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GSA Special Paper 374, Chapter 8

Todd, V.R., Shaw, S.E., and Hammarstrom, J.M., 2003, Cretaceous plutons of the Peninsular Ranges batholith, San Diego and westernmost Imperial Counties, California: Intrusion across a Late Jurassic continental margin, *in* Johnson, S.E., Paterson, S.R., Fletcher, J.M., Girty, G.H., Kimbrough, D.L., and Martin-Barajas, A., eds., Tectonic evolution of northwestern México and the southwestern USA: Boulder, Colorado, Geological Society of America Special Paper 374, p. 185–235.

Sample no	SS832	MR2	POT7	SY16	SS833	MR3	331853	MR12	ML42	A71	EV3
Latitude	32 36 28	32 39 40	32 37 37	33 04 44	32 37 16	32 42 02	33 22 38	32 42 29	32 43 47	32 47 25	33 02 20
Longitude	116 28 25	116 33 13	116 35 36	116 37 53	116 36 46	116 36 15	116 42 26	116 30 47	116 28 41	116 50 30	116 24 32
Lithology	Granodiorite	Ton/granod	Ton/granod	Tonalite	Tonalite	Ton/granod	Tonalite	Tonalite	Tonalite	Tonalite	Tonalite
<u>Tonalite of Granite Mountain</u>											
SiO ₂	69.24	68.60	68.49	66.60	65.47	63.40	63.24	63.23	63.19	62.71	62.28
TiO ₂	0.44	0.44	0.41	0.49	0.55	0.66	0.78	0.78	0.70	0.61	0.86
Al ₂ O ₃	14.78	15.40	15.21	15.97	16.14	16.30	16.95	16.82	16.65	16.36	16.30
Fe ₂ O ₃	0.88	1.22	1.23	1.11	1.42	1.50	1.03	1.30	1.76	2.11	0.72
FeO	2.60	2.34	2.34	3.13	3.08	3.82	3.66	4.10	3.05	3.39	5.08
MnO	0.07	0.06	0.06	0.09	0.09	0.09	0.03	0.09	0.08	0.09	0.10
MgO	1.42	1.59	1.39	2.09	2.24	2.77	2.29	2.52	2.16	2.67	3.03
CaO	3.44	3.97	3.72	4.60	5.24	5.82	5.65	5.71	5.72	5.95	6.15
Na ₂ O	3.35	3.56	3.41	3.32	3.94	3.12	3.38	3.11	3.85	3.37	2.74
K ₂ O	3.11	1.86	1.94	2.11	1.57	1.77	1.66	1.66	1.16	1.38	2.01
P ₂ O ₅	0.07	0.10	0.09	0.11	0.10	0.10	0.14	0.12	0.16	0.12	0.15
H ₂ O+	0.42	0.62	0.86	0.73	0.58	0.73	0.93	1.03	0.98	1.03	0.48
H ₂ O-	0.13	0.10	0.11	0.06	0.08	0.06	0.11	0.06	0.03	0.05	0.11
CO ₂	0.03	0.01	0.23	0.11	0.09	0.02	0.13	0.05	0.06	0.05	0.01
Total	99.98	99.87	99.49	100.52	100.59	100.16	99.98	100.58	99.55	99.89	100.02
Ba	512	544	497	604	359	380	440	575	356	507	808
Cr	15	14	14	36	17	23	25	20	21	14	67
Cu	14	N.D.	<1	9	13	N.D.	6	6	6	22	16
Ga	13	N.D.	15	14	15	N.D.	21	17	20	21	19
Nb	6	N.D.	4	7	3	N.D.	6	4	N.D.	N.D.	N.D.
Ni	6	N.D.	6	13	8	N.D.	9	4	7	19	5
Pb	13	N.D.	9	6	10	N.D.	11	7	7	6	9
Rb	135	45	72	57	47	31	66	66	35	30	84
Sr	182	305	298	245	317	262	417	403	454	342	345
Th	39	N.D.	9	4	9	N.D.	7	3	4	<2	10
U	<3	N.D.	<3	<3	<3	N.D.	3	<3	<3	4	<3
V	59	70	51	80	83	148	81	118	87	105	99
Y	26	31	11	27	21	32	15	14	14	21	31
Zn	59	49	55	45	65	70	91	74	74	73	98
Zr	131	384	120	173	121	102	99	101	77	108	101

EV931	A47	EV2	A9	J32A	MR11	J32B
33 00 44	32 48 09	33 05 14	32 45 48	33 07 35	32 42 45	33 07 35
116 23 27	116 49 13	116 30 03	116 47 16	116 36 01	116 31 18	116 36 01
Tonalite	Tonalite	Ton/qz diorite	Tonalite	Qz diorite	Diorite	Diorite
62.10	60.79	58.89	58.79	57.77	53.59	51.07
0.85	0.67	0.98	0.70	0.81	0.97	1.25
16.79	17.10	18.31	17.87	21.39	17.38	17.80
1.00	2.23	1.14	2.73	0.60	1.99	0.89
4.79	3.90	4.81	3.72	3.53	6.28	10.88
0.09	0.14	0.06	0.12	0.09	0.14	0.20
3.00	2.94	3.03	3.16	1.69	6.56	4.13
6.20	6.47	6.75	7.22	7.58	9.02	7.59
2.66	3.44	3.57	3.55	4.05	1.83	3.44
1.90	1.45	1.12	0.94	1.24	0.90	0.39
0.13	0.12	0.19	0.13	0.23	0.08	0.29
0.96	1.18	1.05	1.30	0.98	1.62	1.79
0.06	0.07	0.11	0.03	0.04	0.07	0.10
0.14	0.04	0.31	0.15	0.06	0.02	0.30
100.67	100.54	100.32	100.41	100.06	100.45	100.12
652	448	531	259	335	166	144
57	15	32	15	7	88	179
11	24	8	40	8	1	37
17	21	23	20	25	15	21
7	N D .	7	N D .	N D .	4	8
10	8	9	10	5	13	32
11	<3	7	5	6	7	11
68	33	35	23	39	30	7
360	347	564	429	727	380	534
6	<2	3	<2	4	6	<2
<3	<3	<3	<3	4	<3	<3
107	114	117	121	47	205	174
19	24	16	24	8	17	32
85	81	107	85	73	99	180
100	63	118	72	430	36	381

Sample no	41252	A1	TS37	VM 921	VM 75	E8	VM 19	A943	A945	A99	A46	TS65	A98
Latitude	32 57 03	32 50 19	32 54 16	32 50 11	32 50 06	33 05 55	32 50 06	32 50 21	32 51 41	32 52 33	32 46 13	32 57 03	32 52 14
Longitude	116 45 33	116 46 49	116 38 42	116 42 35	116 44 59	117 01 29	116 43 05	116 46 10	116 50 41	116 49 11	116 49 43	116 38 17	116 51 05
Lithology	Tonalite	Ton/granod	Tonalite	Tonalite	Tonalite	Tonalite	Tonalite	Tonalite	Qz diorite	Tonalite	Tonalite	Qz diorite	Tonalite
<u>Tonalite of A1 type</u>													
SiO ₂	64.06	63.36	63.17	61.88	61.72	61.71	61.40	60.62	58.63	56.26	56.01	55.41	53.67
TiO ₂	0.60	0.80	0.65	0.71	0.75	0.74	0.74	0.74	0.74	0.86	0.81	0.91	0.90
Al ₂ O ₃	16.27	15.17	16.38	15.89	16.11	16.37	16.03	15.96	17.16	17.55	18.16	17.87	18.17
Fe ₂ O ₃	1.52	1.51	1.85	1.82	1.03	2.71	1.50	1.97	2.19	2.40	3.57	2.39	2.82
FeO	3.56	4.48	4.00	4.45	5.43	3.83	4.47	4.63	4.95	5.46	4.72	5.60	5.92
MnO	0.09	0.10	0.11	0.10	0.12	0.09	0.12	0.12	0.13	0.17	0.16	0.16	0.16
MgO	2.45	3.01	2.84	3.24	3.52	2.55	3.09	3.52	3.43	4.62	3.75	4.17	4.44
CaO	5.70	5.75	6.44	6.44	7.00	6.07	6.15	6.74	7.38	7.71	8.11	7.66	8.56
Na ₂ O	3.47	2.97	3.07	3.06	2.82	3.13	3.11	3.09	3.08	3.18	3.30	3.25	3.13
K ₂ O	0.98	2.16	1.18	1.60	1.51	1.54	1.68	1.49	0.98	0.83	0.73	1.15	0.60
P ₂ O ₅	0.09	0.14	0.10	0.11	0.11	0.16	0.13	0.13	0.13	0.13	0.17	0.17	0.16
H ₂ O+	1.20	0.42	0.39	0.80	0.27	0.98	1.06	1.03	0.79	0.44	1.14	1.06	0.78
H ₂ O-	0.13	0.09	0.03	0.09	0.25	0.12	0.09	0.05	0.05	0.15	0.08	0.08	0.15
CO ₂	0.05	0.04	0.02	0.06	0.06	0.09	0.10	0.13	0.11	0.05	0.04	0.05	0.10
Total	100.17	100.00	100.23	100.25	100.70	100.09	99.67	100.22	99.75	99.81	100.75	99.93	99.56
Ba	279	584	322	419	344	414	316	367	285	244	146	234	174
Cr	19	39	24	45	49	20	43	54	35	42	16	20	41
Cu	19	15	17	25	3	10	34	15	15	34	14	19	38
Ga	17	15	17	16	17	17	16	16	16	17	20	18	21
Nb	2	N D .	N D .	4	N D .	4	4	4	4	4	N D .	5	4
Ni	5	11	12	18	3	10	18	20	13	19	7	11	16
Pb	6	12	7	6	8	7	14	8	9	10	10	9	9
Rb	25	81	39	58	55	63	71	57	29	20	25	31	18
Sr	278	226	264	239	249	245	229	244	275	271	396	272	315
Th	2	6	4	9	2	4	5	10	5	2	4	2	3
U	<3	<3	<3	<3	<3	<3	<3	4	<3	<3	<3	<3	<3
V	102	123	125	150	136	144	145	162	168	182	178	191	203
Y	18	36	16	24	27	17	20	29	29	30	34	28	26
Zn	61	74	69	58	75	72	67	64	70	80	91	89	89
Zr	104	178	105	134	136	246	115	109	89	89	119	101	66

Sample no.	D58	CP931	SY3	CP117B	CP151*	WD80A	CP25*	CP175A
Latitude	32 49 02	32 52 49	33 05 56	32 54 30	32 57 01	32 50 10	32 55 48	32 57 28
Longitude	116 31 01	116 35 00	116 39 47	116 30 34	116 32 17	116 32 09	116 36 15	116 30 26
Lithology	Monzogranite	Monzogranite	Monzogranite	Pegmatite	Granodiorite	Granodiorite	Monzogranite	Granodiorite
<u>Monzogranite of Pine Valley</u>								
SiO ₂	74.48	74.21	74.15	74.09	73.60	72.35	71.40	68.70
TiO ₂	0.17	0.15	0.19	0.11	0.04	0.27	0.29	0.37
Al ₂ O ₃	13.63	13.95	13.12	14.62	14.00	14.37	14.10	16.30
Fe ₂ O ₃	0.32	0.61	0.44	0.21	1.10	0.39	0.36	0.67
FeO	1.49	1.15	1.53	0.64	0.60	2.30	2.40	2.80
MnO	0.05	0.03	0.03	0.02	0.03	0.06	0.06	0.06
MgO	0.32	0.30	0.29	0.39	0.27	0.64	0.46	0.73
CaO	1.76	1.60	1.53	2.14	1.10	2.35	1.80	3.62
Na ₂ O	3.64	4.07	3.93	3.59	4.40	3.48	3.70	3.51
K ₂ O	3.59	3.76	3.81	4.12	3.70	3.20	3.70	2.53
P ₂ O ₅	0.04	0.05	0.05	0.10	0.05	0.08	0.06	0.11
H ₂ O+	0.29	0.39	0.73	0.57	0.31	0.31	0.64	0.72
H ₂ O-	0.05	0.12	0.11	0.11	0.28	0.03	0.04	0.16
CO ₂	0.05	0.13	0.05	0.01	0.03	0.15	0.02	0.05
Total	99.88	100.52	99.96	100.72	99.51	99.98	99.03	100.33
Ba	942	654	1170	1227	310	816	471	1110
Cr	5	3	4	6	8	<3	3	7
Cu	22	<1	3	16	1	40	3	<1
Ga	15	15	18	15	23	16	17	19
Nb	N.D.	8	N.D.	N.D.	N.D.	N.D.	N.D.	8
Ni	19	4	3	5	2	10	3	3
Pb	14	13	8	27	12	13	14	8
Rb	90	146	77	101	199	86	142	90
Sr	143	135	113	185	46	191	129	273
Th	9	16	7	16	8	9	15	3
U	5	5	3	10	<3	4	5	<3
V	12	11	17	12	7	27	21	37
Y	19	33	42	28	19	19	29	26
Zn	32	32	35	18	52	50	53	67
Zr	109	109	156	103	46	115	134	154

Sample no.	VM 41	W 1A	VM 76A	W 5	VM 76C	A7*	D52	D103B	D99*
Latitude	32 50 16	32 38 02	32 51 29	32 43 21	32 51 29	32 44 04	32 50 29	32 49 10	32 49 55
Longitude	116 39 35	116 08 47	116 40 59	116 28 28	116 40 59	116 50 02	116 36 33	116 32 34	116 32 02
SiO ₂	68.20	64.90	63.40	59.00	58.67	56.50	56.32	50.33	50.30
TiO ₂	0.43	0.58	0.75	0.93	0.89	1.10	1.03	0.95	1.40
Al ₂ O ₃	16.18	16.48	16.67	18.78	17.84	16.60	17.95	17.52	17.80
Fe ₂ O ₃	1.08	0.56	2.28	2.15	3.00	3.80	2.13	2.20	1.60
FeO	3.01	3.25	3.42	3.64	4.42	6.00	5.34	7.20	8.90
MnO	0.11	0.08	0.09	0.09	0.14	0.15	0.14	0.18	0.21
MgO	1.34	2.62	2.17	2.57	3.00	3.40	3.38	6.19	4.60
CaO	4.62	5.41	5.39	6.88	6.49	7.10	8.38	9.90	9.30
Na ₂ O	3.60	3.79	3.45	3.76	2.66	3.20	3.13	2.85	3.20
K ₂ O	1.32	1.50	1.60	1.27	1.88	1.50	1.11	1.24	0.54
P ₂ O ₅	0.15	0.15	0.14	0.21	0.17	0.17	0.16	0.10	0.24
H ₂ O+	0.31	0.47	1.14	0.36	1.01	0.80	1.33	1.82	1.10
H ₂ O-	N D.	0.09	0.10	0.09	0.06	0.24	0.16	0.11	0.11
CO ₂	N D.	0.04	0.06	0.04	0.16	0.01	0.05	0.07	0.01
Total	100.35	99.92	100.66	99.77	100.39	100.57	100.61	100.66	99.31
Ba	462	287	441	246	336	289	321	204	233
Cr	310	49	7	19	12	8	40	83	54
Cu	73	5	18	5	19	22	34	15	16
Ga	16	16	19	23	20	18	19	18	21
Nb	N D.	N D.	N D.	N D.	N D.	N D.	N D.	N D.	N D.
Ni	243	4	17	4	12	4	15	17	5
Pb	10	10	10	13	7	6	7	<3	5
Rb	49	55	48	27	69	43	54	35	16
Sr	325	305	322	718	346	252	272	312	414
Th	<2	5	2	3	2	5	7	<2	4
U	<3	7	3	<3	5	<3	4	<3	<3
V	36	63	112	127	147	235	197	281	274
Y	10	20	16	19	16	29	34	22	49
Zn	74	51	82	90	106	102	91	80	129
Zr	153	165	78	126	72	92	50	44	182

Sample no.	TS17X*	A5X	EC4X	D100B*	VM 75X	VM 76D2*
Latitude	32 57 20	32 43 17	32 46 43	32 50 09	32 50 06	32 51 29
Longitude	116 39 32	116 52 53	116 59 50	116 32 36	116 44 59	116 40 59
Host sample	TS17 (Kj)	A5 (Kj)	EC4 (Kj)	D100A (KJem)	VM 75 (Ka)	VM 76D1 (Kj)
<u>Mafic enclaves</u>						
SiO ₂	58.00	56.58	55.92	54.20	53.77	53.60
TiO ₂	0.78	0.75	0.75	1.50	0.80	1.10
Al ₂ O ₃	16.70	16.04	15.88	16.10	17.39	17.30
Fe ₂ O ₃	2.50	2.03	1.93	2.00	4.22	4.20
FeO	4.90	5.51	5.97	9.70	4.89	5.60
MnO	0.20	0.26	0.25	0.21	0.17	0.16
MgO	3.70	4.30	4.17	2.40	5.27	3.80
CaO	7.30	8.12	7.59	6.40	9.44	6.90
Na ₂ O	3.50	4.23	4.85	3.50	3.17	4.20
K ₂ O	0.93	1.34	1.08	1.60	1.15	1.50
P ₂ O ₅	0.12	0.10	0.08	0.41	0.10	0.15
H ₂ O+	0.67	1.19	0.83	0.83	0.18	0.80
H ₂ O-	0.21	0.09	0.10	0.12	0.06	0.16
CO ₂	0.01	0.04	0.11	0.01	0.04	0.01
Total	99.52	100.58	99.51	98.98	100.65	99.48
Ba	429	408	192	309	221	390
Cr	23	52	46	3	69	<3
Cu	53	15	22	10	47	15
Ga	18	17	18	26	19	21
Nb	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ni	11	11	11	3	8	9
Pb	3	4	10	7	10	7
Rb	24	35	26	40	37	45
Sr	266	209	209	381	291	313
Th	<2	3	2	<2	2	3
U	<3	3	<3	<3	<3	<3
V	185	182	195	128	190	253
Y	42	80	52	50	31	28
Zn	90	98	117	173	98	123
Zr	91	75	49	177	43	47

