181	--	--					
119	7	148	--	--					
120	8	174	--	--					
121	11	174	--	--					
122	12	156	--	--					
123	13	186	--	--					
124	14	161	--	--					
125	15	169	--	--					
126	16	154	--	--					
127	17	149	--	--					
128	18	108	--	--					
129	113	--	--	--					
130	16	--	--	--					
131	19	--	--	--					
132	102	--	--	--					
133	20	--	--	--					
134	210	--	--	--					
135	201	--	--	--					
136	160	--	--	--					
137	132	--	--	--					
138	120	KB4	Saleeby and Sharp, 1980	Granodiorite of Rocky Hill stock, intrudes serpentinite melange					
139	114	KB18	--	Hornblende-biotite tonalite of Cretaceous batholith					
140	121	KB13	--	Granodiorite of Cretaceous batholith					
141	154	J15	--	Plagiogranite dike, cuts foliated ophiolite near Red Mtn					
142	125	KB12	--	Tonalite of Granite Ridge, cuts Hughes Ridge pluton					
143	98	KB10	--	Hornblende gabbro of younger Cretaceous suite					
144	169	J12	--	Gabbro-diorite of Mill Creek pluton, intrudes ophiolite					
145	170	J11	--	do					
146	157	J4	--	do					
147	190-305	KRO2&3	--	Quartz diorite of Hughes Creek pluton, intrudes ophiolite					
148	190-225	KRO1	--	Meta-plagiogranite in harzburgite mylonite					
149	150-130	J16	--	Quartz diorite dike, cuts schistose serpentinite of ophiolite					
150	15	184	--	Meta-quartz diorite of Cretaceous batholithic suite					
151	120	KB3	--	do					
152	116	KB7	--	do					
153	130	KB4	--	Hornblende gabbro of Early Cretaceous batholith suite					
154	110	KB9	--	Hornblende gabbro, of Cretaceous batholith					
155	125	KB1	--	Biotite-hornblende gabbro of Cretaceous batholith					
156	117	KB6	--	Two pyroxene hornblende gabbro of Cretaceous batholith					