TABLE 3—*Uranium and other trace elements in rock asphalts*

[All analytical work was done in the U.S. Geological Survey Laboratories, Denver, Colo., under the direction of A. T. Myers, C. A. Horr, and D. L. Ferguson]

Tracing No.	Locality	Laboratory serial No. and collector [1]	Material	Stratigraphic unit	Age	Oil in rock (percent)	Ash in oil (percent)	Uranium in Ash (percent)	Uranium in Oil (parts per million)
	Alabama								
	Colbert County								
1	Margerum area	86865-A	Asphaltic limestone	Bangor limestone	Mississippian	4.69	1.483	0.002	0.3
	Morgan County								
2	Hartselle area	86868-A	do	Hartselle sandstone	do				
3	Unnamed area	86869-A				3.56	.149	.016	.2
	California								
	Kern County								
	McKittrick area:								
4	SW¼ sec. 28, T. 30 S., R. 22 E.	97752	Asphaltic sandstone	Etchegoin formation	Pliocene	5.27	3.32	0.060	19.9
5	do	97753	Asphalt vein	do	do	79.50	.51	.019	1.0
6	NE¼ sec. 29, T. 30 S., R. 22 E.	97754	Asphaltic alluvium	Tulare formation	Pliocene and Pleistocene	39.00	1.54	.006	.9
7	do	97755	do	do	do	5.65	2.85	.002	.6
8	do	225611	Asphaltic sandstone	do	do	5.13	.19	.150	2.9
	Mendocino County								
9	Point Arena area, north of Arena Cove	97756	do	Monterey shale	Miocene	4.21	.52	.039	2.0
10	do	97757	do	do	do	3.34	.77	.022	1.7
11	do	97758	do	do	do	3.67	.64	.027	1.7
12	do	97759	do	do	do	5.52	.72	.030	2.2
13	do	97761	do	do	do	3.71	1.06	.016	1.7
14	do	97762	do	do	do	6.08	1.10	.044	4.8
	Monterey County								
15	Bradley area, SW¼ sec. 35, T. 24 S., R. 10 E.	97751	do	(?)	Pliocene	10.49	.437	.045	2.0
	San Ardo area:								
16	SE¼ sec. 13, T. 22 S., R. 9 E.	97749	do	Transition zone between Monterey shale and Santa Margarita sandstone.	Miocene	3.58	.60	.072	4.3
17	do	97750	do	do	do	8.90	.39	.064	2.5
	San Lorenzo Creek area:								
18	SE¼ sec. 15, T. 17 S., R. 9 E.	97746	Asphaltic arkose	do(?)	Pliocene	8.57	.15	.043	.6
19	do	97747	do	do	do	14.41	.26	.037	1.0
20	do	97748	do	do	do	8.63	.28	.017	.5
	San Benito County								
	Chalone Creek area:								
21	SE¼ sec. 29, T. 17 S., R. 8 E.	97745	do	do(?)	do	5.70	.80	.50	40.0
22	do	97773	do	do	do	13.40	.21	.036	.8
23	do	97772	do	do	do	10.89	.44	.010	.4
	San Luis Obispo County								
24	Edna area; along Edna-Pismo Beach road	99133	Asphaltic sandstone	Pismo formation	Miocene and Pliocene	3.16	1.00	.195	19.5
25	do	99134	do	do	do	4.86	.76	.079	.7
26	do	99135	do	do	do	7.60	.37	1.9	70.3
27	do	99136	do	do	do	10.15	.14	.132	1.8
28	do	99137	do	do	do	6.48	.70	.053	3.7
29	do	99138	do	do	do	4.80	.51	.240	12.2
30	do	99139	do	do	do	7.01	.46	.035	1.6
	Santa Barbara County								
31	Airox quarry, Casmalia	87227	Diatomaceous mudstone.	Sisquoc formation	Miocene and Pliocene	18.18	.288	.0011	.03
32	do	99146	do	do	do	17.88	.23	.009	.2
33	N.T.U. mine, T. 39 N., R. 35 W.	99140	do	do	do	27.80	.18	.041	.7
34	do	99141	do	do	do	29.20	.22	.033	.7
35	do	99142	do	do	do	31.70	.18	.047	.8
36	Mouth of Gaviota Canyon	99156	Asphaltic sandstone	Monterey shale	Miocene	23.32	1.04	.002	.2
37	Goleta area; sec. 20, T. 4 N., R. 28 W.	99157	Asphaltic siltstone	do	do	16.18	2.00	.023	4.6
38	do	99158	do	do	do	21.70	2.11	.024	5.0
39	Los Alamos area, cliffs southeast of Asphaltum Creek, 2 miles northeast of junction of Foxen Canyon and Alisas Canyon roads.	99148	Asphaltic sandstone	Sisquoc formation	Pliocene	3.20	1.75	.038	6.7
40		99149	do	do	do	10.81	.83	.330	27.4
41		99150	do	do	do	14.60	.57	.073	4.2
42		99151	do	do	do	15.70	.28	.059	1.7
43	do	99152	do	do	do	16.10	.68	.010	.7
44	do	99153	do	do	do	17.50	.05	.036	.2
45	do	99154	do	do	do	8.90	1.34	.023	3.1
46	Santa Cruz County: 5 miles west of Santa Cruz.	97763	do	Vaqueros sandstone	Miocene	6.01	.37	.031	1.1
47		97764	do	do	do	9.62	.59	.012	.7
48	do	97765	do	do	do	16.20	.42	.096	4.0
49	do	97766	do	do	do	9.75	.27	.011	.3
50	do	97767	do	do	do	7.03	.43	.005	.2
51	do	97768	Asphaltic shale	do	do	9.25	.28	.015	.3
52	do	97769	Asphaltic sandstone	do	do		.45	.024	1.1
53	do	97770	do	do	do	11.40	.31	.026	.3
54	do	97771	do	do	do	1.94	.52	.0032	.17
	Colorado								
55	Fremont County, Oil Creek, northeast of Canon City.	213839	Asphaltic alluvium			12.20	0.45	0.205	1.12
56	Larimer County, sec. 32, T. 7 N., R. 69 W.	213840	Asphaltic sandstone			.64	.75		
	Missouri								
	Carroll County								
57	Sec. 19, T. 55 N., R. 24 W.	219698	Asphaltic sandstone			1.35	0.72		
	Vernon County								
	Deerfield area:								
58	Sec. 6, T. 35½ N., R. 32 W.	219690	do	Cherokee shale	Pennsylvanian	3.84	.27		