Sample no	VM 89	ML29*	MP23C*	ML12	VM 72*	VM 6*	ECM1	R18	ML3*	ML26	A2
Latitude	32 49 02	32 45 48	32 53 23	32 47 32	32 51 24	32 50 22	32 52 57	33 04 07	32 51 21	32 51 15	32 49 13
Longitude	116 44 12	116 28 06	116 27 15	116 23 35	116 41 04	116 39 13	116 48 43	116 48 22	116 28 06	116 26 10	116 46 34
Lithology	Granodiorite	Tonalite	Tonalite	Granodiorite	Tonalite	Granodiorite	Tonalite	Tonalite	Tonalite	Qz monzodiorite	Tonalite
<u>Las Bancas Tonalite</u>											
SiO ₂	65.59	64.50	64.10	63.37	63.20	63.00	62.83	62.52	61.20	61.01	60.83
TiO ₂	0.71	0.74	0.72	0.77	0.82	0.71	0.78	0.84	0.76	0.89	0.84
Al ₂ O ₃	15.06	15.30	16.10	15.18	15.30	14.80	15.29	16.57	16.00	15.57	15.97
Fe ₂ O ₃	1.87	1.40	0.86	1.13	2.30	1.00	2.00	1.42	0.86	1.89	1.86
FeO	3.08	4.10	4.30	4.26	3.30	4.70	3.90	4.07	5.10	4.26	4.58
MnO	0.10	0.09	0.05	0.12	0.07	0.08	0.11	0.08	0.07	0.14	0.14
MgO	1.72	2.90	2.80	2.98	2.60	3.30	2.87	2.52	3.40	3.23	3.42
CaO	4.48	5.40	5.50	5.42	5.60	6.00	5.81	5.43	6.50	6.25	6.29
Na ₂ O	3.51	3.10	2.90	2.94	3.50	2.90	3.22	3.59	2.90	2.89	3.18
K ₂ O	2.94	2.90	2.30	2.57	1.70	2.00	2.06	1.91	1.80	2.25	1.80
P ₂ O ₅	0.13	0.12	0.14	0.11	0.16	0.15	0.12	0.16	0.15	0.12	0.14
H ₂ O+	0.96	0.67	0.73	0.88	0.65	0.69	0.76	0.79	0.76	0.80	0.90
H ₂ O-	0.06	0.11	0.11	0.05	0.18	0.01	0.03	0.10	0.03	0.03	0.07
CO ₂	0.04	0.01	0.02	0.06	0.01	0.02	0.05	0.05	0.02	0.05	0.04
Total	100.25	101.34	100.63	99.84	99.39	99.36	99.83	100.05	99.55	99.38	100.06
Ba	510	507	751	68	360	520	461	509	567	608	472
Cr	8	53	41	205	38	59	35	26	57	53	46
Cu	47	15	15	56	18	31	28	4	17	16	21
Ga	17	19	18	15	17	18	17	18	18	20	14
Nb	N.D.#	N.D.	N.D.	6	N.D.	N.D.	N.D.	6	N.D.	N.D.	N.D.
N:	8	12	9	32	13	23	15	8	12	12	12
Pb	13	9	6	13	10	10	8	11	10	5	4
Rb	99	128	81	126	61	74	77	62	80	91	52
Sr	215	259	269	246	243	247	231	369	274	292	186
Th	11	15	4	14	10	5	7	7	5	5	4
U	5	3	<3	6	<3	5	3	<3	3	3	4
V	110	138	140	266	117	153	130	118	158	147	136
Y	41	32	29	30	31	28	32	19	27	28	27
Zn	75	72	73	57	72	56	61	75	77	69	57
Zr	189	186	132	166	135	147	143	108	176	151	113

ML27	D28A*	ML13	A61	SP922	D28B*	D28C*	MP23D*	R19	SP923	A931	15M 65A
32 46 58	32 49 22	32 48 43	32 49 31	33 04 59	32 49 22	32 49 22	32 53 23	33 04 53	33 04 52	32 48 02	32 40 27
116 26 33	116 35 43	116 24 12	116 47 34	116 54 57	116 35 43	116 35 43	116 27 15	116 47 03	116 54 12	116 44 53	116 11 32
Qz monzodirite	Tonalite	Tonalite	Qz dirite	Tonalite	Tonalite	Tonalite	Qz dirite	Tonalite	Tonalite	Tonalite	Tonalite
60.78	60.60	59.58	58.91	58.64	57.70	57.60	57.10	56.48	54.39	54.30	51.41
0.86	0.81	0.85	0.69	0.84	0.80	1.10	0.86	1.14	0.94	0.90	2.01
15.81	16.00	16.00	16.23	17.06	16.40	16.30	17.20	18.24	18.04	18.46	17.90
1.47	1.10	1.84	2.28	2.37	1.40	0.51	1.20	3.79	2.49	2.88	2.04
4.75	5.20	4.58	4.73	5.11	5.80	6.50	6.10	3.52	6.09	6.01	9.30
0.14	0.08	0.13	0.22	0.11	0.10	0.08	0.08	0.15	0.14	0.16	0.13
3.68	3.60	3.64	4.27	3.64	4.40	3.90	3.90	3.89	4.55	4.63	3.42
6.69	6.50	6.68	7.21	7.20	7.50	7.40	7.50	7.58	8.73	8.76	8.15
2.88	3.30	2.91	3.28	3.21	3.10	2.50	3.20	3.72	2.73	3.00	2.72
2.12	1.40	1.99	1.20	1.33	1.00	1.40	2.00	0.93	0.72	0.58	1.11
0.14	0.20	0.12	0.13	0.15	0.11	0.20	0.17	0.23	0.16	0.14	0.25
0.70	0.78	1.11	0.89	0.53	0.59	1.00	0.82	0.55	0.54	0.53	1.82
0.06	0.03	0.07	0.06	0.08	0.05	0.02	0.07	0.08	0.06	0.01	0.20
0.07	0.02	0.11	0.04	0.04	0.02	0.02	0.02	0.09	0.05	0.01	0.15
100.15	99.62	99.61	100.14	100.31	98.97	98.53	100.22	100.39	99.63	100.37	100.61
498	390	478	330	342	380	222	546	358	201	257	640
64	65	66	93	38	63	59	38	55	58	49	12
17	26	22	35	26	34	24	12	7	18	23	10
20	18	20	19	19	19	19	19	19	16	19	23
N D .	N D .	N D .	N D .	4	N D .	N D .	N D .	6	4	2	11
17	20	19	30	14	23	17	11	16	18	23	5
7	6	10	8	5	6	13	11	7	29	8	5
89	48	83	46	45	39	35	73	24	21	14	40
301	246	309	265	270	283	306	302	504	307	312	404
5	2	7	5	6	3	3	3	3	8	<2	3
3	<3	3	<3	3	<3	4	<3	<3	3	<3	<3
159	153	149	151	169	176	207	204	167	208	209	282
28	39	27	30	25	27	25	38	17	23	23	36
71	73	80	70	73	74	80	95	91	87	75	116
123	81	141	93	121	87	102	116	76	65	45	67

Sample no	EC1	A5	A6	EC4	POT6	VM 76D1*	VM 511	CP49	TS17	VM 39	VM 3*	VM 922
Latitude	32 48 41	32 43 17	32 44 04	32 46 43	32 35 34	32 51 29	32 45 25	32 53 55	32 57 20	32 46 19	32 46 03	32 45 41
Longitude	116 52 32	116 52 53	116 50 02	116 59 50	116 31 35	116 40 59	116 39 40	116 33 20	116 39 32	116 40 16	116 41 38	116 40 25
Lithology	Ton/granod	Tonalite	Granodiorite	Tonalite	Ton/granod	Tonalite	Ton/granod	Tonalite	Tonalite	Tonalite	Tonalite	Tonalite
<u>Japatul Valley Tonalite</u>												
SiO ₂	70.50	70.27	69.86	67.12	66.99	66.30	65.82	65.75	65.02	63.85	63.10	62.53
TiO ₂	0.41	0.37	0.49	0.65	0.55	0.55	0.78	0.55	0.60	0.70	0.66	0.74
Al ₂ O ₃	14.65	14.92	14.01	14.62	14.95	15.30	14.62	16.74	16.25	15.77	16.20	16.44
Fe ₂ O ₃	1.32	1.29	1.42	1.47	1.43	2.20	1.51	2.40	1.81	2.02	1.70	2.42
FeO	2.13	1.87	2.05	2.95	2.87	2.30	4.33	3.10	3.23	3.71	4.00	3.62
MnO	0.07	0.06	0.09	0.17	0.08	0.06	0.10	0.13	0.09	0.12	0.10	0.12
MgO	0.87	1.00	1.44	1.72	1.82	1.70	2.17	0.73	2.13	2.00	2.40	2.15
CaO	3.37	3.63	3.72	4.29	4.17	4.80	5.08	3.83	5.75	5.67	5.80	5.71
Na ₂ O	4.20	4.26	3.85	3.73	3.55	3.90	3.12	4.66	3.51	3.74	3.70	3.80
K ₂ O	1.95	1.77	2.30	1.95	2.40	1.20	2.16	1.55	0.97	1.08	1.20	1.07
P ₂ O ₅	0.08	0.07	0.07	0.12	0.09	0.11	0.13	0.13	0.11	0.13	0.15	0.15
H ₂ O+	0.84	0.86	0.68	1.07	0.69	0.42	0.34	0.80	0.48	0.54	0.76	0.72
H ₂ O-	0.10	0.09	0.03	0.11	0.06	0.19	0.18	0.09	0.12	0.07	0.04	0.07
CO ₂	0.09	0.03	0.04	0.10	0.09	0.02	0.01	0.04	0.01	0.11	0.02	0.05
Total	100.58	100.49	100.05	100.07	99.74	99.05	100.35	100.50	100.08	99.51	99.83	99.59
Ba	377	473	520	425	649	369	563	698	449	370	326	360
Cr	6	8	24	10	13	10	33	<3	11	20	24	15
Cu	4	36	39	12	<1	7	18	5	56	22	18	6
Ga	15	16	14	16	14	17	16	20	17	16	15	19
Nb	N.D.	N.D.	N.D.	N.D.	5	N.D.	N.D.	10	N.D.	N.D.	N.D.	4
Ni	4	5	7	6	7	7	13	4	32	19	10	5
Pb	6	<3	5	4	7	6	10	6	4	9	4	9
Rb	61	52	84	64	72	43	68	55	29	30	41	32
Sr	192	228	181	247	219	313	196	350	286	260	257	273
Th	3	6	7	6	4	3	5	5	<2	4	3	3
U	3	4	3	<3	<3	3	<3	<3	<3	<3	<3	3
V	44	44	69	87	76	73	123	14	95	97	116	112
Y	33	28	38	33	21	15	43	34	26	47	33	36
Zn	46	35	43	57	49	55	72	99	63	71	65	69
Zr	157	121	118	161	124	126	169	405	146	175	135	176

A70	WD100	ECM 22	VM 76B*	POT1	ECM 19
32 49 02	32 45 45	32 59 58	32 51 29	32 36 02	32 58 04
116 51 49	116 36 46	116 48 51	116 40 59	116 35 27	116 51 44
<u>Granodiorite</u>	<u>Tonalite</u>	<u>Tonalite</u>	<u>Tonalite</u>	<u>Tonalite</u>	<u>Tonalite</u>
61.97	61.55	61.48	60.90	59.65	57.35
1.07	0.93	0.67	0.69	0.81	0.93
14.82	16.53	16.89	17.00	16.84	16.33
2.98	1.54	1.61	2.60	2.29	2.82
3.34	5.07	4.23	3.80	4.48	5.54
0.12	0.12	0.11	0.15	0.13	0.15
2.43	2.59	2.94	2.80	3.65	3.72
5.45	6.20	6.21	6.40	7.20	7.22
3.98	3.15	3.31	3.30	2.98	3.02
1.38	1.70	1.40	1.20	1.36	1.04
0.25	0.19	0.11	0.14	0.10	0.12
1.48	0.50	0.98	0.51	1.10	1.03
0.15	0.06	0.06	0.18	0.07	0.13
0.07	0.07	0.06	0.01	0.00	0.06
99.49	100.20	100.06	99.68	100.66	99.46
706	467	301	337	385	201
21	25	27	5	42	8
8	17	26	25	13	45
17	19	16	17	16	19
6	N D .	4	N D .	2	3
8	17	11	5	9	3
12	11	10	8	8	8
31	62	42	38	47	26
242	278	261	309	305	265
<2	5	<2	4	2	3
4	<3	<3	<3	<3	<3
120	130	126	123	180	293
46	32	27	20	26	20
50	88	63	80	71	76
129	124	102	97	109	73

Sample no	613917	CP117A	D100A*	TS23A	TS76
Latitude	32 51 38	32 54 30	32 50 09	32 54 53	32 58 10
Longitude	116 33 38	116 30 34	116 32 36	116 36 52	116 40 13
Lithology	Tonalite	Qz diorite	Tonalite	Qz diorite	Diorite
	East Mesa Quartz Diorite				
SiO ₂	64.35	58.42	56.70	56.62	53.64
TiO ₂	0.74	0.98	1.30	0.98	0.97
Al ₂ O ₃	16.50	16.37	16.20	16.32	16.13
Fe ₂ O ₃	1.72	0.85	2.00	0.77	1.15
FeO	3.67	6.96	8.20	5.37	5.55
MnO	0.07	0.15	0.19	0.12	0.10
MgO	1.61	3.45	1.90	5.84	7.06
CaO	4.75	7.14	6.50	8.93	10.24
Na ₂ O	3.83	3.33	3.40	2.49	2.84
K ₂ O	1.65	1.50	1.20	1.10	0.77
P ₂ O ₅	0.18	0.17	0.33	0.12	0.12
H ₂ O+	1.05	0.47	0.73	0.52	1.42
H ₂ O-	0.18	0.05	0.11	0.07	0.14
CO ₂	0.07	0.02	0.02	0.02	0.12
Total	100.37	99.86	98.78	99.27	100.25
Ba	637	403	452	374	170
Cr	9	45	6	389	638
Cu	4	34	9	12	7
Ga	19	19	26	17	16
Nb	7	N.D.	N.D.	N.D.	4
Ni	7	23	3	11	12
Pb	8	11	4	9	4
Rb	56	58	42	46	29
Si	337	310	368	148	210
Th	5	4	2	4	2
U	<3	3	3	3	<3
V	81	202	116	155	285
Y	34	32	49	42	26
Zn	79	99	133	86	88
Zr	160	121	193	109	97

Sample no	A28	A76	A72	TS43	A74	TS92B	A45	D102*	VM40	MP18*	A10*	CP152*
Latitude	32 49 40	32 48 55	32 47 33	32 55 34	32 49 10	32 54 59	32 49 37	32 50 00	32 45 02	32 59 05	32 45 52	32 55 37
Longitude	116 50 07	116 51 45	116 51 23	116 37 53	116 50 14	116 39 23	116 50 10	116 32 50	116 40 19	116 24 34	116 47 28	116 34 33
Lithology	Diorite	Diorite	Diorite	Hblgabbro	Hblgabbro	Hblgabbro	Hblgabbro	Hblgabbro	Hblgabbro	Hblgabbro	Hblgabbro	Hblgabbro
Cuyamaca Gabbro												
SiO ₂	57.63	57.45	52.60	52.26	51.60	51.23	49.80	49.60	49.57	49.50	49.40	48.40
TiO ₂	0.74	1.13	0.55	0.96	0.30	1.21	0.35	0.73	0.57	1.20	0.38	0.82
Al ₂ O ₃	17.21	16.03	19.61	18.63	16.01	18.27	19.96	17.30	19.50	19.10	19.00	17.10
Fe ₂ O ₃	2.69	3.18	1.97	3.12	1.39	3.40	1.41	2.30	1.28	1.20	2.10	2.50
FeO	4.81	5.46	4.06	6.51	5.09	7.18	4.22	5.90	6.73	7.10	3.90	6.80
MnO	0.16	0.17	0.14	0.16	0.15	0.25	0.11	0.11	0.14	0.10	0.11	0.14
MgO	4.14	3.15	4.82	5.38	7.62	4.31	6.82	7.20	7.06	6.10	8.60	8.00
CaO	7.94	6.83	10.84	9.90	13.10	7.82	14.33	13.10	12.62	11.10	13.90	12.60
Na ₂ O	3.15	3.53	2.79	2.63	1.21	3.75	1.20	1.40	1.24	1.80	1.30	1.90
K ₂ O	1.00	0.76	0.82	0.34	0.35	1.06	0.26	0.32	0.17	1.20	0.26	0.44
P ₂ O ₅	0.11	0.10	0.06	0.14	0.02	0.14	0.05	0.07	0.09	0.15	0.06	0.11
H ₂ O+	0.92	0.91	1.91	0.14	2.34	1.35	1.55	0.55	0.23	1.10	0.54	0.35
H ₂ O-	0.08	0.20	0.08	0.08	0.24	0.16	0.10	0.11	0.18	0.39	0.18	0.31
CO ₂	0.05	0.05	0.04	0.09	0.09	0.02	0.04	0.04	0.31	0.04	0.05	0.01
Total	100.63	98.95	100.29	100.34	99.51	100.15	100.20	98.73	99.69	100.08	99.78	99.48
Ba	24	325	169	149	47	273	132	68	80	212	60	68
Cr	61	3	143	80	380	<3	97	205	231	22	305	133
Cu	41	23	22	14	20	37	21	56	14	14	14	50
Ga	17	18	16	17	13	21	16	15	18	21	15	16
Nb	N.D.	3	N.D.	N.D.	2	4	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Ni	24	2	23	14	34	5	8	32	7	7	75	26
Pb	6	15	<3	8	12	11	<3	<3	7	6	3	3
Rb	30	21	28	11	12	28	7	2	5	39	2	2
Sr	275	307	288	356	250	274	259	296	361	410	285	348
Th	4	2	<2	4	<2	<2	2	<2	3	<2	<2	<2
U	<3	<3	3	<3	<3	<3	<3	<3	<3	<3	<3	<3
V	166	293	170	242	170	298	179	266	117	199	134	229
Y	29	24	12	18	11	45	10	13	11	19	7	21
Zn	73	94	57	103	65	131	46	57	73	112	66	76
Zr	74	79	32	32	21	87	26	25	23	36	13	35

