

Sample	Fn/Mbr	Age	Stable mineral ratios								
			ZTR	GZi	Total	RZi	Total	ATi	Total	CZi	Total
CR20	Colorado River	Recent	21.7	44.2	380	4.5	222	64.6	198	0.0	212
CR22	Colorado River	Recent	14.1	42.9	366	7.1	225	60.1	213	0.0	209
CR23	Colorado River	Recent	11.6	51.1	235	10.4	222	65.4	228	0.0	199
B1	Alverson	E-M Mio.	10.5	90.9	66	71.4	21	77.1	35	0.0	6
B2	Alverson	M-L Mio.	6.0	96.1	128	82.8	29	80.0	35	0.0	5
B3	Elephant Trees	M-L Mio.	12.0	92.7	109	83.7	49	69.2	13	0.0	8
B4	Elephant Trees	M-L Mio.	14.0	95.1	81	92.6	54	75.0	16	0.0	4
B5	Lycium	L Mio.	13.8	90.8	141	75.9	54	66.7	15	0.0	13
B6	Lycium	L Mio.	22.7	85.7	98	85.1	94	40.0	5	0.0	14
B7	Lycium	L Mio.	14.7	84.8	92	73.6	53	77.8	36	0.0	14
WC 2	U. Megabreccia	L Mio.	97.3	23.1	13	94.3	174	0.0	5	0.0	10
WC1	Wind Caves	E Plio.	8.3	90.4	239	71.5	137	83.9	149	0.0	39
14-5	Wind Caves	E Plio.	17.9	59.5	173	7.9	76	82.7	52	0.0	70
14-3	Wind Caves	E Plio.	10.0	92.6	27	77.8	9	92.0	25	0.0	2
14-2	Wind Caves	E Plio.	11.5	87.9	33	66.7	12	94.4	36	0.0	4
16-2	Wind Caves	E Plio.	16.8	88.5	148	75.0	68	100.0	8	0.0	17
17-2	Wind Caves	E Plio.	7.4	90.8	130	53.8	26	90.6	53	0.0	12
17-3	Wind Caves	E Plio.	4.5	93.7	63	66.7	12	93.8	16	0.0	4
13-5	Wind Caves	E Plio.	39.0	59.2	174	0.0	71	NA	0	0.0	71
17-4	Wind Caves	E Plio.	20.2	62.1	182	4.2	72	79.0	62	0.0	69
17-7	Wind Caves	E Plio.	13.5	75.3	170	8.7	46	86.0	57	0.0	42
17-9	Wind Caves	E Plio.	20.8	63.2	182	4.3	70	83.1	77	0.0	67
18-5a	Wind Caves	E Plio.	16.7	70.0	210	3.1	65	87.3	63	0.0	63
18-6	Wind Caves	E Plio.	24.5	60.1	293	4.9	123	82.2	101	0.0	117
18-7	Wind Caves	E Plio.	16.0	71.9	185	5.5	55	84.0	81	0.0	52
18-10	Wind Caves	E Plio.	17.3	69.1	207	4.5	67	80.0	80	0.0	64
18-11	Wind Caves	E Plio.	13.6	77.9	231	3.8	53	80.8	73	0.0	51
18-12	Wind Caves	E Plio.	14.1	78.3	161	12.5	40	71.7	60	0.0	35
18-15	Wind Caves	E Plio.	7.6	87.2	133	10.5	19	83.0	100	0.0	17
18-16	Wind Caves	E Plio.	16.5	75.2	234	7.9	63	69.5	95	1.7	59
18-17	Wind Caves	E Plio.	13.6	77.8	189	12.5	48	85.7	56	0.0	42
19-14	Wind Caves	E Plio.	6.9	88.3	154	0.0	18	81.6	38	0.0	18
25-11	Wind Caves	E Plio.	14.9	78.4	134	12.1	33	65.4	78	0.0	29
Mh4b	Mud Hills	E Plio.	35.1	62.6	420	7.6	170	78.6	56	0.0	157
Mh5a	Mud Hills	E Plio.	21.2	87.9	232	57.9	228	87.3	204	0.0	96
Mh5b	Mud Hills	E Plio.	16.9	72.9	229	19.5	77	78.1	178	0.0	62
25-2a	Mud Hills	E Plio.	21.0	67.1	82	0.0	27	80.9	262	0.0	27