59	SW¼ sec. 6, T. 35 N., R. 32 W.	219691	do	do	do	4.73	.44	0.010	0.44
60	do	219692	do	do	do	4.65	.44	.010	.44
61	do	219693	do	do	do	5.54	.68	.006	.41
62	do	219694	do	do	do	4.37	.78	.003	.23
63	do	219695	do	do	do	4.57	.93	.008	.74
64	do	219696	do	do	do	4.56	.84	.002	.17
65	do	219697	do	do	do	3.96	1.43	.002	.29
66	Dry Wood Creek area, SE¼ sec. 24, T. 35 N., R. 33 W.	219673	do	do	do	1.73	1.15	.002	.02
67	do	219674	do	do	do	.98	1.35	.004	.05
68	do	219675	do	do	do	2.24	1.09	.007	.08
69	do	219677	do	do	do	2.60	1.36	.009	1.22
70	do	219678	do	do	do	1.74	1.20	.002	.24
71	do	219679	do	do	do	1.23	1.11	.004	.44
72	do	219680	do	do	do	1.66	1.14	.005	.57
73	do	219681	do	do	do	2.60	1.94	.001	.19
74	do	219682	do	do	do	5.42	.74	.001	.07
75	do	219683	do	do	do	2.58	2.26	.004	.90
76	do	219684	do	do	do	4.07	3.06	.001	.31
77	do	219685	do	do	do	3.79	3.40	.001	.34
78	do	219686	do	do	do	2.32	1.59	.003	.48
79	do	219687	do	do	do	1.37	1.45	.005	.73
80	do	219688	do	do	do	3.41	.91	.006	.55
81	do	219689	do	do	do	4.23	1.50	.003	.65
82	Ellis area, SE¼ sec. 10, T. 35 N., R. 32 W.	91576	do	do	do	5.38	.75	.40	30.0
83	do	207078	do	do	do	4.08	.70	.013	.9
84	do	224923	do	do	do	4.47	.40	.011	.4
85	Sheldon East area, NW¼ sec. 33, T. 34 N., R. 30 W.	219661	do	do	do	4.56	1.45	.033	4.79
86	do	219662	do	do	do	3.00	1.95	.013	2.44
87	do	219663	do	do	do	3.75	1.22	.009	1.10
88	do	219665	do	do	do	4.63	1.21	.008	.97
89	do	219668	do	do	do	5.58	.26	.008	.21
90	do	219664	do	do	do	3.54	1.67		
91	do	219666	do	do	do	2.72	.20		
92	do	219667	do	do	do	3.30	.26		
93	Sheldon North area, W½ sec. 15, T. 34 N., R. 31 W.	219669	do	do	do	1.58	1.58	.002	.2
94	do	219670	do	do	do	1.12	1.59	.005	.8
95	do	219671	do	do	do	1.60	.65	.006	.4
96	Unnamed area, sec. 20, T. 35 N., R. 32 W.	219672	Asphaltic shale			.84	.45		
	Montana								
	Carbon County								
	Red Dome area:								
97	E½ sec. 20, T. 7 S., R. 24 E.	213834	Asphaltic sandstone	Chugwater formation	Permian and Triassic	4.74	0.58	0.012	0.7
98	do	213835	do	do	do	6.60	.50	.013	.7
99	do	213836	do	do	do	2.45	.66	.003	.2
100	W½ sec. 20, T. 7 S., R. 24 E.	213837	do	do	do	6.60	.45	.012	.5
101	SW¼ sec. 20, T. 7 S., R. 24 E.	213838	do	do	do	4.16	.81	.009	.7
	New Mexico								
	Guadalupe County								
102	7 mi north of Santa Rosa	89253-C	Asphaltic sandstone	Santa Rosa sandstone	Triassic	2.86	1.88	0.0013	0.2
	10 mi north of Santa Rosa:								
103	Quarry No. 1	94094	do	do	do	1.73	3.13	.002	.3
104	do	94095	do	do	do	2.63	1.08	.008	.9
105	Quarry No. 2	94096	do	do	do	3.58	.70	.052	3.6
106	Quarry No. 3	94097	do	do	do	5.12	1.31	.012	1.6
107	do	94098	do	do	do	8.42	.15	.051	.8
108	Mill pile	94099	do	do	do	2.44	1.12	.025	2.8
	Oklahoma								
	Carter County								
	Bratcher area:								
109	NW¼ sec. 21, T. 4 S., R. 1 E.	200933	Asphaltic sandstone	Deese formation	Pennsylvanian	7.29	0.91	0.005	0.4
110	do	201572	do	do	do	9.30	.09	.003	.03
111	SW¼ sec. 16, T. 4 S., R. 1 E.	201571	do	do	do	9.58	.77	.015	
112	Lone Grove area, NW¼ sec. 32, T. 4 S., R. 1 W.	201573	do	Wichita formation	Permian	.87	3.31	.010	3.3
113	Morgan area, NE¼ sec. 14, T. 5 S., R. 1 E.	201569	do	Deese formation	Pennsylvanian	5.71	.76	.005	.4
114	Oil City area, sec. 21, T. 3 S., R. 2 W.	201577	do	Wichita formation	Permian	12.28	4.49	.002	.9
	Woodford area:								
115	Sec. 3, T. 3 S., R. 1 W.	201574	do	Springer formation	Pennsylvanian	2.26	6.49	.017	11.0
116	do	201575	do	do	do	4.44	6.60	.010	6.6
117	SW¼ sec. 11, T. 3 S., R. 1 W.	201576	do	do	do	1.66	1.77	.004	.7
	Comanche County								
118	Cameron College area, NE¼ sec. 34, T. 2 N., R. 12 W.	201588	Asphaltic sandstone	Wichita formation	Permian	5.70	2.06	.054	11.1
119	Elgin area, SW¼ sec. 26, T. 4 N., R. 11 W.	201592	do	do	do	1.76	1.98	.006	1.2
120	Frisco Creek area, SW¼ sec. 9, T. 3 N., R. 11 W.	201590	do	do	do	1.57	2.96	.005	1.5
121	do	201591	do	do	do	2.58	17.83	.002	3.6
122	Lawton Township area, NW¼ sec. 21, T. 2 N., R. 12 W.	201589	do	do	do	1.19	3.14	.020	6.3
123	Parker area, SW¼ sec. 15, T. 4 N., R. 11 W.	201593	do	do	do	2.16	1.62	.004	.6
	Garvin County								
	Baseline area:								
124	E½ sec. 36, T. 1 N., R. 3 W.	201558	do	do	do	.79	2.71	.007	1.9
125	NW¼ sec. 17, T. 1 N., R. 3 W.	201560	do	do	do	1.17	2.98	.002	.6
	Jefferson and Stephens Counties								
	Asphaltum area:								
126	SE¼ sec. 23, T. 3 S., R. 5 W.	201579	do	do	do	4.27	1.64	.006	1.0
127	do	201580	do	do	do	7.47	.66	.002	.1
128	do	201581	do	do	do	9.72	2.08	.006	1.2