ML36	TS93	TS57	CP26*	D26*	VM79*	D59	CP95*	ECM11
32 46 09	32 53 25	32 55 33	32 55 48	32 50 00	32 52 17	32 49 26	32 56 47	32 55 45
116 29 14	116 38 57	116 39 34	116 36 15	116 32 50	116 39 59	116 30 14	116 36 18	116 51 05
Gabbro	Drite	Hblgabbro	Hblgabbro	Hblgabbro	Gabbro	Hblgabbro	Norte	Hblgabbro
47.82	47.65	47.60	47.00	45.10	44.60	44.07	44.00	43.49
0.53	1.19	1.12	0.23	1.30	0.05	1.35	0.13	1.80
17.99	18.73	17.74	28.00	18.60	27.30	19.58	27.20	15.97
0.81	3.55	2.61	1.00	3.80	1.50	4.19	0.72	7.28
8.92	6.98	8.27	2.50	7.60	3.00	7.98	4.90	9.24
0.19	0.15	0.19	0.02	0.12	0.03	0.19	0.04	0.17
10.41	6.37	6.06	4.30	7.10	6.50	6.89	8.20	5.90
9.72	10.80	10.92	15.50	12.00	14.10	12.64	13.30	11.78
1.19	2.04	2.81	1.10	1.90	0.80	1.39	0.75	1.31
0.11	0.65	0.40	0.01	0.20	0.07	0.22	0.02	0.26
0.01	0.12	0.12	0.05	0.17	0.01	0.13	0.04	0.06
1.63	1.61	1.70	0.49	1.40	0.51	0.36	0.65	1.91
0.13	0.10	0.11	0.01	0.03	0.24	0.10	0.13	0.23
0.48	0.02	0.17	0.02	0.02	0.03	0.01	0.02	0.42
99.94	99.96	99.82	100.23	99.34	98.74	99.10	100.10	99.82
67	134	67	38	52	<8	81	<8	44
48	95	74	150	126	115	107	34	<3
14	77	62	28	41	58	41	15	126
13	18	18	17	21	13	21	15	18
3	2	3	N D .	N D .	N D .	N D .	N D .	2
28	23	15	15	21	33	X	71	14
8	8	11	<3	<3	4	10	<3	11
<1	15	4	2	2	1	3	<1	5
267	291	281	432	369	354	374	405	353
4	<2	4	<2	<2	<2	2	3	<2
<3	<3	<3	<3	<3	<3	<3	<3	<3
175	355	414	78	382	13	436	19	1001
7	36	22	4	26	<2	23	<2	19
96	89	105	27	90	25	107	42	109
13	52	60	<2	29	<2	28	<2	37

Corte Madera-M

Sample no	VM 77	ECM21	D6216	WD49*	A8	A944	VM935	MR38	ECM 2	BL925##	BL922##	R 921	BL9##	A79	EC2	D94	A78
Latitude	32 47 25	32 59 43	32 50 29	32 45 52	32 44 04	32 50 40	32 45 35	32 41 05	32 53 32	32 39 46	32 40 35	33 03 00	32 37 55	32 49 08	32 50 32	32 45 44	32 48 47
Longitude	116 39 38	116 49 15	116 36 33	116 34 44	116 49 59	116 49 44	116 41 58	116 32 44	116 49 26	116 44 49	116 43 59	116 51 18	116 41 15	116 51 12	116 52 49	116 36 47	116 52 20
Lithology	Syenogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Leucocrino	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite
Corte Madera and Mather Gundy Peak Monzogranites																	
SiO ₂	78.02	77.07	76.74	76.40	75.77	75.72	75.50	74.80	74.69	74.01	73.91	73.90	73.74	72.74	72.69	72.40	71.50
TiO ₂	0.06	0.17	0.13	0.14	0.18	0.17	0.14	0.19	0.26	0.27	0.31	0.15	0.28	0.34	0.26	0.35	0.34
Al ₂ O ₃	12.02	12.37	12.68	12.60	12.78	13.07	13.11	13.55	13.08	13.19	13.46	14.11	13.59	13.65	14.69	14.39	14.17
Fe ₂ O ₃	0.65	0.82	0.22	0.07	0.87	0.50	0.72	0.90	0.75	1.04	0.92	0.63	0.86	0.82	1.05	1.07	1.00
FeO	0.37	0.72	1.23	0.96	0.71	1.06	0.61	1.27	1.28	1.58	1.58	1.24	1.60	1.61	1.36	2.04	1.74
MnO	0.02	0.04	0.04	0.03	0.03	0.03	0.01	0.04	0.04	0.04	0.05	0.14	0.03	0.07	0.07	0.06	0.07
MgO	0.02	0.38	0.27	0.14	0.23	0.28	0.14	0.31	0.40	0.33	0.47	0.58	0.39	0.63	0.77	0.73	0.72
CaO	0.53	1.12	1.02	1.10	1.34	1.46	1.39	1.69	2.02	1.52	2.05	1.99	1.89	1.94	2.99	2.79	2.72
Na ₂ O	3.15	3.43	4.16	3.80	3.80	3.61	3.70	3.68	4.02	3.75	3.95	3.74	3.85	3.74	4.16	3.54	3.83
K ₂ O	5.10	3.75	3.22	3.50	3.70	3.47	3.06	3.56	2.64	3.60	2.66	2.69	3.06	3.22	1.62	2.95	2.86
P ₂ O ₅	0.01	0.03	0.02	0.06	0.03	0.02	0.02	0.04	0.05	0.05	0.06	0.02	0.06	0.06	0.08	0.07	0.08
H ₂ O+	0.27	0.40	0.23	0.48	0.45	0.35	0.35	0.33	0.65	0.32	0.45	0.51	0.40	1.00	0.36	0.42	0.76
H ₂ O-	0.09	0.06	0.11	0.05	0.10	0.08	0.08	0.10	0.03	0.15	0.11	0.11	0.04	0.20	0.15	0.12	0.07
CO ₂	0.03	0.18	0.10	0.02	0.05	0.12	0.05	0.06	0.05	0.13	0.09	0.07	0.14	0.05	0.03	0.01	0.05
Total	100.34	100.54	100.17	99.35	100.04	99.94	98.88	100.52	99.96	99.98	100.07	99.88	99.93	100.07	100.28	100.94	99.91
Ba	479	672	1185	739	687	831	2662	755	788	723	864	639	1049	609	403	824	624
Cr	<3	<3	<3	9	<3	<3	<3	3	5	<3	<3	6	4	5	7	5	4
Cu	36	<1	12	4	6	<1	<1	<1	2	<1	<1	<1	<1	3	2	56	4
Ga	12	13	15	14	14	13	12	16	16	16	17	13	13	15	15	16	15
Nb	N.D.	7	N.D.	N.D.	N.D.	5	3	6	N.D.	9	6	5	6	7	5	N.D.	N.D.
Ni	5	<2	6	3	2	<2	3	3	2	2	3	2	2	2	3	32	2
Pb	10	10	7	11	4	7	5	5	4	5	6	13	4	12	9	8	8
Rb	90	105	80	93	123	104	64	88	76	119	61	77	68	126	59	84	124
Si	21	92	70	76	90	107	122	111	159	95	142	162	131	147	353	197	196
Th	11	10	6	10	8	10	9	6	6	11	4	6	5	10	2	7	12
U	<3	3	4	<3	5	<3	3	<3	<3	<3	<3	<3	<3	6	<3	4	5
V	<4	6	6	6	9	12	4	13	17	19	23	17	22	14	13	28	35
Y	21	36	34	22	43	18	24	32	20	79	43	22	36	44	17	39	34
Zn	9	27	23	15	23	13	12	23	17	31	35	38	32	42	38	39	39
Zr	67	91	121	81	98	93	107	118	106	175	163	68	167	175	106	167	153

Sample no	VM67	CP101*	SS831	CP50*	SPL3	VM5*	D9413	VM68	TS62	VM25	CP925	VM69	TS92A	TS11*	CC7	D70*
Latitude	32 50 16	32 57 46	32 55 12	32 53 55	33 00 13	32 50 29	32 51 51	32 50 16	32 55 40	32 51 32	32 55 59	32 50 16	32 54 59	32 53 57	32 43 10	32 46 59
Longitude	116 39 35	116 34 10	116 52 52	116 33 20	116 57 25	116 39 13	116 36 30	116 39 35	116 39 37	116 40 52	116 34 29	116 39 35	116 39 23	116 38 38	116 29 50	116 32 26
Lithology	Pegmatite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Monzogranite	Granodiorite	Tonalite	Tonogranod	Monzogranite	Granodiorite	Tonalite	Granodiorite	Tonalite	Tonalite
<u>Chiquito Peak Monzogranite</u>																
SiO ₂	77.24	76.20	75.05	73.80	73.61	73.10	72.46	72.32	71.94	71.75	71.55	71.41	70.07	69.50	67.46	65.30
TiO ₂	0.04	0.08	0.22	0.23	0.25	0.28	0.26	0.36	0.44	0.28	0.30	0.39	0.48	0.47	0.59	0.70
Al ₂ O ₃	13.06	12.70	13.34	13.40	13.64	13.30	14.34	13.78	14.44	14.87	14.49	13.84	15.49	15.20	15.39	15.20
Fe ₂ O ₃	0.12	0.37	0.71	0.65	0.86	0.57	0.75	1.08	0.96	1.01	0.80	0.69	1.35	1.10	1.53	1.40
FeO	0.32	0.72	1.08	1.50	1.36	1.60	1.69	1.72	1.92	1.80	2.04	2.28	2.06	2.80	2.98	4.20
MnO	0.01	0.01	0.05	0.02	0.04	0.02	0.06	0.06	0.04	0.08	0.05	0.06	0.04	0.07	0.10	0.08
MgO	0.12	0.04	0.50	0.34	0.42	0.52	0.50	0.91	1.03	0.87	0.47	1.00	1.08	0.89	1.19	1.60
CaO	1.23	0.82	1.67	1.90	1.94	2.00	2.22	2.63	3.80	3.24	2.47	2.83	4.62	3.30	3.88	4.50
Na ₂ O	3.26	3.80	3.81	3.30	3.77	3.10	3.78	3.02	3.03	3.63	3.55	3.13	3.84	3.90	4.47	3.90
K ₂ O	5.12	3.90	3.68	4.00	3.04	4.20	3.33	3.61	1.26	2.17	3.15	3.63	0.80	2.20	1.18	2.10
P ₂ O ₅	0.01	0.06	0.03	0.04	0.05	0.08	0.06	0.08	0.08	0.08	0.06	0.06	0.14	0.14	0.13	0.17
H ₂ O+	0.24	0.47	0.24	0.54	0.33	0.50	0.43	0.33	0.70	0.38	0.50	0.23	0.43	0.69	0.68	0.66
H ₂ O-	0.05	0.07	0.10	0.18	0.03	0.01	0.12	0.04	0.08	0.05	0.06	0.11	0.09	0.04	0.04	0.19
CO ₂	0.01	0.02	0.04	0.02	0.03	0.02	0.12	0.02	0.14	0.02	0.06	0.02	0.07	0.02	0.06	0.02
Total	100.83	99.26	100.52	99.92	99.37	99.30	100.12	99.96	99.86	100.23	99.55	99.68	100.56	100.32	99.68	100.02
Ba	417	736	646	927	591	716	785	990	417	565	1532	700	254	374	447	691
Cr	5	4	5	10	3	5	<3	9	4	<3	6	6	7	389	<3	5
Cu	21	2	<1	4	<1	3	<1	13	13	34	<1	9	10	12	1	6
Ga	13	15	11	18	14	14	13	15	12	14	15	16	14	17	16	19
Nb	N.D.	N.D.	7	N.D.	5	N.D.	6	N.D.	3	N.D.	7	N.D.	2	N.D.	5	N.D.
Ni	12	3	<2	4	3	4	5	7	<2	23	3	3	3	11	<2	4
Pb	22	9	13	11	6	9	8	10	8	11	8	14	6	9	10	6
Rb	110	139	130	100	102	202	109	119	44	55	81	156	25	46	41	72
Sr	69	83	123	150	134	116	188	150	244	250	192	139	281	148	296	308
Th	7	14	15	19	13	24	15	7	3	4	7	12	<2	4	5	9
U	<3	<3	4	<3	3	6	<3	4	<3	<3	<3	5	3	3	<3	<3
V	<4	<4	10	27	18	35	20	36	35	26	29	45	77	155	46	71
Y	7	43	38	31	29	47	22	38	4	16	32	48	6	42	29	39
Zn	8	17	23	35	28	26	31	37	44	43	44	42	41	86	72	69
Zr	24	90	124	176	125	179	131	184	105	98	222	195	151	109	224	141

Sample no.	A4	5848	331852	A3	15M65	WSP17*	WSP94*	W3	ML28
Latitude	32 46 52	32 45 53	33 22 59	32 46 52	32 40 13	32 49 50	32 49 36	32 40 28	32 45 15
Longitude	116 47 43	116 10 00	116 41 47	116 47 43	116 11 35	116 12 36	116 08 01	116 16 52	116 26 21
Lithology	M onzogranite	M onzogranite	M onzogranite	Granodiorite	Tonalite	Granodiorite	Granodiorite	Granodiorite	Granodiorite
<u>Tonalite of La Posta</u>									
SiO ₂	76.89	75.57	75.35	73.38	72.65	71.70	71.60	71.02	70.88
TiO ₂	0.04	0.10	0.08	0.18	0.26	0.30	0.21	0.44	0.40
Al ₂ O ₃	12.81	13.68	14.03	14.11	14.94	14.40	14.90	15.37	14.82
Fe ₂ O ₃	0.48	0.28	0.22	0.62	0.38	0.26	1.00	0.87	0.61
FeO	0.06	0.82	0.90	1.08	1.38	1.50	0.68	1.37	1.68
MnO	0.01	0.01	0.01	0.04	0.01	0.02	0.03	0.04	0.06
MgO	0.02	0.34	0.34	0.63	0.57	0.66	0.66	0.89	0.65
CaO	0.76	1.45	1.62	2.25	2.57	2.20	2.50	3.37	2.62
Na ₂ O	3.59	3.51	3.22	3.74	4.02	3.30	3.70	3.85	3.48
K ₂ O	4.95	3.67	3.92	2.95	2.28	3.30	3.40	2.36	3.85
P ₂ O ₅	0.01	0.02	0.03	0.06	0.08	0.09	0.10	0.19	0.09
H ₂ O+	0.60	0.64	0.57	0.94	0.70	0.61	0.43	0.77	1.04
H ₂ O-	0.05	0.13	0.14	0.08	0.13	0.26	0.32	0.09	0.07
CO ₂	0.04	0.03	0.03	0.04	0.09	0.02	0.03	0.03	0.05
Total	100.31	100.25	100.46	100.10	100.06	98.62	99.56	100.66	100.30
Ba	116	1468	1152	768	918	795	903	772	1541
Cr	6	7	8	7	6	19	11	4	<3
Cu	6	<1	<1	2	1	6	3	36	4
Ga	14	18	16	18	21	15	17	20	20
Nb	N.D.	6	7	N.D.	8	N.D.	N.D.	N.D.	N.D.
Ni	2	9	8	4	7	8	6	5	3
Pb	20	21	21	15	13	20	19	12	21
Rb	98	89	131	82	68	121	140	59	123
Si	35	262	233	220	399	171	221	461	352
Th	15	7	14	5	7	12	10	3	17
U	3	<3	3	<3	<3	<3	<3	3	<3
V	11	4	<4	16	7	19	11	19	28
Y	15	10	18	15	13	25	15	8	7
Zn	6	59	52	24	73	47	46	66	61
Zr	47	71	71	78	132	152	134	101	184

MI2	W 2	W 4	SD831	A48	ACS55*	ACS54*	W 1	ACS50*	ACS43*
32 51 21	32 39 37	32 42 45	32 45 59	32 48 12	32 55 52	32 53 50	32 38 02	32 54 26	32 54 47
116 28 06	116 05 38	116 22 50	116 16 55	116 49 03	116 16 25	116 15 31	116 08 47	116 21 55	116 18 31
Granodiorite	Tonalite	Granodiorite	Granodiorite	Tongranod	Tonalite	Tonalite	Granodiorite	Granodiorite	Tonalite
70.01	69.89	69.82	69.74	69.44	69.40	69.30	69.28	69.00	68.80
0.44	0.57	0.52	0.43	0.38	0.53	0.49	0.47	0.48	0.45
15.65	15.53	15.65	15.65	15.50	16.80	16.50	15.74	15.90	16.50
0.65	0.45	0.18	0.41	1.17	0.51	0.61	0.58	0.47	0.54
2.20	2.45	2.42	2.00	1.88	2.40	2.20	2.04	1.80	2.20
0.09	0.04	0.05	0.04	0.07	0.03	0.03	0.05	0.03	0.03
0.81	1.10	1.07	0.93	1.25	0.88	0.84	0.96	0.65	0.77
3.20	3.75	3.67	3.49	3.78	4.20	4.00	3.53	3.40	3.90
3.90	3.90	3.74	4.00	3.58	4.00	4.10	3.47	4.00	4.00
2.45	1.90	2.26	2.05	2.05	1.80	1.70	2.67	2.20	1.70
0.12	0.14	0.13	0.14	0.09	0.16	0.17	0.13	0.13	0.15
0.94	0.41	0.46	0.80	0.53	0.74	0.67	0.50	0.56	0.71
0.08	0.11	0.03	0.26	0.11	0.09	0.09	0.05	0.08	0.06
0.04	0.10	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02
100.58	100.34	100.02	99.96	99.88	101.56	100.72	99.49	98.72	99.83
901	1116	763	736	497	971	846	926	731	877
7	8	7	4	16	7	8	<3	6	5
3	12	56	4	16	4	3	4	3	3
18	21	20	21	17	24	23	22	25	23
N D .	N D .	N D .	7	5	N D .	N D .	N D .	N D .	N D .
5	6	32	6	5	5	5	3	4	5
11	8	15	15	13	7	12	14	13	7
17	46	64	55	45	51	50	81	60	49
361	556	497	458	273	612	609	499	514	608
3	3	8	5	3	4	6	5	7	3
4	<3	<3	<3	<3	<3	<3	3	<3	<3
21	30	33	17	50	25	23	18	18	23
18	12	5	11	19	8	8	13	13	7
70	87	75	77	54	84	84	66	61	76
130	170	114	118	107	150	137	142	117	143

CC1	ACS49*	CC10	ACS37*	ACS53*	CC11	WSP16*	ACS56*	R17	MP8B*
32 43 07	32 54 37	32 43 16	32 53 05	32 56 37	32 43 34	32 52 08	32 58 14	33 02 27	32 59 01
116 15 28	116 19 10	116 23 50	116 17 05	116 17 59	116 26 02	116 13 50	116 20 29	116 49 27	116 24 26
Tonalite	Tonalite	Granodiorite	Tonalite	Tonalite	Ton/granod	Tonalite	Tonalite	Tonalite	Tonalite
68.74	68.60	68.50	68.50	68.20	67.43	66.50	66.00	64.35	63.60
0.54	0.48	0.63	0.52	0.46	0.67	0.60	0.66	0.71	0.93
16.00	16.20	16.00	16.50	16.40	15.91	16.90	16.90	16.46	17.30
0.34	0.48	0.65	0.47	0.43	0.67	0.63	0.31	1.60	0.77
2.29	2.10	2.22	2.20	2.10	2.61	2.20	2.80	3.05	3.40
0.06	0.03	0.04	0.04	0.03	0.06	0.03	0.03	0.05	0.03
1.02	0.75	1.11	0.76	0.71	1.26	0.95	1.20	2.21	1.70
3.88	3.70	4.07	3.80	3.90	4.37	4.60	4.40	5.06	5.30
4.13	3.90	3.85	4.00	4.00	3.85	4.00	3.70	3.65	4.00
1.72	1.90	2.02	1.90	1.70	1.86	1.30	1.60	1.63	1.70
0.16	0.14	0.17	0.15	0.14	0.15	0.19	0.20	0.14	0.25
0.72	0.82	0.63	0.88	0.71	0.75	0.67	0.94	0.76	0.49
0.14	0.09	0.06	0.11	0.05	0.15	0.09	0.25	0.07	0.15
0.06	0.02	0.21	0.02	0.02	0.11	0.02	0.06	0.03	0.01
99.80	99.21	100.16	99.85	98.85	99.85	98.68	99.05	99.77	99.63
755	860	759	835	884	625	708	689	462	588
6	4	10	4	4	15	9	6	26	<3
5	3	<1	4	4	<1	3	3	3	4
22	24	20	22	23	18	22	22	16	25
6	N.D.	7	N.D.	N.D.	9	N.D.	N.D.	4	N.D.
7	5	3	5	8	5	5	3	8	5
13	13	10	8	11	8	8	5	8	12
46	53	51	55	46	54	34	50	60	50
540	589	500	561	606	475	638	599	436	635
5	4	5	2	7	6	2	4	5	6
<3	<3	<3	<3	3	3	<3	<3	<3	3
20	20	46	21	23	51	32	37	98	28
4	7	9	10	6	18	7	7	12	13
89	69	73	77	75	75	73	86	75	97
134	134	123	130	143	123	119	141	109	111