Yh 7	Yuha	E Plio.	34.6	62.5	325	2.7	258	80.6	211	0.0	251
Yh 8	Yuha	E Plio.	5.8	84.3	236	13.7	139	81.0	200	0.0	120
Yh9	Yuha	E Plio.	33.8	52.9	293	3.5	143	76.8	56	0.0	138
Ch10	Camel's head	E Plio.	15.3	68.0	384	3.7	187	69.9	136	0.0	180
Ch11	Camel's head	E Plio.	11.1	88.4	225	15.8	76	81.5	222	0.0	64
Db12	Camel's head	E Plio.	15.4	76.8	155	10.0	40	77.3	97	0.0	36
Db 13	Diablo	M Plio.	0.0	88.4	225	15.8	76	81.5	222	0.0	64
Db14	Diablo	M Plio.	6.2	68.1	279	4.5	223	81.3	187	0.0	213
25-8b	Olla	M Plio.	11.0	98.0	50	92.3	13	42.6	54	0.0	1
25-8c	Olla	M Plio.	7.0	98.6	220	75.0	12	57.6	59	0.0	3
25-9a	Olla	M Plio.	4.2	95.1	82	42.9	7	70.6	34	0.0	4
25-9b	Olla	M Plio.	11.9	71.4	112	3.0	33	67.4	46	0.0	32
26-1a	Olla	M Plio.	5.9	85.4	82	0.0	12	86.1	108	0.0	12
26-1b	Olla	M Plio.	19.4	11.9	84	3.9	77	71.4	7	0.0	74
26-3	Olla	M Plio.	4.7	88.1	268	11.9	84	69.9	196	0.0	74
CC16	Canebrake	M Plio.	10.8	90.6	234	41.5	123	61.1	208	0.0	72
Hu17	Hueso	L Plio.	9.1	87.8	320	41.7	108	62.5	184	0.0	63
BF 24	Bouse	L Mio.	3.9	45.0	189	25.2	139	97.7	220	0.0	104
BF 27	Bouse	L Mio.	0.0	53.0	66	35.4	48	93.8	80	0.0	31
150-1	name unknown	Pal. (?)	16.0	62.1	240	13.3	105	94.2	479	51.6	188
150-2	name unknown	Pal. (?)	10.5	79.1	172	20.0	45	69.2	13	5.3	38
2116	San Francisquito	Pal. (?)	34.0	56.3	327	0.0	143	97.4	77	0.0	143
2101	Coldwater	L Pal/Eoc.	5.7	48.6	288	3.4	207	92.3	222	0.0	200
2102	Sespe	Eoc-E. Mio.	6.3	70.4	216	6.4	110	97.0	201	0.0	103
2103	Sespe	Eoc-E. Mio.	7.9	80.5	87	5.6	18	87.5	56	0.0	17
2110	Sespe	E-M. Mio.	6.7	78.0	291	12.8	94	83.4	205	0.0	82
2108	Topanga	M. Mio.	5.0	71.2	198	6.6	61	89.5	153	0.0	57
2111	Topanga	M. Mio.	3.3	83.0	47	0.0	8	91.2	68	0.0	8

Appendix 2. Stable mineral ratios of sand and sandstone samples from southwestern North America

Sample	Fm/Mbr	Age	ZTR	GZi	Total	RZi	Total	ATi	Total	CZi	Total
2112	Topanga	M. Mio.	6.5	74.2	221	12.3	65	93.8	210	0.0	57
OT12	Topanga	M. Mio.	5.4	71.5	267	8.5	141	89.9	217	0.0	129
2100	Topanga	M. Mio.	17.2	71.5	239	8.1	74	93.7	285	0.0	68
2115	Punchbowl	M-L. Mio.	3.3	42.1	19	0.0	11	72.7	11	0.0	11

Appendix 2 (continued). Stable mineral ratios of 69 Palaeocene-Recent sand and sandstone samples from southwestern North America. ZTR - zircon-rutile-tourmaline Index, GZi - garnet/zircon index, RZi - rutile/zircon index, ATi - apatite/tourmaline index, CZi - chrome-spinel/zircon index.