129	NW¼ sec. 25, T. 3 S., R. 5 W.	200934	do	do	do	8.07	.97	.013	1.2
130	NW¼ sec. 11, T. 4 S., R. 4 W.	201584	do	do	do	1.21	2.64	.006	1.6
131		201587	do	do	do	.76	1.12		
	Marshall County								
132	Sand Creek area	201565				.58	.05		
	McCurtain County								
133	Sec. 28, T. 6 S., R. 21 E.	89246-C	Asphaltic sandstone	Paluxy sand	Cretaceous	8.18	2.86	.010	2.9
	Murray County								
	Dougherty area:								
134		99598	Asphaltic limestone	Viola limestone	Ordovician	1.05	.48		
135	NE¼ sec. 34, T. 2 N., R. 12 W.	99599	do	do	do	3.92	.042	.001	.004
136	SW¼ sec. 30, T. 1 S., R. 3 E.	99601	do	do	do	3.63	.52	.001	.05
137		99603	do	do	do	2.00	1.04	.001	.1
138		99605	do	do	do	5.66	.17		
	Sulphur area:								
139		99606	Asphaltic sandstone	Oil Creek formation	Ordovician	6.13	.14		
140	SE¼ sec. 15, T. 1 S., R. 3 E.	99607	do	do	do	7.95	.41	.004	.2
141	do	99608	do	do	do	3.62	.71	.039	2.8
142	do	201552	do	do	do	4.80	.72	.032	2.3
143	NE¼ sec. 22, T. 1 S., R. 3 E.	201553	do	do	do	6.05	.41	.001	.04
144		201554	do	do	do	6.05	.24		
145	SW¼ sec. 15, T. 1 S., R. 3 E.	201555	do	do	do	3.05	.78	.22	17.1
146	NW¼ sec. 22, T. 1 S., R. 3 E.	201556	do	do	do	4.00	1.12	.002	.2
147	do	201557	do	do	do	2.44	.61	.004	.2
	Pontotoc County								
	Ada area:								
148	NW¼ sec. 6, T. 3 N., R. 6 E.	99591	do	Ada formation	Pennsylvanian	4.08	4.09	.002	.8
149	NW¼ sec. 1, T. 3 N., R. 5 E.	99592	do	do	do	1.87	.81	.005	.4
150	SW¼ sec. 19, T. 4 N., R. 6 E.	99593	do	do	do	3.00	2.13	.042	9.0
151	NW¼ sec. 36, T. 4 N., R. 6 E.	99594	do	do	do	4.20	.75	.007	.5
	Fitzhugh area:								
152	Sec. 32, T. 3 N., R. 5 E.	99596	do	do	do	1.68	1.85	.003	.5
153	Sec. 5, T. 2 N., R. 5 E.	99597	do	do	do	1.02	2.16	.001	.2
	Texas								
	Burnet County								
154	Northeast of Burnet	86628	Asphaltic coquina			3.4	2.63	0.0045	1.2
	Uvalde County								
	Blewett area:								
155	No. 1 quarry	99579	Asphaltic limestone	Anacacho formation	Cretaceous	12.16	.28	.002	.06
156	South quarry	99580	do	do	do	8.02	.63	.002	.1
157	Gato quarry	99581	do	do	do	5.75	.22	.002	.04
158	do	99582	do	do	do	7.53	.56	.002	.1
159	East end of Gato quarry	99583	do	do	do	8.82	.42	.001	.04
160	West end of Gato quarry	99584	do	do	do	10.42	.37	.002	.07
161	White's Uvalde mine quarry	99585	do	do	do	9.18	.43	.002	.09
162	do	99586	do	do	do	7.65	.55	.001	.05
163	White's mine	99587	do	do	do	5.54	.22	.002	.04
164	do	99589	do	do	do	8.93	.69	.004	.3
165	do	99590	do	do	do	9.39	.35	.004	.1
	Utah								
	Carbon County								
	Sunnyside area:								
166	NE¼ sec. 15, T. 14 S., R. 14 E.	94100	Asphaltic sandstone	Wasatch and Green River formation.	Eocene	10.65	0.75	0.020	1.5
167	do	94101	do	do	do	6.93	1.59	.012	1.9
168	do	94102	do	do	do	6.17	.90	.041	3.7
169	do	94103	do	do	do	1.80	1.17	.046	9.3
170	NW¼ sec. 10, T. 14 S., R. 14 E.	94104	do	do	do	3.10	1.27	.005	.6
171	do	94105	do	do	do	1.56	.83	.014	1.2
172	do	94106	do	do	do	5.46	3.68	.010	3.7
173	Sec. 4, T. 14 S., R. 14 E.	94107	do	do	do	1.97	.87	.015	1.3
174	do	94108	do	do	do	6.05	.45	.003	.1
175	do	94109	do	do	do	9.60	.30	.015	.4
176	do	200931	do	do	do	5.80	.30	.048	1.4
177	SE¼ sec. 4, T. 14 S., R. 14 E.	223235	do	do	do	9.06	.312	.010	.32
	Duchesne County								
178	Road Hollow District	94118	do			26.5	.25	.009	.23
	Uintah County								
	Asphalt Ridge:								
179	Sec. 25, T. 4 S., R. 20 E.	85728	do	Uinta formation	Eocene	16.0	1.77	.002	.3
180	do	85729	do	do	do	11.4	5.90	.001	.6
181	do	85730	do	do	do	3.1	.96	.021	2.0
182	Sec. 11, T. 4 S., R. 20 E.	85731	do	do	do	12.3	6.31	.001	.6
183	do	85732	do	do	do	13.0	3.82	.005	1.9
184	Sec. 30, T. 4 S., R. 21 E.	85733	do	do	do	10.8	3.68	.007	2.6
185	Sec. 31, T. 4 S., R. 21 E.	85734	do	do	do	11.6	8.42	.001	.8
186	do	85735	do	do	do	6.6	1.35	.026	3.5
187	Sec. 4, T. 5 S., R. 21 E.	85736	do	do	do	10.0	2.66	.001	.3
188	Sec. 9, T. 5 S., R. 21 E.	85737	do	do	do	7.4	3.45	.005	1.7
189	Sec. 23, T. 5 S., R. 21 E.	85738	do	do	do	8.0	2.75	.017	4.7
190	Sec. 25, T. 5 S., R. 21 E.	85739	do	do	do	9.4	3.24	.002	.6
191	Sec. 29, T. 4 S., R. 21 E.	96056	do	do	do	1.35	2.46	.013	3.2
192	do	96057	do	do	do	1.85	2.04	.034	6.9
193	do	96058	do	do	do	5.50	2.21	.005	1.1
194	do	96059	do	do	do	2.09	.49	.177	8.7
195	do	96060	do	do	do	.39	.89		
196	Sec. 32, T. 4 S., R. 21 E.	96061	do	do	do	.98	.83	.008	.7
197	do	96062	do	do	do	7.04	1.50	.015	2.2
198	do	96063	do	do	do	4.76	.93	.150	1.4
199	do	96064	do	do	do	8.63	1.13	.141	15.9
200	Sec. 20, T. 4 S., R. 21 E.	96065	do	do	do	10.10	.53	.010	.5