Map Unit	Lithology	Sample No.	Latitude N	Longitude W	Hornblende data (See explanation below)											Plotted	Comment	
					Fe/(Fe+Mg)	Fe ²⁺ /Fe ³⁺	Al ^{IV} total	Al ^{IV} total	P _{allhb} Schm fit	P _{allhb} Ham & Zen	P _{allhb} Z	T _{est} at P=0	T _{est} at P=5	P _{AS} -T0	P _{AS} -T5			
Chiquito Peak Monzogranite	gnanodiorite	86CA013	32° 54' 31"	116° 34' 32"	0.77	0.16	2.38	2.54	Inappropriate for P estimate								no	Too Fe-rich
Cuyamaca Reservoir Gnanodiorite	gnanodiorite	SY91-1	33° 04' 26"	116° 43' 06"	0.54	0.25	1.48	1.47	4.0	4.0	3.5	3.5					yes	
	tonalite	86CA046	33° 22' 29"	116° 37' 16"	0.43	0.25	1.20	1.24	Inappropriate for P estimate									N of map area
	gnanodiorite	86CA007	32° 49' 22"	116° 33' 19"	0.36	0.17	0.65	0.78	Inappropriate for P estimate									Almond
Tonalite of Apache	tonalite	A-98	32° 52' 14"	116° 51' 05"	0.42	0.51	1.32	1.35	3.3	3.4	2.7	2.8	802	815	1.3	1.0	yes	
	tonalite	A-99	32° 52' 33"	116° 49' 11"	0.43	0.35	1.48	1.48	4.0	4.0	3.5	3.5	770	778	2.6	2.4	yes	
	tonalite	A-1	32° 50' 19"	116° 46' 49"	0.52	0.27	1.50		4.1		3.6						yes	
	tonalite	86CA036	32° 50' 23"	116° 46' 01"	0.48	0.27	1.50	1.51	4.1	4.2	3.6	3.7					yes	
	tonalite	4-125-2	32° 57' 03"	116° 45' 33"	0.46	0.50	1.46	1.47	3.9	4.0	3.4	3.4					yes	
	tonalite	VM-75	32° 50' 06"	116° 44' 59"	0.47	0.45	1.37		3.5		3.0						yes	
	tonalite	TS-37	32° 54' 16"	116° 38' 42"	0.54	0.23	1.59		4.6		4.1						yes	
	quartz diorite	TS-65	32° 57' 03"	116° 38' 17"	0.51	0.38	2.04	2.51	6.7	8.9	6.3	8.7					yes	
Corte Madera Monzogranite	gnanodiorite	86CA005	32° 45' 14"	116° 46' 26"	0.64	0.14	1.52	1.50	Inappropriate for P estimate								no	Too Fe-rich
	gnanodiorite	D-94	32° 45' 44"	116° 36' 47"	0.67	0.21	1.77		Inappropriate for P estimate								no	Too Fe-rich
	gnanodiorite	D-94*	32° 45' 44"	116° 36' 47"	0.69	0.44	2.05		Inappropriate for P estimate								no	Too Fe-rich
	monzogranite	6-21-6	32° 50' 29"	116° 36' 33"	0.84	0.26	1.65	1.81	Inappropriate for P estimate								no	Too Fe-rich
Tonalite of Granite Mountain	gnanodiorite	86CA001	32° 48' 12"	116° 49' 10"	0.46	0.37	1.17	1.14	2.5	2.4	1.9	1.8					yes	
	tonalite	A-9	32° 45' 47"	116° 47' 16"	0.41	0.31	1.21		2.8		2.2						yes	
	tonalite	86CA006	32° 45' 23"	116° 46' 13"	0.41	0.60	1.26	1.26	3.0	3.0	2.4	2.4	755	764	2.0	1.8	yes	
	tonalite gneiss	SY92-1	33° 06' 26"	116° 39' 24"	0.52	0.39	1.94	1.96	6.2	6.3	5.9	5.9					yes	Note that high P relative to samples E and W may reflect shearing; one is in
	tonalite	J-32A	33° 07' 35"	116° 36' 01"	0.49	0.39	1.50	1.42	4.1	3.7	3.6	3.2	699	724	3.5	3.2	yes	
	diorite	J-32B	33° 07' 35"	116° 36' 01"	0.60	0.51	1.97	1.97	Inappropriate for P estimate								no	Too mafic
	tonalite	MR-12	32° 42' 29"	116° 30' 47"	0.49	0.48	1.68	1.73	5.0	5.2	4.5	4.8	642	686	5.5	5.1	yes	
	tonalite	86CA023	32° 36' 44"	116° 30' 03"	0.50	0.49	1.75	1.78	5.3	5.5	4.9	5.0					yes	
	tonalite	ML-42	32° 43' 47"	116° 28' 41"	0.47	0.34	1.59	1.65	4.5	4.8	4.1	4.4	709	728	4.4	4.1	yes	
	tonalite	CP0-4	32° 36' 44"	116° 28' 30"	0.50	0.36	1.56	1.66	4.4	4.9	3.9	4.4	719	747	4.3	3.8	yes	
	gnanodiorite	SS-83-2	32° 36' 28"	116° 28' 25"	0.57	0.30	1.64	1.64	4.8	4.3	4.3	4.3	735	746	4.0	3.8	yes	
	tonalite	EV-3	33° 02' 20"	116° 24' 32"	0.47	0.20	1.45		3.9		3.4						yes	
	tonalite	ML-17	32° 46' 44"	116° 24' 03"	0.45	0.43	1.55	1.49	4.4	4.1	3.9	3.6	684	720	4.0	3.5	yes	
	tonalite	86CA026	32° 57' 13"	116° 18' 10"	0.52	0.19	1.95	2.23	6.3	7.6	5.9	7.3					yes	
Hot Springs Mountain pluton	gnanodiorite	86CA045	33° 16' 24"	116° 37' 19"	0.51	0.28	1.67	1.71	5.0	5.1	4.5	4.7	719	740	4.5	4.2	yes	
	tonalite	86CA043	33° 16' 11"	116° 36' 58"	0.50	0.19	1.63	1.64	4.8	4.8	4.3	4.3	705	726	4.4	4.1	yes	
East Mesa Quartz Diorite	tonalite	86CA015	32° 54' 44"	116° 33' 06"	0.52	0.21	1.37	1.41	3.5	3.7	3.0	3.2	638	663	4.0	3.8	yes	
	quartz diorite	CP-117A	32° 54' 30"	116° 30' 34"	0.48	0.31	1.11	1.49	2.3	4.1	1.7	3.6					yes	
Japatul Valley Tonalite	tonalite	86CA003	32° 48' 22"	116° 48' 23"	0.46	0.32	1.26	1.49	3.0	4.1	2.4	3.5					yes	
	tonalite	86CA004	32° 46' 14"	116° 41' 52"	0.50	0.22	1.45	1.57	3.9	4.5	3.3	4.0					yes	
	tonalite	VM-39	32° 46' 19"	116° 40' 16"	0.45	0.49	1.50	1.50	4.1	3.6	3.6	3.6	774	793	2.6	2.2	yes	
	tonalite/gnanodiorite	5-1-1	32° 45' 25"	116° 39' 40"	0.60	0.25	1.80		5.5		5.1						SS data	
	tonalite/gnanodiorite	5-1-1*	32° 45' 25"	116° 39' 40"	0.58	0.45	1.76	1.78	5.4	5.5	4.9	5.0	665	697	5.6	5.2	yes	JH data - These agree within expected error
	tonalite	TS-17	32° 57' 20"	116° 39' 32"	0.50	0.31	1.54	1.54	4.3		3.8	3.8	672	695	4.3	4.1	yes	
	tonalite	WD-100	32° 45' 45"	116° 36' 46"	0.59	0.30	1.84		5.7		5.3						SS data	
	tonalite	WD-100*	32° 45' 45"	116° 36' 46"	0.57	0.49	1.88	1.96	5.9	6.3	5.5	5.9					yes	JH data - These agree within expected error
Las Bancas Tonalite	tonalite	POW-2-2	32° 58' 01"	117° 00' 45"	0.46	0.50	1.26	1.27	3.0	3.0	2.4	2.4	756	765	2.0	1.8	yes	
	tonalite	86CA039	33° 04' 07"	116° 43' 13"	0.37	0.24	1.10	1.17	2.2	2.6	1.6	2.0	653	672	2.7	2.6	yes	
Tonalite of La Posta	gnanodiorite	CP0-3	32° 37' 35"	116° 28' 25"	0.52	0.93	1.39	1.41	3.6	3.7	3.1	3.2					yes	
	gnanodiorite/tonalite	86CA009	32° 43' 23"	116° 26' 35"	0.51	0.19	1.14	1.15	2.4	2.5	1.8	1.9					yes	
	gnanodiorite	CC-10-1	32° 43' 16"	116° 23' 50"	0.50	0.40	1.18	1.09	2.6	2.2	2.0	1.6					yes	
	tonalite	86CA031	32° 41' 53"	116° 03' 41"	0.56	0.19	1.97	2.03	6.4	6.7	6.0	6.3	672	701	6.7	6.3	yes	
	tonalite	W-6-6	32° 42' 22"	116° 03' 09"	0.55	0.28	1.97	1.97	6.4	6.4	6.0	6.0	694	710	6.1	5.9	yes	
Dike	tonalite dike	W-1A	32° 38' 02"	116° 08' 47"				1.46									no	Inappropriate for P estimate
Monzogranite of Pine Valley	gnanodiorite	CP-132	32° 57' 28"	116° 30' 26"	0.73	0.19	2.06	2.13	Inappropriate for P estimate								no	Too Fe-rich
	gnanodiorite	WD-80A	32° 50' 10"	116° 32' 09"	0.72	0.26	1.98	1.88	Inappropriate for P estimate								no	Too Fe-rich

Explanation

- P_{allhb} Pressures calculated using allhb analyses with Schmitz (1992) equation.
- P_{allhb}Schm fit Pressures calculated using only inhb analyses with Schmitz (1992) equation.
- P_{allhb}Ham & Zen Pressures calculated using allhb analyses with Ham & Zen (1986) equation.
- P_{allhb}Z Pressures calculated using only inhb analyses with Ham & Zen (1986) equation.
- T_{est}at P=0 T at 0 kbar from Holland & Blundy (1994) hb-plug them on eter
- T_{est}at P=5 T at 5 kbar from Holland & Blundy (1994) hb-plug them on eter
- P_{AS}-T0 Pressures calculated using Anderson & Smith (1995) with above T
- P_{AS}-T5 Pressures calculated using Anderson & Smith (1995) with above T
- * Duplicate sample numbers Separate entries for data analyzed in different laboratories

Map Unit	Lithology	Sample No.	Main mineral assemblage for hornblende geochemistry										Accessory minerals			Subsolidus minerals			Pyroxene			Sulfides			Notes		
			HB	BT	FG	KF	QZ	TL	MT	LM	AP	ZR	ALL	EP	CHL	TE	Opx	Cpx	Py	Cpy	Po						
Chiquito Peak Monzogranite	garnodiorite	86CA013	X	X	X	?	X			X	X	X															
Cuyamaca Reservoir	garnodiorite	SY91-1	X	X	X		X																				
	tonalite	86CA046	X	X	X		X			X	X	X			X	X		X									
Tonalite of Alpine	garnodiorite	86CA007	X	X	X	X	X			Tr?														X		Paik hornblende; odd titanite texture	
	tonalite	A-98	X	X	X		X																				
	tonalite	A-99	X	X	X		X																				
	tonalite	A-1	X	X	X		X																				
	tonalite	86CA036	X	X	X		X			X	X	X			X	X	X		X		X	X					
	tonalite	4-125-2	X	X	X		X																				
	tonalite	VM-75	X	X	X		X			X	X												X		X		
	tonalite	TS-37	X	X	X		X																				
	quartz diorite	TS-65	X	X	X		X																				
	garnodiorite	86CA005	X	X	X	X	X			X	X																Distinct plagioclase cores, interstitial mafic silicates, pleochroic habits around zircon.
Tonalite of Granite Mountain	garnodiorite	D-94	X	X	X	X	X																			Foliated; hb is blue-green	
	monzogranite	6-21-6	X	X	X	X	X																			Strong foliation	
	garnodiorite	86CA001	X	X	X	X	X	X	X	?	X	X			X	X	X				X	X				Albite is associated with chlorite; plagioclase inclusions in biotite; no kinked kspars; euhedral sphene.	
	tonalite	A-9	X	X	X		X	X						X	X												
	tonalite	86CA006	X	X	X	X	X	X	X					X	X	X		X									Distinct plagioclase cores.
	tonalite gneiss	SY92-1	X	X	X		X																				
	tonalite	J-32A	X	X	X		X																				
	diorite	J-32B	X	X	X		X																				
	tonalite	MR-12	X	X	X		X																				
	tonalite	86CA023	X	X	X		X			X	X				X	X											
	tonalite	ML-42	X	X	X		X																				
	tonalite	CPO-4	X	X	X		X																				
	garnodiorite	SS-83-2	X	X	X		X																				
	tonalite	EV-3	X	X	X		X																				
	tonalite	ML-17	X	X	X		X																				
tonalite	86CA026	X	X	X		X			X	X																Px rims some bt, hb; bt bent; no opaque minerals?	
Hot Springs Mountain pluton	garnodiorite	86CA045	X	X	X	X	X	?			X	X		X	X	X											
	tonalite	86CA043	X	X	X	X	X			X	X			X		X											Bt:hb; rounded zircons
East Mesa Quartz Diorite	tonalite	86CA015	X	X	X	?	X			X	X				X												
	quartz diorite	CP-117A	X	X	X		X																				
Japant Valley Tonalite	tonalite	86CA003	X	X	X	?	X			X	X			X	X	X		X		X	X					Paik, low Al hornblende cores; clinopyroxene cores in some grains*, range of compositions exclusive of paik cores. Paik cores account for the high m g#.	
	tonalite	86CA004	X	X	X	X	X	X	?	?	X			X	X	X										Plagioclase cores are filled "remobilized" hornblende and biotite - could this explain the anomalously high (4 A) pressure?	
	tonalite	VM-39	X	X	X		X																				
Las Bancas Tonalite	tonalite/garnodiorite	5-1-1	X	X	X	X	X	X																			
	tonalite	TS-17	X	X	X		X																				
	tonalite	WD-100	X	X	X		X																				
	tonalite	POW-2-2	X	X	X		X																				
	tonalite	86CA039	X	X	X	?	X			X	X				X											Opaque minerals are scarce - hb; pleochroic habits around zircons	
Tonalite of La Posta	garnodiorite	CPO-3	X	X	X	?	X																				
	garnodiorite/tonalite	86CA009	X	X	X	X	X	X	?	?	X	X	X		X											Opaque minerals are scarce - only in hb	
	garnodiorite	CC-10-1	X	X	X	X	X																				
	tonalite	86CA031	X	X	X	X	X	X			X	X	X	X	Tr											Spectacular albite!	
Dike	tonalite dike	W-6-6	X	X	X	X	X																				
	tonalite dike	W-1A	X	X	X	X	X																				
Monzogranite of Pine Valley	garnodiorite	CP-132	X	X	X	X	X				X	X			X												
	garnodiorite	WD-80A	X	X	X	X	X																				

Key	
HB hornblende	ALL albite
BT biotite	EP epidote
FG plagioclase	CHL chlorite
KF potassium feldspar	TE secondary titanite
QZ quartz	Opx orthopyroxene
TL primary titanite	Cpx clinopyroxene
MT magnetite	Py pyrite
LM ilmenite	Cpy chalcopyrite
AP apatite	Po pyrrhotite
ZR zircon	

Sample	Quadrangle (7.5')	Latitude	Longitude	Todd /JMH notes	Lithology
VM-25	Viejas Mountain	32° 51' 32"	116° 40' 52"		tonalite/granodiorite
VM-69	Viejas Mountain	32° 50' 16"	116° 39' 35"	Anomalous Shaw P; strongly recrystallized	monzogranite
VM-5	Viejas Mountain	32° 50' 29"	116° 39' 13"		monzogranite
TS-11	Tule Springs	32° 53' 57"	116° 38' 38"		granodiorite
86CA013	Cuyamaca Peak	32° 54' 31"	116° 34' 32"		granodiorite
CC-7 (CC-7A)	Cameron Corners	32° 43' 10"	116° 29' 50"		tonalite
CP-97	Cuyamaca Peak			To check anomalous high P S of Green Valley	monzogranite
D-18	Descanso			Close to D-19; possible magmatic epidote	granodiorite/tonalite
D-19	Descanso			Check anomalous hb P; Recrystallized magmatic texture	granodiorite
VM-12	Viejas Mountain				tonalite
ECM-2	El Cajon Mountain	32° 53' 32"	116° 49' 26"	Fill in P gap; Check 2 Shaw P	granodiorite
86CA005	Alpine	32° 45' 14"	116° 46' 26"	Eastern tip of body mapped as Kcm. More mafic here than typical Kcm due to large amount of gabbro incorporated. Check for only Along Lawson Valley Road	granodiorite
D-94	Descanso	32° 45' 44"	116° 36' 47"	Check anomalous Shaw P; strong foliation	granodiorite
6-21-6 (=D-6-21-6)	Descanso	32° 50' 29"	116° 36' 33"	Check anomalous Shaw P; strong foliation	monzogranite
SY-91-1	Santa Ysabel	33° 04' 26"	116° 43' 06"	Only Jurassic granite with good hornblende.	granodiorite
SY91-1A	Santa Ysabel	33° 04' 26"	116° 43' 06"	Only Jurassic granite with good hornblende.	granodiorite
SY91-1B	Santa Ysabel	33° 04' 26"	116° 43' 06"	Only Jurassic granite with good hornblende.	granodiorite
86CA046	Hot Springs Mountain	33° 22' 29"	116° 37' 16"	Foliated; pale amphibole, pale reddish-brown biotite and secondary sphene typical of Jcr 2px geothermometer?	tonalite
CP-178	Julian	33° 00' 02"	116° 33' 58"		granodiorite
86CA007	Descanso	32° 49' 22"	116° 33' 19"		granodiorite
BH-1	Boucher Hill			Possible I-type (hbl-bearing) Jcr; Jcr is "I-S" or transitional granite	tonalite
6-139-17	Descanso	32° 51' 38"	116° 33' 38"		tonalite
86CA015	Cuyamaca Peak	32° 54' 44"	116° 33' 06"		tonalite
CP-117A	Cuyamaca Peak	32° 54' 30"	116° 30' 34"		quartz diorite
D-3	Descanso			Check anomalous WD-80A P; recrystallized magmatic texture	tonalite
86CA065					
W-1A	Jacumba	32° 38' 02"	116° 08' 47"	Fine-grained mafic/intermediate dike in Klp.	tonalite
86CA091					
A12					gabbro
86CA085					
86CA081		33° 42' 17"	116° 43' 55"		
86CA060					
86CA082	Idylwild 15'				
86CA084					
86CA045	Hot Springs Mountain	33° 16' 24"	116° 37' 19"		granodiorite
86CA043	Hot Springs Mountain	33° 16' 11"	116° 36' 58"		tonalite
EC-4	El Cajon	32° 46' 43"	116° 59' 50"	Fill in P gap	tonalite
A-5	Jamul Mountain	32° 43' 17"	116° 52' 53"	To fill in area with no P data.	tonalite/granodiorite
EC-1	El Cajon	32° 48' 41"	116° 52' 32"	Fill in P gap	tonalite/granodiorite
A6	Dulzura	32° 44' 04"	116° 50' 02"		granodiorite

Sample	Quadrangle (7.5')	Latitude	Longitude	Todd /JMH notes	Lithology
86CA003	Alpine	32° 48' 22"	116° 48' 23"	Locality about 2.5 mi east of 86CA001; outcrop at a waterfall at 1400'. Typical heterogeneous Kvj showing lots of interaction with wallrock; dikes of Kcp (interfingers with Kvj, not sampled). Kvj is very fresh, with pinkish quartz (Bonsall type).	tonalite
86CA004	Viejas Mountain	32° 46' 14"	116° 41' 52"	Kvj well into the pluton. Along Dehasa Road just east of the Carveacre Road intersection at 2,280 ft (695 m) . More homogeneous than at 86CA003; quartz is not pink here; note pale colored titanite	tonalite
VM-3	Viejas Mountain	32° 46' 03"	116° 41' 38"	Possible magmatic epidote; Near JH P=4.1 and Shaw P=3.7	tonalite
VM-76D	Viejas Mountain	32° 51' 29"	116° 40' 59"	Anomalous Shaw P (to check on VM-69)	tonalite
VM-39	Viejas Mountain	32° 46' 19"	116° 40' 16"		tonalite
5-1-1 (=VM-5-1-1)	Viejas Mountain	32° 45' 25"	116° 39' 40"	Check anomalous Shaw P; strongly recrystallized	tonalite/granodiorite
TS-17	Tule Springs	32° 57' 20"	116° 39' 32"	Have Shaw P 4.3 here; Shaw P 8.9 nearby	tonalite
WD-100	Descanso	32° 45' 45"	116° 36' 46"	Check anomalous Shaw P; strongly recrystallized. Possible magmatic epidote.	tonalite
POT-6	Potrero	32° 35' 34"	116° 31' 35"	Fill in P gap	tonalite
R-92-3	Ramona				tonalite
D6	Descanso			Granitic veinlet in quartzite	
86CA089					
86CA090					
POW-2-1	Poway	32° 58' 01"	117° 00' 45"	Collected beneath L. Cretaceous Lusardi Fm (basal conglomerate overlying PRB); hornblende	tonalite
POW-2-2	Poway	32° 58' 01"	117° 00' 45"	Collected beneath L. Cretaceous Lusardi Fm (basal conglomerate overlying PRB); hornblende	tonalite
A2	Alpine	32° 49' 13"	116° 46' 34"		tonalite
86CA039	Santa Ysabel	33° 04' 07"	116° 43' 13"	In contact zone between Klb pluton and westernmost Jcr pluton ("I-S" line). Chilled Klb.	tonalite
MP-23A	Monument Peak	32° 53' 23"	116° 27' 15"	Fill in P gap	tonalite
SP-92-3	San Pasqual				tonalite
ECM-19	El Cajon Mountain	32° 58' 04"	116° 51' 44"	Fill in P gap	tonalite
BL-92-5	Barrett Lake	32° 39' 46"	116° 44' 49"	New map unit; monzogranite with euhedral hbl	monzogranite
SY-3	Santa Ysabel	33° 05' 56"	116° 39' 47"	Fill in P gap	monzogranite
CP-25	Cuyamaca Peak	32° 55' 50"	116° 36' 17"	Check on 2 Shaw P; 1 anomalous	monzogranite
WD-80A	Descanso	32° 50' 10"	116° 32' 09"	Check anomalous Shaw P; strongly foliated	granodiorite
CP-132	Cuyamaca Peak	32° 57' 28"	116° 30' 26"	Fill in P gap; strong foliation (protomylonite)	granodiorite
D-62	Descanso			Contaminated, next to gabbro	granodiorite/tonalite
A-98	Alpine	32° 52' 14"	116° 51' 05"		tonalite
A-99	El Cajon Mountain	32° 52' 33"	116° 49' 11"		tonalite
A-1	Alpine	32° 50' 19"	116° 46' 49"		tonalite
86CA036	Alpine	32° 50' 23"	116° 46' 01"		tonalite
4-125-2	Tule Springs	32° 57' 03"	116° 45' 33"		tonalite
VM-75	Viejas Mountain	32° 50' 06"	116° 44' 59"		tonalite
TS-37	Tule Springs	32° 54' 16"	116° 38' 42"		tonalite
TS-65	Tule Springs	32° 57' 03"	116° 38' 17"		quartz diorite
R-92-7	Ramona				tonalite
VM-92-1	Viejas Mountain				tonalite
PO-5	Palomar Observatory	33° 17' 02"	116° 52' 02"		tonalite
86CA001	Alpine	32° 48' 12"	116° 49' 10"	Typical Kgm lithology - texturally variable at this outcrop along Dehasa Road.	granodiorite

Sample	Quadrangle (7.5')	Latitude	Longitude	Todd /JMH notes	Lithology
86CA002	Alpine	32° 48' 12"	116° 49' 10"	Coarse-grained variety of Kgm at same outcrop as 86CA001.	granodiorite
A-9	Alpine	32° 45' 47"	116° 47' 16"	To fill in area with no P data. Also for Kgm-Klp W to E transect	tonalite
86CA006	Alpine	32° 45' 23"	116° 46' 13"	Kgm away from contacts; contains a variety of inclusions. Standing Rock Road off Lawson Vallev Road.	tonalite
SY-92-1	Santa Ysabel	33° 06' 26"	116° 39' 24"		tonalite gneiss
SS-83-3	Potrero	32° 37' 16"	116° 36' 46"	Fill in P gap; Kgm-Klp transect	tonalite
J-32A	Ranchita	33° 07' 35"	116° 36' 01"		tonalite
MR-12	Morena Reservoir	32° 42' 29"	116° 30' 47"	To fill in area with no P data. Also for Kgm-Klp W to E transect	tonalite
86CA023	Julian	33° 05' 14"	116° 30' 03"		tonalite
ML-42	Cameron Corners	32° 43' 47"	116° 28' 41"		tonalite
CPO-4	Campo	32° 36' 44"	116° 28' 30"	To fill in area with no P data. Also for Kgm-Klp W to E transect	tonalite
SS-83-2	Campo	32° 36' 28"	116° 28' 25"		granodiorite
EV-3	Earthquake Valley	33° 02' 20"	116° 24' 32"		tonalite
ML-17	Mount Laguna	32° 46' 44"	116° 24' 03"	Fill in P gap; Check Walawander P; Kgm-Klp transect	
86CA026	Agua Caliente Springs	32° 57' 13"	116° 18' 10"	Near Elsinore fault zone; strong subsolidus recrystallization.	tonalite
3-31-85-3	Beauty Mountain			Fill in P gap	tonalite
MR-17	Morena Reservoir			Fill in P gap	
SY-1A	Santa Ysabel			Fill in P gap	tonalite
J-32B	Ranchita	33° 07' 35"	116° 36' 01"	Check anomalous P on J32A; strong foliation; JH interested in Ti zoning in hornblende	diorite
A3	Alpine	32° 46' 52"	116° 47' 43"		granodiorite
86CA048		33° 22' 38"	116° 42' 24"		
CPO-3	Cameron Corners	32° 37' 35"	116° 28' 25"	To fill in area with no P data. Also for Kgm-Klp W to E transect	granodiorite
86CA009	Cameron Corners	32° 43' 23"	116° 26' 35"	Type locality for La Posta tonalite along old Rt. 80, just east of La Posta Service Station. Note abundant hornblende.	granodiorite/ tonalite
Trip 21	In-Koh-Pah Gorge	32° 58' 47"	116° 25' 03"		
CC-10-1	Cameron Corners	32° 43' 16"	116° 23' 50"	Klp E of where H&Z sampled it; hb scarce.	granodiorite
CC-10-2	Cameron Corners	32° 43' 16"	116° 23' 50"		granodiorite
ACS-49	Agua Caliente Springs	32° 54' 37"	116° 19' 10"	Possible magmatic epidote	tonalite
86CA031		32° 41' 53"	116° 03' 41"	In-Ko-Pah Gorge; Gromet's E-most REE locality	tonalite
W-6 (=W-6-6)	In-Koh-Pah Gorge	32° 42' 22"	116° 03' 09"	Farthest east Klp sample from I-8 near desert. Fission-track sample.	tonalite
W-6-1	In-Koh-Pah Gorge	32° 42' 22"	116° 03' 09"	Farthest east Klp sample from I-8 near desert. Fission-track sample.	tonalite
W-6-2	In-Koh-Pah Gorge	32° 42' 22"	116° 03' 09"	Farthest east Klp sample from I-8 near desert. Fission-track sample.	tonalite
86CA037	San Pasqual	33° 00' 22"	116° 58' 00"		leucomonzogranite
SVR-2	San Vicente Reservoir	32° 54' 18"	116° 56' 59"	Hypabyssal microgranite pluton, same longitude as Woodson Mt. Pluton. No hb. Other Todd notes describe as Subvolcanic pluton with bt and hbld; collected ~35 m below base of Encana Stadium Conglomerate	monzogranite
86CA008	Descanso	32° 49' 22"	116° 33' 19"	Andesite dike in Jcr outcrop where 86CA007 sampled.	andesite
86CA074	Palm Desert 15'	33° 42' 53"	116° 17' 47"		
E-7	Escondido	33° 01' 22"	116° 05' 46"	Shallow pluton coeval with Santiago Peak Volcanics; contains very fine-grained biotite and hornblende.	granodiorite
86CA060					

Sample	Quadrangle (7.5')	Latitude	Longitude	Map symbol	Map unit	Todd /JMH notes	Lithology
3-31-85-3	Beauty Mountain			Kgm-type	Tonalite of Granite Mountain	Fill in P gap	tonalite
4-125-2	Tule Springs	32° 57' 03"	116° 45' 33"	Ka	Tonalite of Alpine		tonalite
5-1-1 (=VM-5-1-1)	Viejas Mountain	32° 45' 25"	116° 39' 40"	Kjv	Japatul Valley Tonalite	Check anomalous Shaw P; strongly recrystallized	tonalite/granodiorite
6-21-6 (=D-6-21-6)	Descanso	32° 50' 29"	116° 36' 33"	Kcm	Corte Madera Monzogranite	Check anomalous Shaw P; strong foliation	monzogranite
6-139-17	Descanso	32° 51' 38"	116° 33' 38"	KJem	East Mesa Quartz Diorite		tonalite
86CA001	Alpine	32° 48' 12"	116° 49' 10"	Kgm	Tonalite of Granite Mountain	Typical Kgm lithology - texturally variable at this outcrop along Dehasa Road.	granodiorite
86CA002	Alpine	32° 48' 12"	116° 49' 10"	Kgm	Tonalite of Granite Mountain	Coarse-grained variety of Kgm at same outcrop as 86CA001.	granodiorite
86CA003	Alpine	32° 48' 22"	116° 48' 23"	Kjv	Japatul Valley Tonalite	Locality about 2.5 mi east of 86CA001; outcrop at a waterfall at 1400'. Typical heterogeneous Kjv showing lots of interaction with wallrock; dikes of Kcp (interfingers with Kjv, not sampled). Kjv is very fresh, with pinkish quartz (Bancal type).	tonalite
86CA004	Viejas Mountain	32° 46' 14"	116° 41' 52"	Kjv	Japatul Valley Tonalite	Kjv well into the pluton. Along Dehasa Road just east of the Carveacre Road intersection at 2,280 ft (695 m) . More homogeneous than at 86CA003; quartz is not pink here; note pale colored titanite	tonalite
86CA005	Alpine	32° 45' 14"	116° 46' 26"	Kcm	Corte Madera Monzogranite	Eastern tip of body mapped as Kcm. More mafic here than typical Kcm due to large amount of gabbro incorporated. Check for rhy. Along Lawson Valley Road	granodiorite
86CA006	Alpine	32° 45' 23"	116° 46' 13"	Kgm	Tonalite of Granite Mountain	Kgm away from contacts; contains a variety of inclusions. Standing Rock Road off Lawson Valley Road.	tonalite
86CA007	Descanso	32° 49' 22"	116° 33' 19"	Jcr	Cuyamaca Reservoir Granodiorite		granodiorite
86CA008	Descanso	32° 49' 22"	116° 33' 19"			Andesite dike in Jcr outcrop where 86CA007 sampled.	andesite
86CA009	Cameron Corners	32° 43' 23"	116° 26' 35"	Klp	Tonalite of La Posta	Type locality for La Posta tonalite along old Rt. 80, just east of La Posta Service Station. Note abundant hornblende.	granodiorite/ tonalite
86CA013	Cuyamuca Peak	32° 54' 31"	116° 34' 32"	Kcp	Chiquito Peak Monzogranite		granodiorite
86CA015	Cuyamuca Peak	32° 54' 44"	116° 33' 06"	KJem	East Mesa Quartz Diorite		tonalite
86CA023	Julian	33° 05' 14"	116° 30' 03"	Kgm	Tonalite of Granite Mountain		tonalite
86CA026	Agua Caliente Springs	32° 57' 13"	116° 18' 10"	Kgm	Tonalite of Granite Mountain	Near Elsinore fault zone; strong subsolidus recrystallization.	tonalite
86CA031		32° 41' 53"	116° 03' 41"	Klp	Tonalite of La Posta	In-Ko-Pah Gorge; Gromet's E-most REE locality	tonalite
86CA036	Alpine	32° 50' 23"	116° 46' 01"	Ka	Tonalite of Alpine		tonalite
86CA037	San Pasqual	33° 00' 22"	116° 58' 00"	Kwm	Woodson Mountain Granodiorite		leucomonzogranite
86CA039	Santa Ysabel	33° 04' 07"	116° 43' 13"	Klb	Las Bancas Tonalite	In contact zone between Klb pluton and westernmost Jcr pluton ("I-S" line). Chilled Klb.	tonalite
86CA043	Hot Springs Mountain	33° 16' 11"	116° 36' 58"	Khsm	Hot Springs Mountain pluton		tonalite
86CA045	Hot Springs Mountain	33° 16' 24"	116° 37' 19"	Khsm	Hot Springs Mountain pluton		granodiorite
86CA046	Hot Springs Mountain	33° 22' 29"	116° 37' 16"	Jcr	Cuyamaca Reservoir Granodiorite	Foliated; pale amphibole, pale reddish-brown biotite and secondary sphene typical of Jcr	tonalite
86CA048		33° 22' 38"	116° 42' 24"	Klp	Tonalite of La Posta		
86CA052					Cahuilla Valley Kt1		
86CA060					Hill's Kt1		
86CA060					Erskine's Kqr		
86CA065							
86CA074	Palm Desert 15'	33° 42' 53"	116° 17' 47"				
86CA081		33° 42' 17"	116° 43' 55"		Hill's Kt1		
86CA082	Idylwild 15'				Hill's Kt2		
86CA084					Hill's Kt3		
86CA085					Hill's Ksc		