	Uintah and Grand Counties								
	PR Springs Area:								
201	Sec. 5, T. 15½ S., R. 23 E.	96044	Asphaltic sandstone	Green River formation	Eocene	12.0	.24	.011	.3
202	do	96045	do	do	do	9.50	.55	.063	3.5
203	do	96046	do	do	do	7.13	.37	.025	.9
204	do	96047	do	do	do	9.86	3.05	.005	1.5
205	do	96048	do	do	do	4.99	1.40	.009	1.3
206		96049	do	do	do	7.20	.36		
207	Sec. 36, T. 15 S., R. 23 E.	96050	do	do	do	4.22	.73	.006	.2
208	do	96051	do	do	do	4.45	1.08	.003	.3
209	do	96052	do	do	do	15.75	.27	.0045	.12
210	do	96053	do	do	do	4.76	1.46	.009	1.3
211	do	96054	do	do	do	3.82	.76	.004	.3
212	do	96055	do	do	do	4.89	1.46	.009	1.3
213	Seep at head of Willow Creek	215290-B	Liquid tar	do	do	100.0	1.36	.0019	.25
	Uintah County								
214	Rainbow area, SW¼ sec. 13, T. 11 S., R. 24 E.	222080-B	Asphaltic sandstone	Uinta formation	do	5.66	.249	.0116	.29
215	Northwest end of Raven Ridge	222078-B	do	Green River formation	do	7.86	.441	.0546	2.4
216	Three Mile Canyon, NW¼ sec. 9, T. 12 S., R. 25 E.	222079	do	do	do	10.02	1.197	.0048	.47
	Whiterocks Canyon:								
217	Sec. 18, T. 2N., R. 1 E.	94110	do	Navajo sandstone	Jurassic	5.60	.72	.024	1.7
218	Sec. 19, T. 2 N., R. 1 E.	94111	do	do	do	9.72	.24	.003	.1
219	do	94112	do	do	do	2.93	1.00	.005	.5
220	do	94113	do	do	do	4.13	.68	.003	.2
221	Sec. 7, T. 2 N., R. 1 E.	222081-B	do	do	do	7.18	.157	.0055	.09
	Wyoming								
	Carbon County								
	Muddy Creek area:								
222	NE¼ sec. 15, T. 17 N., R. 92 W.	213818	Asphaltic sandstone	Fort Union formation	Paleocene	6.35	0.29	0.091	2.6
223	NE¼ sec. 10, T. 17 N., R. 92 W.	213819	do	do	do	5.70	.42	.032	1.3
224	do	213820	do	do	do	6.00	.34	.021	.7
225	Sec. 3, T. 17 N., R. 92 W.	213821	do	do	do	6.11	.38	.015	.6
	Fremont County								
	Washakie Oil Spring:								
226	Sec. 35, T. 1 N., R. 1 W.	213823	Liquid tar			100.0	1.82	.0001	.015
227	do	213825	Asphaltic alluvium	Alluvium	Recent	14.45	.78	.0015	.012
228	Sec. 26, T. 1 S., R. 1 E.	213826	do	do	do	13.55	.25	.012	.3
	Natrona County								
229	Sec. 29, T. 33 N., R. 84 W.	88358-D	Asphaltic sandstone			5.96	0.857	0.060	5.1
230	Sec. 5, T. 33 N., R. 87 W.	213827	do	Teapot sandstone member of Mesaverde Group.	Cretaceous	4.00	.84	.014	1.2
231	do	213828	do	do	do	3.62	.34	.032	1.1
232	Sec. 34, T. 33 N., R. 82 W.	213829	Asphaltic alluvium	Alluvium	Recent	1.3	3.09	.0015	.46
	Sublette County								
233	Sec. 11, T. 38 N., R. 110 W.	213822	Asphaltic sandstone			3.20	.28		
	Washakie County								
234	Sec. 24, T. 47 N., R. 90 W.	213841	Asphaltic alluvium	Alluvium	Recent	3.21	.18		

Composition of ash by spectrochemical analysis

Tracing No.	V	Ni	Cu	Co	Pb	Zn	Cr	Mo	Mn	La	Y	B	Other elements xx.	Other elements x.	Other elements 0.x	Other elements 0.0x	Other elements 0.00x	Other elements 0.000x
Alabama																		
1	x.	0.x	0.0x	0.00x	0.00x	0.0x	0.00x		0.0x			0.00x	Ca	Si, Mg	Al, Fe, Na, K	Ti, Sr, Zr	Ba	
2	.x	.x	.x	.00x	.0x	.x	.00x	.00x	.x	.0x	.00x	.0x		Al, Fe, Ca	Ti, Mg, Na, K	Ba, Ce, Sr, Zr	Sn, Y	Ag, Sc, Yb
3																		
California																		
4	0.x	0.x	0.0x	0.00x	0.0x	0.x	0.0x	0.x	0.x		0.00x	0.x	Fe	Al, Mg, Na	Ti, Ca	Ba	Ag, Nb, Sc, Sr, Zr	Be, Yb
5	.x	x.	.x	.00x	.00x		.0x	.0x	.0x	.0x	.00x	.x		Al, Fe, Ca, Mg, Na	Ti, Ba	Sr, Zr	Ag, Nb, Sc	Yb
6	.x	.x	.0x	.00x	.00x		.0x	.0x	.0x	.0x	.00x	.0x		Al, Fe, Ca, Mg	Ti, P, Na, Ba	Sr	Be, Ca, Nb, Sc, Yb, Zr	Ag
7																		
8																		
9	x.	x.	.x	.00x	.0x		.0x	.0x	.0x		.00x	.0x	Ca	Al, Fe, Mg, Na	Ti, Ba	Ga, Sr, Zr	Ag	Sc
10	x.	x.	.x	.00x	.0x	.x	.0x	.00x	.0x		.00x	.0x		Fe, Ca, Na	Al, Mg	Ti, Ba, Ga, Zr	Ag, Sr	Sc
11	x.	x.	.x	.00x	.0x	.x	.0x	.00x	.0x		.00x	.0x	Fe	Al, Ca, Mg, Na	Ti, P, Ba	Ga, Sr, Zr	Ag, Sc	
12	x.	x.	.x	.00x	.0x	.x	.0x	.0x	.0x		.00x	.0x		Fe, Ca, Mg, Na	Al	Ti, Ba, Ga, Sr, Zr	Ag	
13	.x	x.	.x	.0x	.0x	.x	.0x	.0x	.x		.00x	.0x	Ca	Fe, Mg, Na	Al, Ba	Ti, Ga, Sc, Sr, Zr	Ag	
14	x.	.x	.x	.00x	.0x	.0x	.0x	.0x	.0x	.00x	.0x	.0x	Fe	Al, P, Ca, Na	Ti, Mg, Ba	Ga, Sr, Zr	Ag, Sc, Sn	
15																		
16	x.	x.	.x	.00x	.0x	.x	.0x	.x	.0x		.0x	.0x	Fe	Al, Ca	Ti, P, Mg, Na	Ba, Zr	Ag, Ga, Nb, Sc, Sn, Sr, Yb.	Be
17																		
18	.x	x.	.x	.0x	.0x	.x	.0x	.0x	.x		.0x	.x	Fe	Al, Ca	Ti, Mg, Na	Ba, Ga	Ag, Be, Nb, Sc, Sn, Sr, Yb, Zr.	
19																		
20	.x	x.	.x	.0x	.0x	.x	.0x	.0x	.x	.0x	.00x	.x	Fe	Al, Mg	Ti, Ca, Na	Ba, Sc, Sn	Ag, Be, Ga, Nb, Zr	Yb
21	.x	.x	.x	.0x	.00x	.x	.0x	.x	.x	.0x	.0x	.0x		Al, Fe, Ca	Ti, Mg, Na, U	Ba, Cd, Ce, Sc, Sr, Nd, Sb.	Ag, Ga, Nb, Yb, Zr	Be