Sample	Quadrangle (7.5')	Latitude	Longitude	Map symbol	Map unit	Todd /JMH notes	Lithology
86CA089					Lakeview tonalite		
86CA090					Lakeview tonalite (mafic)		
86CA091				Metamorphic	French Valley Formation		
86CA092					Domenigoni Valley pluton		
86CA092					Domenigoni Valley pluton	Roadcut along west side of Rt. 79, about 1 mile south of Winchester. Morton's Domenigoni Valley pluton. Massive rock with no internal structures (passive emplacement). Inclusions are equant in contrast to the elongate inclusions characteristic of the Val Verde tunnel	
86CA104					Bonsall tonalite		
A-1	Alpine	32° 50' 19"	116° 46' 49"	Ka	Tonalite of Alpine		tonalite
A2	Alpine	32° 49' 13"	116° 46' 34"	Klb	Las Bancas Tonalite		tonalite
A3	Alpine	32° 46' 52"	116° 47' 43"	Klp	Tonalite of La Posta		granodiorite
A-5	Jamul Mountain	32° 43' 17"	116° 52' 53"	Kjv	Japatul Valley Tonalite	To fill in area with no P data.	tonalite/granodiorite
A6	Dulzura	32° 44' 04"	116° 50' 02"	Kjv	Japatul Valley Tonalite		granodiorite
A-6							
A7	Dulzura	32° 44' 04"	116° 50' 02"		dike	Fine-grained mafic/intermediate dike in A-6.	diorite
A-9	Alpine	32° 45' 47"	116° 47' 16"	Kgm	Tonalite of Granite Mountain	To fill in area with no P data. Also for Kgm-Klp W to E transect	tonalite
A12				Kc	gabbro		gabbro
A-98	Alpine	32° 52' 14"	116° 51' 05"	Ka	Tonalite of Alpine		tonalite
A-99	El Cajon Mountain	32° 52' 33"	116° 49' 11"	Ka	Tonalite of Alpine		tonalite
ACS-49	Agua Caliente Springs	32° 54' 37"	116° 19' 10"	Klp	Tonalite of La Posta	Possible magmatic epidote	tonalite
BH-1	Boucher Hill			Jcr	Cuyamaca Reservoir Granodiorite	Possible I-type (hbl-bearing) Jcr; Jcr is "I-S" or transitional granite	tonalite
BL-92-5	Barrett Lake	32° 39' 46"	116° 44' 49"	Kmgp	Monzogranite of Mother Grundy Peak	New map unit; monzogranite with euhedral hbl	monzogranite
CC-7 (CC-7A)	Cameron Corners	32° 43' 10"	116° 29' 50"	Kcp	Chiquito Peak Monzogranite		tonalite
CC-10-1	Cameron Corners	32° 43' 16"	116° 23' 50"	Klp	Tonalite of La Posta	Klp E of where H&Z sampled it; hb scarce.	granodiorite
CC-10-2	Cameron Corners	32° 43' 16"	116° 23' 50"	Klp	Tonalite of La Posta		granodiorite
CP-25	Cuyamaca Peak	32° 55' 50"	116° 36' 17"	Kpv	Monzogranite of Pine Valley	Check on 2 Shaw P; 1 anomalous	monzogranite
CP-97	Cuyamaca Peak			Kcp	Chiquito Peak Monzogranite	To check anomalous high P S of Green Valley	monzogranite
CP-117A	Cuyamaca Peak	32° 54' 30"	116° 30' 34"	KJem	East Mesa Quartz Diorite		quartz diorite
CP-132	Cuyamaca Peak	32° 57' 28"	116° 30' 26"	Kpv	Monzogranite of Pine Valley	Fill in P gap; strong foliation (protomylonite)	granodiorite
CP-178	Julian	33° 00' 02"	116° 33' 58"	Jcr	Cuyamaca Reservoir Granodiorite	2px geothermometer?	granodiorite
CPO-3	Cameron Corners	32° 37' 35"	116° 28' 25"	Klp	Tonalite of La Posta	To fill in area with no P data. Also for Kgm-Klp W to E transect	granodiorite
CPO-4	Campo	32° 36' 44"	116° 28' 30"	Kgm	Tonalite of Granite Mountain	To fill in area with no P data. Also for Kgm-Klp W to E transect	tonalite
D-3	Descanso			KJem	East Mesa Quartz Diorite	Check anomalous WD-80A P; recrystallized mafic texture	tonalite
D6	Descanso				Julian Schist	Granitic veinlet in quartzite	
D-18	Descanso			Kcp	Chiquito Peak Monzogranite	Close to D-19; possible magmatic epidote	granodiorite/tonalite
D-19	Descanso			Kcp	Chiquito Peak Monzogranite	Check anomalous hb P; Recrystallized mafic texture	granodiorite
D-62	Descanso			Kpv	Monzogranite of Pine Valley	Contaminated, next to gabbro	granodiorite/tonalite
D-94	Descanso	32° 45' 44"	116° 36' 47"	Kcm	Corte Madera Monzogranite	Check anomalous Shaw P; strong foliation	granodiorite
E-1	Escondido			?	?		tonalite or borderline
E-7	Escondido	33° 01' 22"	116° 05' 46"			Shallow pluton coeval with Santiago Peak Volcanics; contains very fine-grained biotite and hornblende.	granodiorite
EC-1	El Cajon	32° 48' 41"	116° 52' 32"	Kjv	Japatul Valley Tonalite	Fill in P gap	tonalite/granodiorite
EC-4	El Cajon	32° 46' 43"	116° 59' 50"	Kjv	Japatul Valley Tonalite	Fill in P gap	tonalite
ECM-2	El Cajon Mountain	32° 53' 32"	116° 49' 26"	Kcm	Corte Madera Monzogranite	Fill in P gap; Check 2 Shaw P	granodiorite
ECM-19	El Cajon Mountain	32° 58' 04"	116° 51' 44"	Kjv	Mafic rock in Japatul Valley Tonalite	Fill in P gap	tonalite
EV-3	Earthquake Valley	33° 02' 20"	116° 24' 32"	Kgm	Tonalite of Granite Mountain		tonalite
J-32A	Ranchita	33° 07' 35"	116° 36' 01"	Kgm	Tonalite of Granite Mountain		tonalite

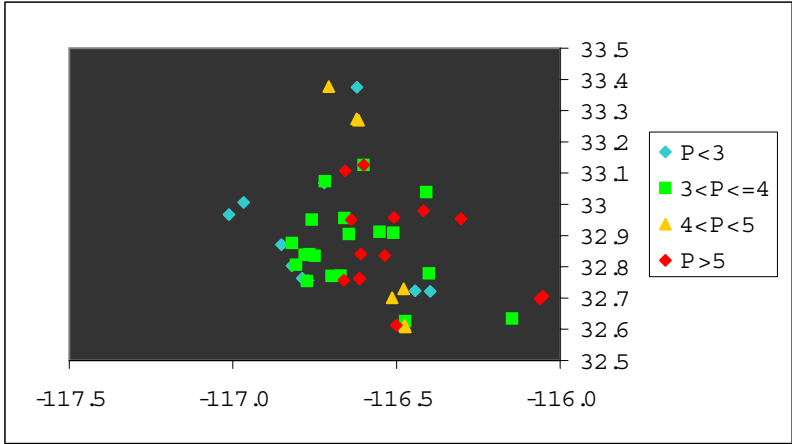
Sample	Quadrangle (7.5')	Latitude	Longitude	Map symbol	Map unit	Todd /JMH notes	Lithology
J-32B	Ranchita	33° 07' 35"	116° 36' 01"	Kgm	Tonalite of Granite Mountain(mafic phase)	Check anomalous P on J32A; strong foliation; JH interested in Ti zoning in hornblende	diorite
ML-17	Mount Laguna	32° 46' 44"	116° 24' 03"	Kgm	Tonalite of Granite Mountain	Fill in P gap; Check Walawander P; Kgm-Klp transect	
ML-42	Cameron Corners	32° 43' 47"	116° 28' 41"	Kgm	Tonalite of Granite Mountain		tonalite
MP-23A	Monument Peak	32° 53' 23"	116° 27' 15"	Klb	Las Bancas Tonalite	Fill in P gap	tonalite
MR-12	Morena Reservoir	32° 42' 29"	116° 30' 47"	Kgm	Tonalite of Granite Mountain	To fill in area with no P data. Also for Kgm-Klp W to E transect	tonalite
MR-17	Morena Reservoir			Kgm	Tonalite of Granite Mountain	Fill in P gap	
PO-5	Palomar Observatory	33° 17' 02"	116° 52' 02"	Kgm	Tonalite of Granite Mountain		tonalite
POT-6	Potrero	32° 35' 34"	116° 31' 35"	Kjv	Japatul Valley Tonalite	Fill in P gap	tonalite
POW-2-1	Poway	32° 58' 01"	117° 00' 45"	Klb	Las Bancas Tonalite	Collected beneath L. Cretaceous Lusardi Fm (basal conglomerate overlying PRB); hornblende	tonalite
POW-2-2	Poway	32° 58' 01"	117° 00' 45"	Klb	Las Bancas Tonalite	Collected beneath L. Cretaceous Lusardi Fm (basal conglomerate overlying PRB); hornblende	tonalite
R-92-3	Ramona			Kjv	Japatul Valley Tonalite		tonalite
R-92-7	Ramona			Ka	Tonalite of Alpine		tonalite
SP-92-3	San Pasqual			Klb	Las Bancas Tonalite		tonalite
SS-83-2	Campo	32° 36' 28"	116° 28' 25"	Kgm	Tonalite of Granite Mountain		granodiorite
SS-83-3	Potrero	32° 37' 16"	116° 36' 46"	Kgm	Tonalite of Granite Mountain	Fill in P gap; Kgm-Klp transect	tonalite
SVR-2	San Vicente Reservoir	32° 54' 18"	116° 56' 59"			Hypabyssal microgranite pluton, same longitude as Woodson Mt. Pluton. No hb. Other Todd notes describe as Subvolcanic pluton with bt and hbltd; collected ~35 m below base of Eocene Stadium Conglomerate	monzogranite
SY-1A	Santa Ysabel			Kgm	Tonalite of Granite Mountain		tonalite
SY-3	Santa Ysabel	33° 05' 56"	116° 39' 47"	Kpv	Monzogranite of Pine Valley	Fill in P gap	monzogranite
SY-91-1	Santa Ysabel	33° 04' 26"	116° 43' 06"	Jcr	Cuyamaca Reservoir Granodiorite	Only Jurassic granite with good hornblende.	granodiorite
SY91-1A	Santa Ysabel	33° 04' 26"	116° 43' 06"	Jcr	Cuyamaca Reservoir Granodiorite	Only Jurassic granite with good hornblende.	granodiorite
SY91-1B	Santa Ysabel	33° 04' 26"	116° 43' 06"	Jcr	Cuyamaca Reservoir Granodiorite	Only Jurassic granite with good hornblende.	granodiorite
SY-92-1	Santa Ysabel	33° 06' 26"	116° 39' 24"	Kgm	Tonalite of Granite Mountain		tonalite gneiss
Trip 21	In-Koh-Pah Gorge	32° 58' 47"	116° 25' 03"	Klp	Tonalite of La Posta		
TS-11	Tule Springs	32° 53' 57"	116° 38' 38"	Kcp	Chiquito Peak Monzogranite		granodiorite
TS-17	Tule Springs	32° 57' 20"	116° 39' 32"	Kjv	Japatul Valley Tonalite	Have Shaw P 4.3 here; Shaw P 8.9 nearby	tonalite
TS-37	Tule Springs	32° 54' 16"	116° 38' 42"	Ka	Tonalite of Alpine		tonalite
TS-65	Tule Springs	32° 57' 03"	116° 38' 17"	Ka	Tonalite of Alpine		quartz diorite
VM-3	Viejas Mountain	32° 46' 03"	116° 41' 38"	Kjv	Japatul Valley Tonalite	Possible magmatic epidote; Near JH P=4.1 and Shaw P=3.7	tonalite
VM-5	Viejas Mountain	32° 50' 29"	116° 39' 13"	Kcp	Chiquito Peak Monzogranite		monzogranite
VM-12	Viejas Mountain			Kcp	Chiquito Peak Monzogranite		tonalite
VM-25	Viejas Mountain	32° 51' 32"	116° 40' 52"	Kcp	Chiquito Peak Monzogranite		tonalite/granodiorite
VM-39	Viejas Mountain	32° 46' 19"	116° 40' 16"	Kjv	Japatul Valley Tonalite		tonalite
VM-69	Viejas Mountain	32° 50' 16"	116° 39' 35"	Kcp	Chiquito Peak Monzogranite	Anomalous Shaw P; strongly recrystallized	monzogranite
VM-75	Viejas Mountain	32° 50' 06"	116° 44' 59"	Ka	Tonalite of Alpine		tonalite
VM-76D	Viejas Mountain	32° 51' 29"	116° 40' 59"	Kjv	Japatul Valley Tonalite	Anomalous Shaw P (to check on VM-69)	tonalite
VM-92-1	Viejas Mountain			Ka	Tonalite of Alpine		tonalite
W-1A	Jacumba	32° 38' 02"	116° 08' 47"	Kmid	Fine-grained dikes of mafic to intermediate composition	Fine-grained mafic/intermediate dike in Klp.	tonalite
W-6 (=W-6-6)	In-Koh-Pah Gorge	32° 42' 22"	116° 03' 09"	Klp	Tonalite of La Posta	Farthest east Klp sample from I-8 near desert. Fission-track sample.	tonalite
W-6-1	In-Koh-Pah Gorge	32° 42' 22"	116° 03' 09"	Klp	Tonalite of La Posta	Farthest east Klp sample from I-8 near desert. Fission-track sample.	tonalite
W-6-2	In-Koh-Pah Gorge	32° 42' 22"	116° 03' 09"	Klp	Tonalite of La Posta	Farthest east Klp sample from I-8 near desert. Fission-track sample.	tonalite
WD-100	Descanso	32° 45' 45"	116° 36' 46"	Kjv	Japatul Valley Tonalite	Check anomalous Shaw P; strongly recrystallized. Possible magmatic epidote.	tonalite
WD-80A	Descanso	32° 50' 10"	116° 32' 09"	Kpv	Monzogranite of Pine Valley	Check anomalous Shaw P; strongly foliated	granodiorite

Map Unit	Lithology	Sample No.	Plotted	Comment	Fe/(Fe+Mg)	Mg/(Mg+Fe)	Fe ³⁺ /(Fe ²⁺ +Fe ³⁺)	Al ^{Total} _{all}	Al ^{Total} _{rim}	P _{all-S}	P _{rim-S}	P _{all-HZ}	P _{rim-HZ}	T _{ed-ri}	P=0	T _{ed-ri}	P=5	P _{AS-T0}	P _{AS-T5}
Kcp	granodiorite	86CA013	no	Too Fe-rich	0.77	0.23	0.16	2.38	2.54	8.3	9.1	8.1	8.8		508	572		10.0	10.0
Jcr	granodiorite	SY91-1	yes		0.54	0.46	0.25	1.48	1.47	4.0	4.0	3.5	3.5						
Jcr	tonalite	86CA046	no	N of map area	0.43	0.57	0.25	1.20	1.24	2.7	2.9	2.1	2.3		688	708		2.8	2.6
Jcr	granodiorite	86CA007	no	Altered	0.36	0.64	0.17	0.65	0.78	0.1	0.7	-0.7	0.0	Subsolidus					
Ka	tonalite	A-98	yes		0.42	0.58	0.51	1.32	1.35	3.3	3.4	2.7	2.8		802	815		1.3	1.0
Ka	tonalite	A-99	yes		0.43	0.57	0.35	1.48	1.48	4.0	4.0	3.5	3.5		770	778		2.6	2.4
Ka	tonalite	A-1	yes		0.52	0.48	0.27	1.50		4.1			3.6						
Ka	tonalite	86CA036	yes		0.48	0.52	0.27	1.50	1.51	4.1	4.2	3.6	3.7						
Ka	tonalite	4-125-2	yes		0.46	0.54	0.50	1.46	1.47	3.9	4.0	3.4	3.4						
Ka	tonalite	VM-75	yes		0.47	0.53	0.45	1.37		3.5			3.0						
Ka	tonalite	TS-37	yes		0.54	0.46	0.23	1.59		4.6			4.1						
Ka	quartz diorite	TS-65	yes		0.51	0.49	0.38	2.04	2.51	6.7	8.9	6.3	8.7						
Kcm	granodiorite	86CA005	no	Too Fe-rich	0.64	0.36	0.14	1.52	1.50	4.2	4.1	3.7	3.6		674	689		4.1	4.0
Kcm	granodiorite	D-94	no	Too Fe-rich	0.67	0.33	0.21	1.77		5.4			5.0						
Kcm	granodiorite	D-94	no	Too Fe-rich	0.69	0.31	0.44	2.05		6.7			6.4						
Kcm	monzogranite	6-21-6	no	Too Fe-rich	0.84	0.16	0.26	1.65	1.81	4.8	5.6	4.4	5.2						
Kgm	granodiorite	86CA001	yes		0.46	0.54	0.37	1.17	1.14	2.5	2.4	1.9	1.8						
Kgm	tonalite	A-9	yes		0.41	0.59	0.31	1.21		2.8			2.2						
Kgm	tonalite	86CA006	yes		0.41	0.59	0.60	1.26	1.26	3.0	3.0	2.4	2.4		755	764		2.0	1.8
Kgm	tonalite gneiss	SY92-1	yes	Note that high P relative to samples E and W may reflect shearing (this is a gneiss) - does this make sense with mapped shear -----?	0.52	0.48	0.39	1.94	1.96	6.2	6.3	5.9	5.9						
Kgm	tonalite	J-32A	yes		0.49	0.51	0.39	1.50	1.42	4.1	3.7	3.6	3.2		699	724		3.5	3.2
Kgm	diorite	J-32B	no	Too mafic	0.60	0.40	0.51	1.97	1.97	6.3	6.4	6.0	6.0		701	748		6.0	5.1
Kgm	tonalite	MR-12	yes		0.49	0.51	0.48	1.68	1.73	5.0	5.2	4.5	4.8		642	686		5.5	5.1
Kgm	tonalite	86CA023	yes		0.50	0.50	0.49	1.75	1.78	5.3	5.5	4.9	5.0						
Kgm	tonalite	ML-42	yes		0.47	0.53	0.34	1.59	1.65	4.5	4.8	4.1	4.4		709	728		4.4	4.1
Kgm	tonalite	CPO-4	yes		0.50	0.50	0.36	1.56	1.66	4.4	4.9	3.9	4.4		719	747		4.3	3.8
Kgm	granodiorite	SS-83-2	yes		0.57	0.43	0.30	1.64	1.64	4.8		4.3	4.3		735	746		4.0	3.8
Kgm	tonalite	EV-3	yes		0.47	0.53	0.20	1.45		3.9			3.4						
Kgm	tonalite	ML-17	yes		0.45	0.55	0.43	1.55	1.49	4.4	4.1	3.9	3.6		684	720		4.0	3.5
Kgm	tonalite	86CA026	yes		0.52	0.48	0.19	1.95	2.23	6.3	7.6	5.9	7.3						
Khsm	granodiorite	86CA045	yes		0.51	0.49	0.28	1.67	1.71	5.0	5.1	4.5	4.7		719	740		4.5	4.2
Khsm	tonalite	86CA043	yes		0.50	0.50	0.19	1.63	1.64	4.8	4.8	4.3	4.3		705	726		4.4	4.1
Kjem	tonalite	86CA015	yes		0.52	0.48	0.21	1.37	1.41	3.5	3.7	3.0	3.2		638	663		4.0	3.8
Kjem	quartz diorite	CP-117A	yes		0.48	0.52	0.31	1.11	1.49	2.3	4.1	1.7	3.6						
Kjv	tonalite	86CA003	yes		0.46	0.54	0.32	1.26	1.49	3.0	4.1	2.4	3.5						
Kjv	tonalite	86CA004	yes		0.50	0.50	0.22	1.45	1.57	3.9	4.5	3.3	4.0						
Kjv	tonalite	VM-39	yes		0.45	0.55	0.49	1.50	1.50	4.1		3.6	3.6		774	793		2.6	2.2
Kjv	tonalite/granodiorite	5-1-1		SS data	0.60	0.40	0.25	1.80		5.5		5.1							
Kjv	tonalite/granodiorite	5-1-1	yes	JH data - These agree within expected error	0.58	0.42	0.45	1.76	1.78	5.4	5.5	4.9	5.0		665	697		5.6	5.2
Kjv	tonalite	TS-17	yes		0.50	0.50	0.31	1.54	1.54	4.3		3.8	3.8		672	695		4.3	4.1