22	.x	x.	.x	.0x	.0x	.x	.0x	.x	.x	.0x	.00x	.0x	Fe	Al	Ti, P, Ca, Mg, Na, Ce	Ba, Ca, Zr	Ag, Sn, Nb	Be, Sr
23																		
24	.x	x.	.x	.00x	.0x	.0x	.0x	.x	.0x		.0x	.0x		Al, Fe, Ca, Mg, Na	Ti, P, U	Ba, Sr	Ag, Ga, Nb, Sc, Yb, Zr	
25	.x	x.	.x	.00x	.0x	.x	.0x	.0x	.x		.0x	.0x		Al, Fe, P, Ca, Na	Ti, Mg	Ba, Sr	Ag, Ga, Nb, Sc, Yb	Be
26																		
27	x.	x.	.x	.0x	.0x	.x	.x	.x	.0x		.00x	.x		Fe, Ca, Na	Al, Ti, P, Mg, U	Ba, Ga	Ag, Nb, Sc, Sn, Sr, Zr	Yb
28	.x	x.	.0x	.00x	.00x	.x	.0x	.0x	.0x		.00x	.0x	Fe	Al, P, Ca	Ti, Mg, Na	Ba, Sr	Nb, Zr	Ag, Ga, Sc, Yb
29	.x	x.	.x	.00x	.0x	.x	.x	.x	.0x		.0x	.0x		Al, Fe, P, Ca	Ti, Mg, Na, U	Ba, Sc, Sr, Zr	Ag, Ga, Nb, Sn, Yb	
30	.x	x.	.x	.00x	.0x	.0x	.0x	.0x	.0x	.00x	.00x	.00x		Al, Fe, Ca, K	P, Mg, Na	Ti, Ba, Sr	Ga, Sn, Yb, Zr	Ag, Be, Sc
31	x.	x.	.x	.0x	.0x	.x	.0x	.0x	.0x			.0x		Na	Al, Fe, Ca, Mg	Ti, Ga	Ag, Sn, Sr, Zr	
32																		
33	xx.	x.	.x	.00x	.0x	.x	.0x	.x	.0x	.0x		.0x	V	Al, Fe, Ca	Ti, Mg, Na	Ba, Ce, Sc, Zr	Ag, Ga, Nb, Sr	
34	x.	x.	.x	.00x	.0x	.x	.0x	.x	.x	.0x	.00x	.0x		Al, Fe, P, Ca	Ti, Mg, Na, Ba, Sr	Ce, Zr	Ag, Ga, Nb, Sc	Be, Yb
35	x.	x.		.00x	.00x	.0x	.0x	.0x	.x	.0x		.0x		Al, Fe, Ca, Mg	Ti, Mn, Na	Ba, Sr, Zr	Ga, Nb, Sc	Ag
36																		
37																		
38	.x	.x	.0x	.00x	.00x	.0x	.0x	.0x	.0x	.0x	.00x	.0x	Mg	Fe, Na	Al, Ca, As	Ti, Ba	Nb, Sc, Sr, Zr	Ag, Ga, Yb
39	.x	.x	.x	.00x	.00x	.0x	.0x	.0x	.0x	.0x	.0x	.0x	Ca	Fe, Mg, Na	Al, Ti	Ba, Ce, Sr	Ag, Ga, Nb, Sc, Yb, Zr	
40																		
41	x.	x.	.x	.00x	.0x	.x	.0x	.0x	.0x	.0x	.0x	.0x		Al, Fe, P, Ca, Na	Ti, Mg	Ba, Sr, Zr	Ag, Ga, Nb, Sc, Yb	Be
42	x.	x.	.x	.00x	.0x	.x	.0x	.x	.x	.0x	.00x	.0x		Al, Fe, P, Ca	Ti, Mg, Na, Ba, Sr	Ce, Zr	Ag, Ga, Nb, Sc	Be, Yb
43	x.	x.	.x	.00x	.00x	.x	.0x	.x	.x	.0x		.0x		Al, Fe, Ca, Mg	Ti, Na	Ba, Sr, Zr	Ga, Nb, Sc	Ag
44																		
45	x.	x.	.0x	.00x	.0x	.0x	.0x	.0x	.0x	.0x	.0x	.0x	Fe	Al, P, Ca, Mg, K	Ti	Ba, Ga, Zr, Nd, Sr	Ag, Ga, Nb, Sc, Yb	Be
46	x.	x.	.x	.0x	.0x	.x	.0x	.0x	.0x		.0x	.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Ga, Zr	Ag, Be, Sr	
47																		
48	x.	x.	.x	.0x	.0x	.x	.0x	.x	.0x		.00x	.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Ga, Sr, Zr	Ag, Be, Sc	
49	x.	x.	.x	.0x	.0x	.0x	.0x	.0x	.0x		.00x	.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Ga, Zr	Ag, Be, Sc	
50	x.	x.	.x	.0x	.0x		.0x	.0x	.0x	.00x		.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Ca, Zr	Ag, Be, Sr	
51	x.	x.	.x	.0x	.0x	.x	.0x	.0x	.0x		.00x	.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Ga, Nb, Zr	Ag, Be, Sr	
52																		
53	x.	x.	.x	.0x	.0x	.x	.0x	.x	.0x			.0x		Al, Fe, Ca, Mg	Ti, Na	Ba, Ga, Zr	Ag, Be, Sc, Sr	
54	.x	.x	.x	.000x	.00x	.0x	.00x	.00x	.00x			.x		Fe, Ca, Mg	Al, Na	Ti, Ba, Ga	Zr	Ag
Colorado																		
55	0.0x	0.0x	0.0x	0.00x	0.0x	0.0x	0.0x	0.00x	0.x	0.0x	0.0x	0.0x	Ca	Al, Fe, Mg	Ti, Na, Ce	Ba, Nd, Sr, Zr	Nb, Sc, Sn, Yb	Ag, Be
56	.0x	.00x	.0x	.000x	.00x	.0x	.00x	.00x	.00x		.0x	.0x			Al, Fe, Ca, Mg, Na	Ti	Ba, Sn, Yb, Zr	Ag, Sr
Missouri																		
57	0.x	0.x	0.0x		0.0x	0.x	0.0x		0.0x		0.00x	0.0x		Al, Fe, Ca, Mg	Na	Ti, Ba, Zr	Ag, Sc, Sr	
58	.x	.x	.x	0.00x	.0x	.x	.0x		.x	0.0x	.00x	.0x		Al, Fe, Ca, Mg	Ti, Na	Ba, Sr, Zr	Ag	
59	.x	.x	.0x	.0x	.0x	.x	.0x	.00x	.x	.0x	.00x	.0x		Al, Fe, Ti, Ca, Mg	Na	Ba, Sr, Zr	Nb, Sc	Ag
60	.x	.x	.x	.0x	.0x	.x	.0x		.x	.0x	.0x	.0x	Al	Fe, Ca, Mg	Ti, Na	Ba, Nd, Sr, Zr	Ag, Nb, Sc	Be
61	.x	.x	.0x	.x	.0x	.x	.0x		.x		.00x	.0x		Al, Fe, Ti, Ca, Mg	Na	Ba, Sr, Zr	Ag, Nb, Sc	
62	.x	.x	.0x	.00x	.0x	.0x	.00x		.x		.00x	.0x		Al, Fe, Ca	Ti, Na	Ba, Sr, Zr	Ag, Nb, Sc	
63	.x	.x	.0x	.0x	.0x	.x	.0x		.0x		.00x	.0x	Al	Fe, Ti, Ca, Mg	Na	Ba, Sr, Zr	Ag, Nb, Sc	
64	.x	.x	.0x	.00x	.0x	.x	.0x		.x		.00x	.0x	Al	Fe, Ti, Ca, Mg	Na	Ba, Sr, Zr	Ag, Nb	
65	.x	.x	.0x	.00x	.00x	.0x	.0x		.0x		.00x	.0x	Al	Fe, Ca, Mg	Ti, Na	Ba, Sr, Zr	Ag, Nb	
66	.x	.0x	.0x	.000x	.0x	.x	.0x	.000x	.0x	.0x	.0x	.0x		Al, Fe, Ca	Mg, Na	Ti, Ba, Ce, Nd, Sc, Sr	Nb, Sn	Ag, Be
67	.x	.x	.0x	.00x	.0x	.0x	.0x		.x		.0x	.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Cd, Sr, Zr	Ag, Sc, Yb	
68	.x	.x	.0x	.00x	.0x	.0x	.0x	.000x	.x	.0x	.0x	.0x		Al, Fe, Ca	Mg, Na	Ti, Ba, Ce, Sr	Nb, Sc, Sn	Ag, Be
69	.x	.x	.0x	.00x	.0x	.0x	.0x	.000x	.x	.x	.x	.0x	Fe	Al, Ca	Mg, Na, Ce, Nd	Ti, Ba, Dy, Gd, Sr	Nb, Sc, Sn	Ag, Be
70	.x	.x	.x	.00x	.00x	x.	.0x		.x	.0x	.0x	.0x	Fe	Al, Ca	Mg, Na	Ti, Ba, Cd, Nd, Sc, Sr, Zr.		Ag
71	.x	.x	.0x	.00x	.0x	.x	.0x		.x	.0x	.0x	.0x	Al, Fe	Ca, Mg	Na	Ti, Ba, Ce, Nd, Sc, Sr, Zr	Ag, Nb	
72	.x	.x	.0x	.00x	.0x	.x	.0x		.x	.x	.0x	.0x	Fe, Ca	Al, Mg	Ti, Na, Ce, Nd	Ba, Sc, Sr, Zr		Ag
73	.0x	.0x	.x	.00x	.00x	.x	.0x		.x		.0x		Fe, Ca	Mg	Al	Ti, Na, Ba, Sc, Sr, Zr	Yb	Ag
74	.x	.x	.x	.00x	.0x	.x	.0x		.x	.0x	.00x	.0x	Al	Fe, Ti, Ca, Mg	Na	Ba, Ce, Nd, Sr, Zr	Ag, Nb, Sc	
75	.x	.0x	.0x	.00x	.00x	.0x	.0x		.x		.0x		Ca	Fe, Mg	Al	Ti, Na, Ba, Sc, Sr, Zr	Nb	
76	.x	.0x	.0x	.00x	.00x	.x	.0x		.x				Ca	Al, Fe, Mg	Ti	Na, Ba, Sr, Zr	Sc	
77	.x	.0x	.0x	.00x	.00x	x.	.00x		.x		.00x			Fe, Ca	Al, Mg	Ti, Ba, Zr	Sc	
78	.x	.x	.0x	.00x	.0x	x.	.0x		.x		.0x	.00x	Fe	Al, Ca	Ti, Mg	Na, Ba, Cd, Sc, Sr, Zr	Yb	Be
79	.x	.x	.x	.00x	.0x	.x	.0x		.x	.0x	.0x	.0x	Ca	Al, Fe, Mg	Ti, Na	Ba, Sc, Sr	Ag, Nb	Be
80	.x	.x	.0x	.00x	.00x	.x	.0x		.x		.0x	.0x	Fe, Ca	Al, Mg	Na, Ba	Ti, Sc, Sr, Zr		Be
81	.x	.x	.0x	.00x	.0x	.x	.00x		.x	.0x	.0x	.0x	Ca	Al, Fe, Mg	Na, Ba	Sc, Sr, Zr		
82	x.	x.	.x	.0x	.0x	.0x	.0x	.00x	.0x	0.0x	0.00x	0.0x	Si, Al	Fe, Ti, Mg, Na, K	Ca, Sm, U	Ba, Ce, Nd, Sr, Zr	Sc, Sn	Ag, Be, Ga, Yb
83																		
84																		
85	.x	.0x	.0x		.0x	.x	.x		.0x	.0x	.0x	.0x	Al, Fe	Ca	Ti, Mg, Na	Ba, Sc, Sr, Zr	Nb, Yb	Ag
86	.x	.0x	.0x		.00x	.x	.x		.0x	.0x	.0x	.0x	Fe	Al, Ca	Ti, Mg, Na, Ba	Sr, Zr	Nb, Sc, Yb	
87	.x	.x	.0x	.00x	.0x	.x	.x		.0x	.0x	.0x		Al, Fe	Ca	Ti, Mg, Na	Nd, Sn, Zr	Sc, Sr, Yb	Be
88	.x	.x	.0x		.00x	.x	.x		.0x	.0x	.0x			Al, Fe, Ca	Ti, Mg, Na	Ba, Nd, Sc, Sr, Zr	Nb	
89	.x	.x	.x	.00x	.0x	.x	.x	.00x	.0x			.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Zr	Ag, Sc, Sn, Sr	
90	.x	.x	.0x	.0x	.0x	x.	.x	.00x	.x	.0x	.00x	.0x		Al, Fe, Ca, Mg	Ti, Na	Ba, Sn, Zr	Sc, Sr	Ag
91	.x	.x	.0x	.0x	.0x	x.	.x	.0x	.x	.0x		.0x		Al, Fe, Ca, Mg	Ti, Na	Ba, Sn, Sr, Zr	Ag	
92	.x	.x	.0x	.0x	.0x	x.	.x	.0x	.0x	.0x		.x	Fe	Al, Ca, Mg	Ti, Na, Ce	Ba, Zr	Ag, Sc, Sn, Sr	
93	.0x	.0x	.x	.00x	.0x	.x	.0x		.0x		.0x	.0x	Fe	Al, Ca	Mg	Ti, Na, Ba, Ce, Ga, Nd, Sc, Zr.	Be, Yb	
94	.x	.0x	.x	.00x	.0x	.x	.x		.0x	.0x	.0x	.0x	Fe	Al, Ca, Mg	Na, Ce, Nd	Ti, Ba, Dy, Gd, Sc, Zr	Be, Nb, Sr, Yb	Ag
95	.x	.x	.0x	.000x	.0x	.0x	.x	.000x	.0x	.0x	.0x	.0x		Al, Fe, Ca	Mg, Na	Ti, Ba, Ce, Nd	Ag, Nb, Sc, Sn, Sr	
96		.0x	.00x		.00x	.0x	.00x		.00x			.0x			Al, Fe, Ca, Mg, Na	Ti, Ba	Zr	Ag
Montana																		
97	0.x	0.x	0.x	0.00x	0.0x	0.0x	0.00x	0.0x	0.0x			0.0x	Ca	Mg	Al, Fe, Na	Ti, Ba, Sr	Ag, Zr	
98	.x	.x	.x	.00x	.0x	.0x	.00x	.0x	.0x		0.00x	.00x	Ca	Al, Mg	Fe, Na	Ti, Ba, Sr, Zr	Ag, Sc, Sn	
99	.x	.x	.x	.000x	.0x	.0x	.00x	.00x	.0x	0.0x	.00x	.0x	Ca		Al, Fe, Mg, Na	Ti, Sr, Zr	Ba, Sc, Sn	Ag, Be
100	x.	.x	.x	.00x	.0x	.0x	.00x	.0x	.0x	.0x	.00x	.0x	Ca	Al, Fe, Mg	Ti, P, Na, K	Ba, Nd, Sr, Zr	Ag, Sn	
101	.x	.x	.x	.000x	.0x	.0x	.00x	.0x	.0x	.00x	.00x	.0x	Ca	Al, Fe, Mg	Na	Ti, Sr, Zr	Ba, Sc, Sn	Ag
New Mexico																		
102																		
103	0.0x	0.0x	0.0x	0.00x	0.0x	0.0x	0.00x		0.x	0.0x	0.000x	0.00x	Ca	Fe, Mg	Al, Na	Ce, Nd, Sr	Ti, Ba, Sc, Yb, Zr	Ag
104	.x	.0x	.x	.00x	.0x	.0x	.00x		.x	.0x	.00x	.00x		Al, Fe, Ca, Mg	Na	Ba, Ce, Nd, Sr	Ag, Zr	Ga, Yb
105	.x	.0x	.x	.00x	.0x	.x	.0x	0.000x	.x	.0x	.00x	.00x		Al, Fe, Ca, Mg, K	Na	Ba, Ce, Nd, Sr	Ag, Zr	Sc, Ga, Yb, Be
106																		
107	.x	.0x	.x	.00x	.0x	.x	.0x	.000x	.x	.0x	.00x	.00x		Al, Fe, Ca, Mg, Na	Ti	Ba, Ce, Nd, Sr	Ag, Zr	Ga, Yb
108	.x	.0x	.x	.0x	.0x	.x	.00x		.x	.00x	.0x	.0x		Fe, Ca, Mg	Al, Na	Ti, Ba, Zr	Sc, Sr, Yb	Ag, Be
Oklahoma																		
109	0x.	0.x	0.0x	0.00x	0.0x	0.0x	0.0x	0.00x	0.0x	0.0x	0.00x	0.00x	Si, Al	Fe, Ca, Mg, K	Ti, Na	Ba, Sr, Zr	Ga, Sc	Be
110																		
111	x.	x.	.x	.0x	.0x	.x	.00x	.00x	.0x			.x		Al, Fe, Ca	Ti, Mg, Na	Ba, Zr	Ag	Be
112	.x	.0x	.x		.0x	.x	.00x		.0x		.00x	.x		Ca	Al, Ti, Mg, Na	Ba, Zr	Yb	
113																		
114																		
115	.x	.x	.0x		.0x		.0x		.0x	.0x	.0x			Al, Fe, Ca	Ti, Mg, Na, Ce, Nd	Ba, Sr, Zr	Sc	Be
116	.x	.x	.0x		.00x		.0x		.x	.0x	.0x	.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Sr, Zr	Nb, Sc	Be
117																		
118																		
119																		
120	.x	.x	.x	.00x	.00x		.0x		.0x	.0x	.0x	.0x		Al, Fe, Ca	Mg, Na	Ba, Sr, Zr	Nb, Nd, Sc	
121																		
122	.x	.0x	.x	.00x	.0x	.0x	.0x		.0x	.x	.0x	.0x		Al, Fe, Ca	Ti, Mg, Na, Ba, Ca, Nd	Dy, Er, Sc, Sr, Zr	Nb, Yb	Be
123																		
124	.x	.x	.x	.0x	.0x	.x	.0x		.x	.x	.x		Ca	Al, Fe, Mg	Ti, Na, Ba, Ce, Dy, Cd, Nd, Sm.	Br, Sc, Sr, Yb, Zr	Be	
125	.x	.x	.x	.00x	.0x	.x	.0x		.x	.0x	.0x		Ca	Al, Fe	Ti, Mg, Na, Sc	Ba, Nd, Sr, Zr	Be, Nb	
126	.x	.x	.0x	.00x	.00x		.0x		.x		.0x	.0x		Al, Fe, Ca	Ti, Mg, Na	Ba, Zr	Sc, Sr	Be