Map Unit	Lithology	Sample No.	Plotted	Comment	Fe/(Fe+Mg)	Mg/(Mg+Fe)	Fe ³ /(Fe ²⁺ +Fe ³⁺)	Al ^{Total} _{all}	Al ^{Total} _{rimms}	P _{all-S}	P _{rimms-S}	P _{all-HZ}	P _{rimms-HZ}	T _{ed-ri} P=0	T _{ed-ri} P=5	P _{AS-T0}	P _{AS-T5}
Kjv	tonalite	WD-100		SS data	0.59	0.41	0.30	1.84		5.7		5.3					
Kjv	tonalite	WD-100	yes	JH data - These agree within expected error	0.57	0.43	0.49	1.88	1.96	5.9	6.3	5.5	5.9				
Klb	tonalite	POW-2-2	yes		0.46	0.54	0.50	1.26	1.27	3.0	3.0	2.4	2.4	756	765	2.0	1.8
Klb	tonalite	86CA039	yes		0.37	0.63	0.24	1.10	1.17	2.2	2.6	1.6	2.0	653	672	2.7	2.6
Klp	granodiorite	CPO-3	yes		0.52	0.48	0.93	1.39	1.41	3.6	3.7	3.1	3.2				
Klp	granodiorite/tonalite	86CA009	yes		0.51	0.49	0.19	1.14	1.15	2.4	2.5	1.8	1.9				
Klp	granodiorite	CC-10-1	yes		0.50	0.50	0.40	1.18	1.09	2.6	2.2	2.0	1.6				
Klp	tonalite	86CA031	yes		0.56	0.44	0.19	1.97	2.03	6.4	6.7	6.0	6.3	672	701	6.7	6.3
Klp	tonalite	W-6-6	yes		0.55	0.45	0.28	1.97	1.97	6.4	6.4	6.0	6.0	694	710	6.1	5.9
Kmid	tonalite dike	W-1A	no					1.46		3.9		3.4					
Kpv	granodiorite	CP-132	no	Too Fe-rich	0.73	0.27	0.19	2.06	2.13	6.8	7.1	6.4	6.8				
Kpv	granodiorite	WD-80A	no	Too Fe-rich	0.72	0.28	0.26	1.98		6.4		6.0					
									1.88								
Samples below are N of study area																	
Klp		86CA048						1.54	1.60	4.3	4.6	3.8	4.1				
Kwm	leucomonzogranite	86CA037						1.11	1.07	2.3	2.1	1.7	1.4				
Sharp's Kga		86CA056						1.80	1.82	5.5	5.7	5.1	5.2				
Bonsall tonalite		86CA104						1.38	1.39	3.6	3.6	3.0	3.1				
Cahuilla Valley Kt1		86CA052						1.45	1.44	3.9	3.8	3.4	3.3				
Klp		Trip 21						1.77	1.90	5.4	6.0	5.0	5.7				
Domenigoni Valley		86CA092						1.29	1.24	3.1	2.9	2.6	2.3				
Erskine's Kam		86CA050						2.10	2.10	7.0	7.0	6.6	6.6				
Erskine's Kam		86CA066						1.97	1.97	6.4	6.4	6.0	6.0				
Erskine's Kam		86CA070						2.05	2.05	6.8	6.8	6.4	6.4				
Erskine's Kqr		86CA065						1.33	1.37	3.3	3.5	2.7	3.0				
Gromet		86CA074						2.12	2.14	7.1	7.2	6.7	6.8	696	718	6.9	6.5
Hill's Ksc		86CA085						1.92	2.00	6.1	6.5	5.7	6.1	558	604	7.1	7.1
Hill's Kt1		86CA060						1.77	1.83	5.4	5.7	5.0	5.3				
Hill's Kt1		86CA081						1.82	1.82	5.6	5.6	5.2	5.2				
Hill's Kt2		86CA082						1.89		6.0		5.6		662	683		
Hill's Kt3		86CA084						1.66		4.9		4.4					
													count	56.0	26.0		
Clinkenbeard&Walawender (1989)																	
Sample	Facies																
Klp	WH	CW 8			0.63	0.37	0.16	1.18	1.18	2.6		2.0	2.0	661	678	2.7	2.6
Klp	WH	CW 22			0.50	0.50	0.15	1.25	1.25	2.9		2.3	2.3	645	663	3.1	3.0
Klp	W LB	CW 4			0.50	0.50	0.15	1.13	1.13	2.3		1.7	1.7	665	679	2.4	2.3
Klp	E LB	CW 35			0.51	0.49	0.14	1.56	1.56	4.4		3.9	3.9	635	662	4.7	4.5
Klp	EH	CW 12			0.53	0.47	0.18	1.81	1.81	5.6		5.2	5.2	660	685	5.8	5.5
Klp	EH	CW 19			0.52	0.48	0.15	1.80	1.80	5.6		5.1	5.1	638	672	5.9	5.6
Klp	EH	CW 20			0.53	0.47	0.15	1.88	1.88	5.9		5.5	5.5	622	656	6.4	6.1
Kqm	tonalite west of La F	CW 23			0.47	0.53	0.26	1.68	1.68	5.0		4.5	4.5	709	731	4.6	4.2
Kqm	tonalite west of La F	CW 1			0.48	0.52	0.25	1.61	1.61	4.7		4.2	4.2	704	723	4.3	4.0
Kqm	tonalite west of La F	CW 2			0.52	0.48	0.25	1.80	1.80	5.6		5.1	5.1	710	727	5.1	4.8
Kgm	tonalite west of La F	CW 39			0.43	0.57	0.31	1.51	1.51	4.2		3.7	3.7	722	742	3.6	3.3

Latitude	Longitude	Sample No.	Prims-HZ	P group	Map Unit	Lithology	Lat txt	Long txt
33.07389	-116.71833	SY91-1	3.5		2 Jcr	granodiorite	33° 04'26"	116° 43'06"
33.37472	-116.62111	86CA046	2.3		1 Jcr	tonalite	33° 22'29"	116° 37'16"
32.87056	-116.85139	A-98	2.8		1 Ka	tonalite	32° 52'14"	116° 51'05"
32.87583	-116.81972	A-99	3.5		2 Ka	tonalite	32° 52'33"	116° 49'11"
32.83861	-116.78028	A-1	4.0		2 Ka	tonalite	32° 50'19"	116° 46'49"
32.83972	-116.76694	86CA036	3.7		2 Ka	tonalite	32° 50'23"	116° 46'01"
32.95083	-116.75917	4-125-2	3.4		2 Ka	tonalite	32° 57'03"	116° 45'33"
32.835	-116.74972	VM-75	3.0		2 Ka	tonalite	32° 50'06"	116° 44'59"
32.90444	-116.64500	TS-37	4.0		2 Ka	tonalite	32° 54'16"	116° 38'42"
32.95083	-116.63806	TS-65	8.7		4 Ka	quartz diorite	32° 57'03"	116° 38'17"
32.75389	-116.77389	86CA005	3.6		2 Kcm	granodiorite	32° 45'14"	116° 46'26"
32.76222	-116.61306	D-94	5.0		3 Kcm	granodiorite	32° 45'44"	116° 36'47"
32.76222	-116.61306	D-94	6.0		4 Kcm	granodiorite	32° 45'44"	116° 36'47"
32.84139	-116.60917	6-21-6	5.2		4 Kcm	monzogranite	32° 50'29"	116° 36'33"
32.80333	-116.81944	86CA001	1.8		1 Kgm	granodiorite	32° 48'12"	116° 49'10"
32.76306	-116.78778	A-9	2.0		1 Kgm	tonalite	32° 45'47"	116° 47'16"
32.75639	-116.77028	86CA006	2.4		1 Kgm	tonalite	32° 45'23"	116° 46'13"
33.10722	-116.65667	SY92-1	5.9		4 Kgm	tonalite gneiss	33° 06'26"	116° 39'24"
33.12639	-116.60028	J-32A	3.2		2 Kgm	tonalite	33° 07'35"	116° 36'01"
33.12639	-116.60028	J-32B	6.0		4 Kgm	diorite	33° 07'35"	116° 36'01"
32.70056	-116.51306	MR-12	4.8		3 Kgm	tonalite	32° 42' 29"	116° 30'47"
33.08722	-116.50083	86CA023	5.0		3 Kgm	tonalite	33° 05'14"	116° 30'03"
32.72972	-116.47806	ML-42	4.4		3 Kgm	tonalite	32° 43'47"	116° 28'41"
32.61222	-116.47500	CPO-4	4.4		3 Kgm	tonalite	32° 36'44"	116° 28'30"
32.60778	-116.47361	SS-83-2	4.3		3 Kgm	granodiorite	32° 36'28"	116° 28'25"
33.03889	-116.40889	EV-3	3.0		2 Kgm	tonalite	33° 02'20"	116° 24'32"
32.77889	-116.40083	ML-17	3.6		2 Kgm	tonalite	32° 46'44"	116° 24'03"
32.95361	-116.30278	86CA026	7.3		4 Kgm	tonalite	32° 57'13"	116° 18'10"
33.27333	-116.62194	86CA045	4.7		3 Khsm	granodiorite	33° 16'24"	116° 37'19"
33.26972	-116.61611	86CA043	4.3		3 Khsm	tonalite	33° 16'11"	116° 36'58"
32.91222	-116.55167	86CA015	3.2		2 Kjm	tonalite	32° 54'44"	116° 33'06"
32.90833	-116.50944	CP-117A	3.6		2 Kjm	quartz diorite	32° 54'30"	116° 30'34"
32.80611	-116.80639	86CA003	3.5		2 Kjr	tonalite	32° 48'22"	116° 48'23"
32.77056	-116.69778	86CA004	4.0		2 Kjr	tonalite	32° 46'14"	116° 41'52"
32.77194	-116.67111	VM-39	4.0		2 Kjr	tonalite	32° 46'19"	116° 40'16"
32.75694	-116.66111	5-1-1	5.0		3 Kjr	tonalite/granodiorite	32° 45'25"	116° 39'40"
32.95556	-116.65889	TS-17	4.0		2 Kjr	tonalite	32° 57'20"	116° 39'32"
32.7625	-116.61278	WD-100	5.0		3 Kjr	tonalite	32° 45'45"	116° 36'46"
32.7625	-116.61278	WD-100	5.9		4 Kjr	tonalite	32° 45'45"	116° 36'46"
32.96694	-117.01250	POW-2-2	2.4		1 Klb	tonalite	32° 58'01"	117° 00'45"
33.06861	-116.72028	86CA039	2.0		1 Klb	tonalite	33° 04'07"	116° 43'13"
32.62639	-116.47361	CPO-3	3.2		2 Klp	granodiorite	32° 37'35"	116° 28'25"
32.72306	-116.44306	86CA009	1.9		1 Klp	granodiorite/tonalite	32° 43'23"	116° 26'35"
32.97972	-116.41750	Trip 21	5.7		4 Klp		32° 58'47"	116° 25'03"
32.72111	-116.39722	CC-10-1	1.6		1 Klp	granodiorite	32° 43'16"	116° 23'50"
32.69806	-116.06139	86CA031	6.3		4 Klp	tonalite	32° 41'53"	116° 03'41"
32.70611	-116.05250	W-6-6	6.0		4 Klp	tonalite	32° 42'22"	116° 03'09"
32.63389	-116.14639	W-1A	3.0		2 Km il	tonalite dike	32° 38'02"	116° 08'47"
32.95778	-116.50722	CP-132	6.8		4 Kpv	granodiorite	32° 57'28"	116° 30'26"
32.83611	-116.53583	WD-80A	6.0		4 Kpv	granodiorite	32° 50'10"	116° 32'09"
33.37722	-116.70667	86CA048	4.1		3 Klp		33° 22'38"	116° 42'24"
33.00611	-116.96667	86CA037	1.4		1 Kwm	leucocratic monzogranite	33° 00'22"	116° 58'00"

Latitude	Longitude	Sample No.	Prims-HZ	P group	Map Unit	Longitude	P<3	3<P<=4	4<P<5	P>5
33.37472	-116.62111	86CA046	2.3		1 Jcr	-116.62111	33.37472			
32.87056	-116.85139	A-98	2.8		1 Ka	-116.85139	32.87056			
32.80333	-116.81944	86CA001	1.8		1 Kgm	-116.81944	32.80333			
32.76306	-116.78778	A-9	2.0		1 Kgm	-116.78778	32.76306			
32.75639	-116.77028	86CA006	2.4		1 Kgm	-116.77028	32.75639			
32.96694	-117.01250	POW -2-2	2.4		1 Klb	-117.01250	32.96694			
33.06861	-116.72028	86CA039	2.0		1 Klb	-116.72028	33.06861			
32.72306	-116.44306	86CA009	1.9		1 Klb	-116.44306	32.72306			
32.72111	-116.39722	CC-10-1	1.6		1 Klb	-116.39722	32.72111			
33.00611	-116.96667	86CA037	1.4		1 Kwm	-116.96667	33.00611			
33.07389	-116.71833	SY91-1	3.5		2 Jcr	-116.71833		33.07389		
32.87583	-116.81972	A-99	3.5		2 Ka	-116.81972		32.87583		
32.83861	-116.78028	A-1	4.0		2 Ka	-116.78028		32.83861		
32.83972	-116.76694	86CA036	3.7		2 Ka	-116.76694		32.83972		
32.95083	-116.75917	4-125-2	3.4		2 Ka	-116.75917		32.95083		
32.835	-116.74972	VM -75	3.0		2 Ka	-116.74972		32.835		
32.90444	-116.64500	TS-37	4.0		2 Ka	-116.64500		32.90444		
32.75389	-116.77389	86CA005	3.6		2 Kcm	-116.77389		32.75389		
33.12639	-116.60028	J-32A	3.2		2 Kgm	-116.60028		33.12639		
32.70056	-116.51306	MR-12	4.8		3 Kgm	-116.51306			32.70056	
32.72972	-116.47806	ML-42	4.4		3 Kgm	-116.47806			32.72972	
32.61222	-116.47500	CPO-4	4.4		3 Kgm	-116.47500			32.61222	
32.60778	-116.47361	SS-83-2	4.3		3 Kgm	-116.47361			32.60778	
33.03889	-116.40889	EV-3	3.0		2 Kgm	-116.40889		33.03889		
32.77889	-116.40083	ML-17	3.6		2 Kgm	-116.40083		32.77889		
33.27333	-116.62194	86CA045	4.7		3 Khsm	-116.62194			33.27333	
33.26972	-116.61611	86CA043	4.3		3 Khsm	-116.61611			33.26972	
32.91222	-116.55167	86CA015	3.2		2 Kjm	-116.55167		32.91222		
32.90833	-116.50944	CP-117A	3.6		2 Kjm	-116.50944		32.90833		
32.80611	-116.80639	86CA003	3.5		2 Kjr	-116.80639		32.80611		
32.77056	-116.69778	86CA004	4.0		2 Kjr	-116.69778		32.77056		
32.77194	-116.67111	VM-39	4.0		2 Kjr	-116.67111		32.77194		
32.95556	-116.65889	TS-17	4.0		2 Kjr	-116.65889		32.95556		
32.62639	-116.47361	CPO-3	3.2		2 Klb	-116.47361		32.62639		
32.63389	-116.14639	W-1A	3.0		2 Km il	-116.14639		32.63389		
33.37722	-116.70667	86CA048	4.1		3 Klb	-116.70667			33.37722	
32.95083	-116.63806	TS-65	8.7		4 Ka	-116.63806			32.95083	
32.76222	-116.61306	D-94	5.0		4 Kcm	-116.61306			32.76222	
32.76222	-116.61306	D-94	6.0		4 Kcm	-116.61306			32.76222	
32.84139	-116.60917	6-21-6	5.2		4 Kcm	-116.60917			32.84139	
33.10722	-116.65667	SY92-1	5.9		4 Kgm	-116.65667			33.10722	
33.12639	-116.60028	J-32B	6.0		4 Kgm	-116.60028			33.12639	
32.61222	-116.50083	86CA023	5.0		4 Kgm	-116.50083			32.61222	
32.95361	-116.30278	86CA026	7.3		4 Kgm	-116.30278			32.95361	
32.75694	-116.66111	5-1-1	5.0		4 Kjr	-116.66111			32.75694	
32.7625	-116.61278	W D-100	5.0		4 Kjr	-116.61278			32.7625	
32.7625	-116.61278	W D-100	5.9		4 Kjr	-116.61278			32.7625	
32.97972	-116.41750	Tri 21	5.7		4 Klb	-116.41750			32.97972	
32.69806	-116.06139	86CA031	6.3		4 Klb	-116.06139			32.69806	
32.70611	-116.05250	W-6-6	6.0		4 Klb	-116.05250			32.70611	
32.95778	-116.50722	CP-132	6.8		4 Kpv	-116.50722			32.95778	
32.83611	-116.53583	W D-80A	6.0		4 Kpv	-116.53583			32.83611	