127	.x	.x	.x	.0x	.0x		.0x		.0x		.0x	.x	Al, Fe	Ca	Mg, Na	Ti, Ba, Sc, Sr, Zr	Ag, Be	
128																		
129	.x	.x	.x	.00x	.0x	.0x	.0x	.00x	.0x	.0x	.0x	.00x		Si, Al, Fe, Ca, Mg, K	Ti, Na, Ce	Ba, Nd, Sc, Sr, Zr	Ag, Ca	Be
130	.x	.x	.x		.0x	.x	.00x		.0x	.0x	.0x	.x		Fe, Ca, Mg, Na	Al	Ba, Nd, Sr	Ti, Nb, Sc, Zr	Ag, Be
131	.x	.0x	x.	.0x	.0x	.x	.0x		x.			.0x		Fe, Ca, Mg, Na	Al	Ti, Ba, Zr	Ag, Sn	
132	.0x	.0x	x.	.00x	.0x	.x	.00x	.00x	.0x			.x		Fe, Ca, Na	Al, Ti, Mg	Ba, Sn	Ag, Ca, Ge, Nb, Zr	
133																		
134	x.	x.	.x	.00x	.0x	.x	.00x	.00x	.0x	.00x		.00x	Ca		Al, Fe, Mg, Na	Ti, Sr	Ag, Ba, Ga, Zr	
135	x.	x.	.x	.00x	.0x	.0x	.0x	.00x	.0x			.0x	Ca		Al, Fe, Mg, Na	Ti, Sr	Ba, Ga, Zr	Ag
136	x.	x.	.x	.00x	.0x	.x	.0x	.00x	.00x			.0x		Ca	Al, Fe, Mg, Na	Ti	Ba, Sn, Sr, Zr	Ag
137	.x	.x	.x	.00x	.0x	.0x	.0x	.00x	.0x			.00x	Ca	Al	Fe, Mg, Na	Ti, Sr	Ag, Ba, Ga, Zr	
138	x.	x.	.x	.0x	.0x	.x	.x	.00x	.0x	.0x		.00x		Al, Fe, Ca, Mg, Na	Ti, K	Ba, Ce, Nd, Sr, Zr	Ag, Ga	
139	x.	x.	.x	.00x	.x	.x	.x	.00x	.0x	.00x		.0x	Ca	Al, Fe, Mg, Na	Ti, K	Ba, Ce, Sr	Ag, Ga, Sc, Zr	
140																		
141	x.	.x	.x	.00x	.0x	.x	.0x	.00x	.00x	.00x	.00x	.00x	Ca	Al	Fe, Mg, Na	Ti, Ba, Ce, Sr	Sn, Zr	Ag, Ga, Yb
142	x.	.x	.x	.00x	.0x	.x	.00x	.00x	.x		.0x	.0x		Al, Fe, Ca	Mg, Na, Ba	Ti, Sr, Zr	Be	Ag
143	x.	x.	.x	.00x	.0x	.x	.00x	.0x	.x			.0x		Fe	Al, Ca, Mg, Na	Ti, Ba	Ag, Zr	
144	x.	x.	x.	.00x	.00x	.x	.00x	.0x				.0x		Fe	Al, Ca, Mg, Na	Ti, Ba	Zr	Ag
145	x.	.x	.x	.00x	.0x	.x	.00x	.x				.0x		Fe	Al, Ca, Mg, Na, U	Ti, Ba	Ag, Zr	
146	x.	.x	.x		.0x	.x	.00x					.x		Ca	Al, Fe, Mg, Na	Ti, Ba, Zr		
147	x.	x.	.x	.0x	.0x	.x	.0x		.x		.00x			Al, Fe, Ca, Mg	Na	Ti, Ba, Sc, Sr	Zr	
148																		
149	.x	.x	x.	.00x	.0x	.0x	.00x	.00x	.0x	.00x	.0x	.0x	Ca	Mg, Na	Al, Fe	Sr	Ti, Ag, Ba, Sc, Yb, Zr	Be
150	.x	.x	.x	.0x	.0x	.0x	.0x	.00x	.0x	.00x	.00x	.00x	Ca	Al, Fe, Mg	Ti	Ba, Sr	Zr	Ag, Be, Sc, Yb
151	x.	.x	.x	.0x	x.	.x	.00x	.00x	.0x		.00x	.00x	Ca	Fe, Mg	Al, Na	Ti, Ba, Sr	Ag, Zr	Be, Ga, Yb
152	.x	.x	.x	.00x	x.	x.	.00x	.00x	.0x	.00x	.00x	.00x	Ca	Fe	Al, Mg, Na	Ba	Ti, Ag, Sr, Zr	Be, Sc, Yb
153	.x	.x	.x	.00x	.0x	xx.	.00x	.00x	.0x	.00x	.00x	.0x	Ca	Al, Fe	Mg, Na	Ti, Cd	Ag, Ba, Sc, Sr, Zr	Be, Ga, Yb
Texas																		
154																		
155	x.	x.	0.x	0.00x	0.0x	0.0x	0.0x	0.x	0.0x			0.00x	Ca	Mg, Na	Al, Fe	Ti, Ba, Sr, Ga	Zr	Ag
156	.x	.x	.x	.00x	.0x		.0x	.x	.0x			.00x	Ca	Na	Al, Fe, Mg	Ti, Ga, Sr	Ba, Zr	Ag
157	x.	.x	.x	.00x	.0x	.0x	.0x	.0x	.0x			.0x		Ca, Na	Al, Fe, Mg	Ti, Ba, Ga	Ag, Sn, Sr, Zr	
158	.x	.x	.x	.00x	.0x		.0x	.x	.0x			.0x	Ca	Na	Al, Fe, Mg	Ti, Ga, Sr	Ba, Zr	Ag
159	x.	.x	.0x	.0x	.0x	.0x	.0x	.x	.0x			.0x	Ca	Mg, Na	Al, Fe	Ti, Ga, Sr, Zr	Ag, Ba	
160	.x	.x	.0x	.00x	.00x	.0x	.0x	.x	.0x		0.000x		Ca		Si, Al, Fe, Mg, Na	Ti, Sr, Zr	Ba, Ga	
161	x.	.x	.x	.00x	.0x		.0x	.x	.0x			.00x	Ca	Mg	Al, Fe, Na	Ti, Sr	Ba, Ga, Zr	Ag
162	x.	.x	.0x	.00x	.00x		.0x	.x	.0x			.00x	Ca	Mg	Al, Fe, Na	Ti, Sr	Ba, Ga, Zr	
163	x.	.x	.x	.00x	.0x		.x	.x	.0x			.0x	Ca		Al, Fe, Mg, Na	Ti, Ga, Sr	Ag, Ba, Zr	
164	.x	.x	.0x	.00x	.00x		.x	.x	.0x	0.x	.00x		Ca	Si, Al, Fe	Ti, Mg, Na, K, Cd, Na	Sr, Zr	Ba, Ga, Sc	
165	x.	.x	.x	.00x	.0x	.0x	.0x	.x	.0x			.0x	Ca		Al, Fe, Mg, Na	Ti, Ga, Sr	Ag, Ba, Zr	
Utah																		
166	0.0x	0.x	0.x	0.0x	0.0x	0.x	0.0x	0.00x	0.0x	0.x	0.0x	0.0x		Al, Fe, Ca	Ti, Mg, Na, As, Ba, Ce, Nd.	Sc, Sr, Zr	Ag, Be, Nb, Yb	
167														Al, Ca	Ti, Mg, Na, Ba, Ce, Nd, Sc.	Sr	Be, Nb, Yb, Zr	Ag
168	.0x	.x	.x	.0x	.0x	.x	.0x	.00x	.x	.x	.0x	.0x	Fe					
169	.0x	.x	.x	.00x	.0x	.x	.0x	.00x	.0x	.x	.0x	.0x	Ca	Fe, Mg, Na	Al, As, Ce, Nd	Ti, Ba, Sc, Sr	Nb, Yb, Zr	Ag, Be
170	.0x	.x	.0x	.0x	.00x	.x	.0x	.x	.x	.x	.0x	.0x		Fe, Ca, Mg	Al, Na, As, Ce	Ti, Ba, Nd, Sc, Sr	Ag, Nb, Yb, Zr	
171	.0x	.x	.x	.0x	.0x	.x	x	.00x	.x	.x	.0x	.0x		Fe, Al, Ca, Mg	Na, As, Ce, Nd	Ti, Ba, Sc, Sr	Ag, Zr	Be
172																		
173	.0x	.x	.x	.0x	.0x	.x	.0x	.00x	.x	.x	.0x	.0x		Fe, Ca, Mg, Na	Al, Ti, As, Ce, Nd	Ba, Sc, Sr	Be, Nb, Yb, Zr	Ag
174	.0x	.x	.x	.0x	.0x	.x	.00x	.00x	.x	.0x	.0x	.0x		Fe, Ca, Mg	Al, Ti, Na, As	Ba, Ce	Ag, Nb, Sc, Sr, Yb, Zr	Be
175																		
176	.x	x.	.0x	.0x	.0x	.x	.0x	.00x	.x	.x	.0x	.x		Al, Fe, Ca, Mg	Ti, Na, As, Ce, Nd	Ba, Sc, Zr	Be, Nb, Sr, Yb	Ag
177	.x	x.	.x	.x	.0x	.x	.0x	.0x	.x	.0x	.0x	.0x	Ca	Al, Fe, Ti, Mg, Na	Ce	Ba, Nb, Nd, Sc, Sn, Sr, Zr.	Be, Yb	Ag
178	.0x	.x	.x	.0x	.0x	.x	.00x	.0x	.x	.x	.00x	.x		Fe, Ca, Mg	Al, Na, As, Ce, Nd, Sr	Ti, Ba	Be, Nb, Sc, Zr	Ag, Yb
179																		
180																		
181																		
182																		
183																		
184																		
185																		
186																		
187																		
188																		
189																		
190																		
191																		
192	.00x	.0x	.x	.00x	.0x	.x	.00x				.00x	.x	Ca	Fe, Mg	Al, Na	Sr	Ba, Yb, Zr	
193	.00x	.0x	.0x	.00x	.00x	.x	.00x		.0x		.00x	.0x	Ca	Fe, Mg	Al, Na	Ba, Sr	Zr	Yb
194	.0x	.0x	x.	.0x	.0x	.x	.0x	.00x	.0x		.00x	.x	Al	Fe, Ca	Mg, Na	Ti, Ba, Sc, Zr	Ag, Yb	Be
195	.0x	.x	.x	.0x	.0x	.x	.0x	.0x	.0x		.00x	.0x	Ca	Al, Fe, Mg, Na		Ti, Ba, Sr, Zr	Ag, Nb, Sc, Yb	
196	.0x	.x	.x	.0x	.0x	.x	.0x		.x			.0x		Fe, Ca	Al, Mg, Na	Ti, Ba, Sr	Ag, Zr	
197																		
198	.0x	.x	.x	.00x	.0x	.x	.0x	x.	.00x	.0x	.00x	.0x		Al, Fe, Ca	Ti, Mg, Na, Ba	Sr, Zr	Ag, Sc	Yb
199	.0x	.x	.x	.0x	.0x	.x	.00x	.0x	.0x			.0x	Ca	Al, Fe	Mg, Na, U	Ti, Ba, Sr, Zr		Ag
200	.0x	.x	.x	.0x	.0x	.x	.0x	.00x	.0x		.00x	.0x	Al	Fe, Ca	Ti, Mg, Na	Ba, Zr	Ag, Nb, Sc, Sr	Be, Yb
201	.0x	x.	.x	.0x	.0x	.x	.0x	.0x	.0x	.0x	.00x	.x	Fe	Al, Ca	Ti, Mg, Na	Ba, Zr	Ag, Nb, Sc, Yb	
202	.0x	.x	.x	.0x	.0x	.x	.0x	.0x	.x	.0x	.0x	.x	Fe	Al, Ca	Ti, Mg, Na	Ba, U, Sc, Sr, Zr	Ag, Nb, Yb	
203	.0x	x.	x.	.0x	.0x	.x	.0x	.0x	.x	.x	.0x	.x	Fe	Al, Ca	Ti, Mg, Na, Ce, Nd	Sc, Sr, Zr	Ag, Ba, Nb, Yb	
204																		
205	.0x	.x	.x	.0x	.0x	.x	.0x		.x	.x	.0x	.00x	Ca	Fe	Al, Mg, Na, Ce, Nd	Ti, Ba, Sc, Sr	Ag, Yb	
206	.0x	.x	x.	.0x	.0x	.x	.0x	.00x	.x	.x	.0x	.x		Ca	Al, Fe, Ti, Mg, Na, Ce, Nd	Ba, Sc, Sr	Yb, Zr	
207	.0x	.x	.x	.00x	.00x	.x	.0x		.0x	.0x	.0x	.x	Ca	Fe, Mg	Al, Na	Ti, Sc, Sr	Ba, Nb, Yb	
208	.0x	.x	.x	.00x	.00x	.x	.0x		.0x	.x	.0x	.x	Ca	Fe, Mg	Al, Na, Ce, Nd	Ti, Sc, Sr	Ba, Yb	
209	.0x	.0x	.x	.00x	.0x	.0x	.0x		.0x	.0x	.0x	.0x	Ca	Si, Fe, Mg	Al, Ti, Na, K	Ba, Ce, Nd, Sc, Sr	Yb, Zr	Ag, Be
210	.0x	.x	.0x	.0x	.0x	.x	.00x		.x	.x	.0x	.0x		Fe, Ca	Al, Ti, Mg, Na, Ce, Nd	Ba, Sc, Sr, Sm, Yb	Zr	Ag
211	.0x	.x	.x	.0x	.0x	.x	.0x		.x	.x	.x	.0x		Al, Fe, Ca	Ti, Mg, Na, Ce, Nd	Ba, Dy, Er, Sc, Sr, Sm, Yb	Ag, Nb, Zr	
212	.0x	.x	.x	.0x	.0x	.x	.0x		.x	.x	.0x	.0x	Ca	Fe, Mg	Al, Na, Ce, Nd	Ti, Ba, Sc, Sr	Nb, Yb	
213	.0x	.x	.0x	.0x	.00x		.0x	.00x	.x		.00x	.0x		Al, Fe, Ca, Mg, K	Ti, Ba	Sr, Zr	Sc	Yb
214	.x	x.	.x	.x	.0x	x.	.0x	.0x	.x	.0x	.00x	.0x	Ca	Al, Fe, Mg, Na	Ti, Sr	B, Ba, Sn, Zr	Ag, Nb	
215	.0x	x.	.x	.x	.0x	x.	.00x	.0x	.x		.0x	.x	Ca	Al, Fe, Mg, Na	Ti	Ba, Sr, Zr	Ag, Sn, Yb	
216	.0x	.x	.x	.0x	.0x	.x	.0x	.00x	.x	.0x	.0x	.0x	Ca	Al, Fe, Mg, Na	Ti, Ce	B, Ba, Nd, Sc, Sr	Ag, Nb, Sn, Yb, Zr	Be
217	.0x	.x	.x	.0x	.00x	.0x	.00x	.00x	.0x	.0x	.0x	.0x	Ca		Al, Fe, Mg, Na, As, Nd	Ba, Ce, Sr, Zr	Ti, Be, Sc, Yb	Ag, Ga
218																		
219	.0x	.x	.x	.0x	.0x	.0x	.00x	.0x	.0x	.0x	.0x	.0x		Fe, Ca	Al, Mg, Na, As	Ti, Ba, Sr, Zr	Ag, Be, Nb, Sc, Yb	
220	.0x	.x	.x	.0x	.0x	.0x	.0x	.00x	.0x	.0x	.0x	.0x	Ca	Fe	Al, Mg, Na, As, Nd	Ti, Ba, Ce, Sr, Zr	Be, Nb, Yb	Ag, Sc
221	.x	x.	x.	.x	.0x	.x	.0x	.0x	.x		.0x	.0x		Al, Fe, Ca, Na	Mg	Ti, B, Ba, Sc, Sn, Zr	Ag, Be, Yb	Sr
Wyoming																		
222	0.0x	0.0x	0.0x	0.00x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x	0.0x	Fe	Al, Ca	Ti, Mg, Na, U	Ba, Ce, Nd, Sc, Sr, Zr	Ag, Yb	Be
223	.00x	.0x	.0x		.0x	.0x	.0x	.00x	.00x	.0x	.0x	.0x	Fe	Al, Ca	Mg, Na	Ti, Ba, Nd	Ag, Ga, Sc, Sr, Yb, Zr	Be
224	.00x	.00x	.0x		.0x	.0x	.0x	.0x	.00x	.0x	.00x	.0x	Fe	Al, Ca	Mg, Na	Ti, Ba, Ce, Nd	Ag, Ga, Sn, Sr, Yb, Zr	Be
225	.0x	.00x	.0x		.0x	.0x	.0x	.0x	.0x	.0x	.0x	.0x	Fe	Al, Ca	Ti, Mg, Na	Ba, Ce, Nd	Ag, Ga, Sc, Sn, Sr, Yb, Zr	Be
226	.x	.x	.0x	.000x	.00x		.00x	.00x	.0x		.00x	.00x	Ca	Fe, Mg, Na	P, Ba, Sr	Al, Ti	Ca, Zr	Ag
227	.x	.x	.0x	.00x	.0x	.00x	.0x	.00x	.0x	.0x	.00x	.0x	Ca	Al, Fe, Mg	Ti, Na, K, Ce, Sr	Ba, Nd	Sn, Zr	Ag
228	.00x	.0x	.0x	.00x	.0x	.x	.0x		.x	.0x	.0x	.0x		Al, Fe, Ca	Mg, Na	Ti, Ba, Ce, Nd, Sr, Zr	Ag, Sc, Sn, Yb	Be
229	0.0x	0.0x	0.0x	0.00x	0.0x	0.0x	0.0x	0.0x	0.00x		0.00x	0.00x	Fe	Si, P	Al, Ca, Na, K	Ti, Mg	Ba, Sc, Sn, Sr, Zr	Ag, Ga, Yb
230	.0x	.0x	.0x	.00x	.0x	.0x	.0x	.0x	.00x		.00x	.0x	Fe	Al, Ca	Mg, Na	Ti, Ba, Zr	Ag, Sc, Sr, Yb	Be
231																		
232	.0x	.00x	.0x	.00x	.0x	.0x	.00x		.x	0.0x	.0x	.0x	Fe	Al, Ca, Mg	Ti, Na, K, Ba	Nd, Sr, Zr	Nb, Sc, Yb	Ag, Be
233	x.	.x	.x		.0x	.x	.0x	.00x	.0x			.0x		Fe, Ca, Mg	Al, Na, Yb	Ti, Ba, Zr	Ag, Sr	
234	.0x	.0x	.0x	.00x	.0x	.0x	.00x	.0x	.0x		.00x	.x		Ca, Mg, Na	Fe	Al, Ti, Zr	Ag, Ba, Sn, Sr	Yb

[1] Samples were collected by W. J. Hail, Jr., except those indicated by letter after laboratory serial No. as follows: A, collected by Henry S. Johnson, Jr.; B, by Kenneth G. Bell; C, by James W. Hill; D, by George W. Moore.