Tomashe of G maske M maske	JRH	H3B1	c	4775	0.62	6.54	na.	7.08	11.76	0.62	11.76	11.91	0.97	0.55	2.03	0.02	0.01	10.121	6.94	1.06	-	0	0.186	0.54	2	-	0.13	0.1	0.21	0.22	1.97	0.1	0.01	0.46	0.54	0.25	1.12	1.12						
		H3B2	c	4937	0.29	7.68	na.	8.22	10.26	0.68	11.15	1.14	0.24	0.24	0.02	0.02	0.01	10.202	6.77	1.21	-	0	0.179	0.21	2	-	0.17	0.1	0.27	0.22	1.97	0.2	0.02	0.46	0.54	0.25	1.18	1.18						
		H3B3	c	4791	0.61	6.52	na.	7.93	10.21	0.62	12.08	1.16	1.31	0.38	0.25	0.02	0.04	0.07	10.211	6.31	1.09	-	0	0.179	0.23	2	-	0.18	0.07	0.15	0.22	1.98	0.05	0.08	0.46	0.54	0.25	1.18	1.18					
		H3B4	c	4638	0.68	6.58	na.	7.27	11.01	0.71	11.88	1.05	1.05	0.27	0.02	0.02	0.01	10.211	6.48	1.04	-	0	0.179	0.23	2	-	0.18	0.07	0.15	0.22	1.98	0.05	0.08	0.46	0.54	0.25	1.18	1.18						
		H3B5	c	4649	0.87	7.27	na.	7.74	12.15	0.64	11.31	1.16	1.34	0.16	0.19	0.01	0.03	0.05	10.211	6.63	1.17	-	0	0.179	0.23	2	-	0.18	0.07	0.15	0.22	1.98	0.05	0.08	0.46	0.54	0.25	1.18	1.18					
		H3B6	c	4664	0.71	7.46	na.	7.66	11.31	0.68	12.01	1.16	1.21	0.24	0.02	0.02	0.01	10.211	6.48	1.04	-	0	0.179	0.23	2	-	0.18	0.07	0.15	0.22	1.98	0.05	0.08	0.46	0.54	0.25	1.18	1.18						
		H3B7	c	4808	0.7	6.06	na.	7.29	11.66	0.68	12.01	1.16	1.2	0.52	0.24	0.05	0.04	0.01	10.211	6.38	1.02	-	0	0.179	0.23	2	-	0.18	0.07	0.15	0.22	1.98	0.05	0.08	0.46	0.54	0.25	1.18	1.18					
Tomashe of G maske M maske	JRH	H3B1	c	4476	0.13	7.22	na.	6.96	10.8	-	12.11	11.61	0.67	0.27	0.07	na.	0	0.10045	7.07	0.94	-	0	0.179	0.23	2	-	0.18	0.19	1.89	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B2	c	5203	0.23	7.93	na.	7.67	11.55	-	13.07	11.6	0.43	0.11	0.26	na.	0	0.1924	7.37	0.94	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B3	c	4821	0.21	6.86	na.	7.12	11.66	0.68	12.01	1.16	1.21	0.24	0.02	0.02	0.01	10.211	6.48	1.04	-	0	0.179	0.23	2	-	0.18	0.07	0.15	0.22	1.98	0.05	0.08	0.46	0.54	0.25	1.18	1.18						
		H3B4	c	4773	0.26	8.16	na.	7.75	10.47	-	11.62	11.37	0.86	0.25	0.26	na.	0.01	-	0.10333	7.04	1.06	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B5	c	5028	0.16	6.79	na.	8.64	8.22	-	11.64	11.21	0.98	0.58	0.11	na.	-	-	101.4	7.14	0.96	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B6	c	4768	0.72	7.04	na.	8.98	11.67	0.52	12.82	13.08	0.89	0.26	0.26	0.01	0.03	0	0.10188	6.85	1.15	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B7	c	4687	0.79	7.05	na.	8.96	12.07	0.78	13.14	12.66	0.78	0.28	0.11	0.01	0.01	0.01	10.171	6.77	1.07	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
Tomashe of G maske M maske	JRH	H3B1	c	4687	0.79	7.05	na.	8.96	12.07	0.78	13.14	12.66	0.78	0.28	0.11	0.01	0.01	10.171	6.77	1.07	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B2	c	4687	0.79	7.05	na.	8.96	12.07	0.78	13.14	12.66	0.78	0.28	0.11	0.01	0.01	10.171	6.77	1.07	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B3	c	4687	0.79	7.05	na.	8.96	12.07	0.78	13.14	12.66	0.78	0.28	0.11	0.01	0.01	10.171	6.77	1.07	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B4	c	4687	0.79	7.05	na.	8.96	12.07	0.78	13.14	12.66	0.78	0.28	0.11	0.01	0.01	10.171	6.77	1.07	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B5	c	4687	0.79	7.05	na.	8.96	12.07	0.78	13.14	12.66	0.78	0.28	0.11	0.01	0.01	10.171	6.77	1.07	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B6	c	4751	0.59	7.62	na.	7.74	8.06	0.42	10.75	11.72	0.93	0.3	0.24	na.	0.02	0.01	10.01	6.86	1.25	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B7	c	4624	0.24	6.45	na.	7.26	11.31	0.59	11.68	11.11	0.54	0.26	0.02	0.02	0.01	10.211	6.38	1.02	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
Tomashe of G maske M maske	JRH	H3B1	c	4729	0.54	6.89	na.	8.78	11.61	0.46	13.24	11.66	0.85	0.25	0.25	na.	0.01	0.931	6.92	1.08	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B2	c	4926	0.89	10.96	na.	8.78	10.99	0.61	10.98	11.78	1.01	1.18	2	na.	0.04	-	10.047	6.71	1.69	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B3	c	4285	0.9	11.28	na.	8.48	11.1	0.57	10.08	11.68	1.09	1.18	2.01	0.03	0.03	0.01	10.126	6.33	1.67	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B4	c	4285	0.91	11.06	0	8.26	10.63	0.41	10.04	11.69	1.05	1.2	1.92	0.23	0.03	0.08	0.01	10.126	6.2	1.7	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18
		H3B5	c	4081	0.86	10.85	na.	8.98	10.89	0.62	9.91	11.84	1.06	1.196	0.04	0.04	0.01	10.211	6.38	1.02	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B6	c	4081	0.86	10.85	na.	8.98	10.89	0.62	9.91	11.84	1.06	1.196	0.04	0.04	0.01	10.211	6.38	1.02	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18		
		H3B7	c	4285	0.9	10.87	na.	8.09	11.97	0.56	9.91	11.86	1.11	1.19	2.01	0.01	0.01	0.01	10.126	6.33	1.67	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
Tomashe of G maske M maske	JRH	H3B1	c	4356	0.64	11.37	na.	7.76	12.25	0.51	9.76	11.64	1.17	1.26	1.96	0.01	0.05	0.04	10.121	6.14	1.66	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B2	c	4356	0.64	11.37	na.	7.76	12.25	0.51	9.76	11.64	1.17	1.26	1.96	0.01	0.05	0.04	10.121	6.14	1.66	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B3	c	4356	0.64	11.37	na.	7.76	12.25	0.51	9.76	11.64	1.17	1.26	1.96	0.01	0.05	0.04	10.121	6.14	1.66	-	0	0.179	0.23	2	-	0.18	0.12	1.91	0.00	0.05	0.05	0.22	2	-	0.8	0.1	0.01	0.46	0.54	0.25	1.18	
		H3B4	c	4356	0.64	11.37	na.	7.76	12.25	0.51	9.76	11.64	1.17	1.26	1.96	0.01	0.05	0.04	10.121	6.14	1.66	-	0	0																				

Last Name

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Sample no	CP945	1079K	CP944	1079I	CP948	J948	584SS1	1079L1	D27	1079J	J949	58410
Latitude	32 58 30	33 03 47	32 58 30	32 53 35	32 59 29	33 00 43	32 58 47	33 00 13	32 49 14	33 03 47	33 03 16	33 03 47
Longitude	116 31 06	116 34 06	116 31 06	116 26 49	116 32 05	116 37 22	116 31 28	116 37 17	116 34 23	116 34 06	116 34 28	116 34 06
Lithology	Metaquartzite	Metaquartzite	Metaquartzite	Metaquartzite	Pelitic schist	Metaquartzite	Pelitic schist	Pelitic schist	Metaquartzite	Pelitic schist	Pelitic schist	Metasiltstone
<u>Julian Schist</u>												
SiO ₂	89.99	80.25	79.43	76.65	75.77	72.05	70.94	70.90	68.36	66.47	65.23	64.27
TiO ₂	0.24	0.32	0.47	0.28	0.54	0.44	0.68	0.68	0.60	0.78	0.77	0.70
Al ₂ O ₃	4.86	8.21	9.48	10.11	11.99	11.93	13.88	13.04	15.45	15.69	16.41	16.21
Fe ₂ O ₃	0.37	0.55	0.63	0.82	1.30	1.55	1.16	0.97	0.33	0.87	1.48	1.38
FeO	0.97	1.35	2.70	1.36	2.75	1.30	3.10	2.59	4.00	3.94	3.48	2.86
MnO	0.03	0.05	0.03	0.03	0.06	0.06	0.02	0.07	0.01	0.05	0.06	0.06
MgO	0.76	0.63	1.45	0.75	1.83	1.17	1.70	2.09	1.86	1.82	1.96	1.78
CaO	0.21	6.61	0.24	3.61	0.86	5.91	1.78	1.27	3.33	3.11	2.59	1.02
Na ₂ O	0.69	0.56	0.96	2.15	1.04	2.36	1.70	0.99	1.92	2.82	2.13	2.97
K ₂ O	1.15	0.08	2.36	3.01	1.91	1.83	2.10	3.72	2.12	2.63	2.38	5.84
P ₂ O ₅	0.02	0.13	0.04	0.11	0.09	0.14	0.09	0.14	0.15	0.13	0.17	0.09
H ₂ O+	0.70	0.83	1.26	0.74	1.32	0.30	1.33	2.10	0.74	1.38	1.33	1.33
H ₂ O-	0.13	0.11	0.05	0.18	0.25	0.12	0.17	0.20	0.10	0.08	0.28	0.29
CO ₂	0.18	0.49	0.23	0.31	2.50	2.23	2.60	1.45	3.23	0.41	3.53	1.37
Total	100.30	100.17	99.33	100.11	102.21	101.39	101.25	100.21	102.20	100.18	101.80	100.17
Ba	864	40	4121	1450	420	561	574	1428	672	408	639	861
Cr	23	30	43	23	76	38	80	79	81	77	106	73
Cu	<1	5	16	14	12	10	49	45	37	9	7	15
Ga	7	8	12	11	14	14	18	17	18	20	18	20
Nb	7	N.D.	11	N.D.	12	12	13	N.D.	12	N.D.	14	14
Ni	8	9	16	7	32	21	35	13	30	15	12	18
Pb	4	8	9	13	10	14	21	21	16	23	17	23
Rb	45	1	90	79	93	54	95	148	88	124	112	159
Sr	48	304	99	330	79	261	175	152	205	271	213	161
Th	5	4	9	3	9	12	9	9	13	10	13	12
U	<3	6	<3	3	3	4	3	5	<3	5	3	<3
V	30	35	61	39	95	68	114	155	131	121	157	116
Y	11	25	20	25	23	31	27	28	35	40	32	37
Zn	31	37	72	46	126	86	110	106	157	115	137	107
Zr	80	290	145	224	148	242	172	151	197	238	210	246

Sample no.	84SC3	MP942	J915	CP942	MP941	CP177	WSP99	MP948
Hostunit	Stephenson Peak	HarperCreek	HarperCreek	Julian Schist	HarperCreek	Julian Schist	Julian Schist	HarperCreek
Latitude	33 06 40	32 56 10	33 07 02	32 58 53	32 56 14	32 52 58	32 50 29	32 55 47
Longitude	116 26 40	116 29 08	116 35 03	116 31 49	116 29 14	116 31 20	116 13 32	116 29 00
Lithology	Amphibolite	Mafic schist	Amphibolite	Amphibolite	Amphibolite	Amphibolite	Amphibolite	Amphibolite
<u>Orthoamphibolites in Julian Schist/HarperCreek Gneiss/Stephenson Peak facies</u>								
SiO ₂	55.80	51.60	50.39	49.49	49.05	48.90	47.60	47.57
TiO ₂	1.07	2.55	1.00	1.28	1.51	1.70	2.00	2.06
Al ₂ O ₃	14.46	12.25	15.59	15.14	18.11	15.50	15.80	17.05
Fe ₂ O ₃	1.06	1.34	1.56	1.56	1.94	1.10	3.50	2.45
FeO	9.37	10.08	10.26	8.13	9.24	8.70	8.60	10.30
MnO	0.17	0.27	0.19	0.20	0.21	0.13	0.26	0.23
MgO	7.20	9.34	6.81	8.61	5.76	6.60	5.20	5.53
CaO	7.94	7.05	9.49	12.58	11.48	12.30	10.60	11.36
Na ₂ O	0.40	0.27	0.54	1.93	0.47	2.30	3.40	0.52
K ₂ O	0.70	2.56	1.91	0.06	0.16	0.26	0.61	1.24
P ₂ O ₅	0.10	0.53	0.10	0.14	0.21	0.33	0.24	0.17
H ₂ O+	1.41	1.99	2.30	0.63	1.26	1.49	0.59	1.54
H ₂ O-	0.13	0.11	0.28	0.08	0.07	0.14	0.16	0.05
CO ₂	0.22	0.17	0.74	0.13	0.88	0.31	0.01	1.40
Total	100.03	100.11	101.16	99.96	100.35	99.76	98.57	101.47
Ba	397	1225	107	114	65	1261	76	248
Cr	132	666	251	396	250	63	218	258
Cu	13	7	3	24	27	41	122	41
Ga	18	18	15	17	17	17	18	20
Nb	6	40	5	2	9	N.D.	N.D.	3
Ni	64	143	77	62	150	25	108	122
Pb	6	8	11	<3	11	25	8	8
Rb	41	130	81	1	10	98	10	67
Sr	94	236	404	150	293	223	235	581
Th	3	2	<2	<2	<2	12	8	2
U	<3	<3	<3	<3	<3	4	<3	<3
V	291	267	322	290	249	108	306	383
Y	32	32	28	31	35	22	41	45
Zn	81	162	123	77	108	108	103	118
Zr	77	162	46	80	99	179	120	126

Sample no	ECM 32	A44	1079B	A942	E7	330851	1079A1	TS45	A23	1079C1
Latitude	32 57 08	32 49 30	32 51 17	32 50 10	33 01 22	32 47 38	32 52 10	32 55 02	32 50 40	32 49 35
Longitude	116 47 44	116 48 55	116 51 04	116 50 35	117 05 46	117 03 45	116 53 05	116 39 02	116 52 37	116 51 44
Lithology	Rhyolite tuff	Rhyolite	Meta-dacite tuff	Meta-dacite tuff	Monzogranite	Andesite breccia	Pelite schist	Amphibolite	Metabasalt	Amphibolite
<u>Western-zone metavolcanic and metasedimentary rocks/coeval plutons</u>										
SiO ₂	78.11	77.80	74.85	74.00	73.56	70.74	60.79	55.32	52.10	49.13
TiO ₂	0.11	0.08	0.19	0.27	0.27	0.57	0.96	1.26	1.20	1.23
Al ₂ O ₃	12.58	12.33	12.75	13.62	13.69	13.42	17.15	14.33	16.70	14.70
Fe ₂ O ₃	0.84	0.50	0.84	0.90	0.83	2.29	1.22	5.76	2.60	1.76
FeO	0.16	0.08	0.59	1.82	1.38	2.37	6.28	7.58	7.30	9.00
MnO	0.01	0.01	0.03	0.10	0.04	0.05	0.20	0.28	0.26	0.53
MgO	0.09	0.20	0.30	0.34	0.66	1.40	2.61	2.79	6.10	1.89
CaO	0.48	0.56	1.38	2.04	2.69	4.16	3.35	9.61	10.60	19.62
Na ₂ O	4.69	3.24	3.09	3.64	3.75	3.42	2.71	0.95	2.60	0.75
K ₂ O	2.95	4.89	5.27	2.64	1.85	1.21	3.50	0.28	0.33	0.06
P ₂ O ₅	0.01	0.02	0.04	0.04	0.04	0.09	0.19	0.21	0.16	0.26
H ₂ O+	0.27	0.73	0.53	0.52	0.62	0.52	1.39	1.14	0.36	0.72
H ₂ O-	0.08	0.10	0.08	0.06	0.20	0.12	0.11	0.06	0.12	0.08
CO ₂	0.05	0.06	0.04	0.23	0.11	0.07	0.05	0.05	0.02	0.05
Total	100.43	100.60	99.98	100.22	99.69	100.43	100.51	99.62	100.45	99.78
Ba	694	726	1603	838	557	301	383	147	41	67
Cr	3	5	6	6	4	15	36	15	65	7
Cu	<1	6	4	<1	10	4	5	10	133	9
Ga	18	13	16	16	11	17	22	22	19	22
Nb	3	N.D.	N.D.	9	5	5	N.D.	6	N.D.	N.D.
Ni	<2	2	2	3	4	8	10	7	20	9
Pb	11	4	10	39	7	14	10	8	5	13
Rb	47	136	134	85	58	39	326	4	46	4
Sr	41	43	144	158	191	180	144	148	193	139
Th	10	15	11	17	6	8	5	4	7	5
U	<3	4	4	6	<3	<3	<3	4	4	4
V	<4	7	12	13	29	61	165	153	312	70
Y	41	24	39	38	17	41	30	62	19	60
Zn	65	8	27	286	30	64	73	78	107	298
Zr	181	87	215	193	117	223	190	142	50	192

NOTES AND APPENDIX FOR GEOCHEMICAL ANALYSES

Notes: Abbreviations for lithologies are: quartz-rich granitoid, qz-rich granitoid; leucomonzogranite, leucomonzo; borderline monzogranite-granodiorite, monzo/granod; borderline tonalite-granodiorite, ton/granod; quartz monzodiorite, qz monzodiorite; borderline tonalite-quartz diorite, ton/qz diorite; quartz diorite, qz diorite; hornblende gabbro, hbl gabbro.
*Forty-three samples analyzed for major oxides by Rapid Rock method at the U.S Geological Survey, Reston, Virginia.

#N.D. = not determined. Symbol < indicates actual value less than or equal to number shown.

**Stephenson Peak facies of the Harper Creek suite.

##Mother Grundy Peak Monzogranite.

Appendix

Two hundred-forty-six plutonic rocks and twenty-nine prebatholithic rocks were analyzed by a combination of x-ray fluorescence (XRF) and rapid rock method for major and selected trace elements. Major and trace elements of 201 samples were determined by XRF method at Macquarie University. Forty-three plutonic samples were analyzed for major oxides at the U.S. Geological Survey by rapid rock method; trace elements for these samples were determined by XRF method at Macquarie University. In addition, major and trace elements of two plutonic rock samples were analyzed at the U.S. Geological Survey by quantitative x-ray spectroscopy, partial chemical analysis, and XRF methods.

At Macquarie University, major elements (Si, Al, Fe, Mg, Ca, Na) were determined by XRF using lithium tetraborate/lithium carbonate/la oxide glass disks, in a Siemens instrument. Calibration was by means of international rock standards, and well-calibrated internal standards were included as unknowns in each run. All samples were run in duplicate. FeO was determined by titration; H₂O and CO₂ were analyzed using a LECO furnace, with magnesium perchlorate (H₂O) and ascarite (CO₂) collectors. Minor elements (Ti, Cr, Mn, Ni, K, P) and some trace elements (Rb, Ba, Nb, Sr, Zr, Pb, Th, U, Y, V, Zn, Cu, Ga) were analyzed by XRF using pressed-powder pellets. Mass-absorption corrections (Norrish and Chappell, 1977) were applied, and all samples were analyzed in duplicate, using an appropriate range of carefully selected rock standards. Comparisons of duplicate analyses have given the following estimates of precision (1s) at the median values for each element:

Major elements: <± 1%

Minor elements: Ti, Mn, Cr, Ni, ± 2% or better; K, P, ± 10%

Trace elements, XRF: Rb, Ba, Nb, Y, Ga, ± 15%; Zr, Cu, ± 10%; Sr, V, Zn, ± 2%