

B-3 Geochemical Analyses of the Orange Area (17)

No.	Sample No.	Rock Name	Rock Code	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Sc	Y	U	Th	Nb	Ta	Zr	Mn	Sr	P	Fe %	T-1203 ppm
721	Ma620	Beforsite, Dol	Mcb2	127	214	69	15.2	4.7	2.0	0.7	0.1	0.8	21	1	3	737	2	3	5430	6940	7070	3.37	557
722	Ma625	Beforsite	Mcb2	210	378	157	35.7	7.8	2.2	0.2	0.2	1.6	38	5	18	1621	2	2	7712	5040	8030	4.12	1029
723	Ma700	Beforsite, Dol-Ark	Mcb2	141	254	60	12.1	3.2	1.5	1.8	0.2	1.1	27	1	4	14	2	5	7270	5500	1050	3.31	603
724	Ma710	Beforsite-ovite, Dol	Mcb2	8590	11633	1804	268.5	41.0	7.9	1.0	0.1	0.9	22	1	29	354	2	2	7880	20120	6500	2.88	27224
725	Ma715	Beforsite, Ap-Cal. bearing	Mcb2	5398	5603	2041	271.3	41.5	7.5	1.4	0.1	0.5	35	1	42	33	2	3	15468	21140	100	6.59	18476
726	Ma720	Shale, siliceous-calcareous	Nsh	131	242	65	12.7	3.1	1.9	4.1	0.5	6.7	59	4	11	32	2	2	181	2330	430	11.50	596
727	Ma800	Gneiss, Qtz-Fs	Ngn	82	124	30	7.5	1.6	2.0	3.3	0.4	5.9	48	4	16	18	2	2	65	791	465	6.71	335
728	Ma820	Quartzite-chert	Nsh	53	80	25	5.5	1.1	0.9	1.0	0.1	1.2	4	1	3	22	2	2	86	210	180	1.94	217
729	Ma825	Beforsite	Mcb2	77	102	55	14.1	3.2	1.2	1.1	0.1	2.1	18	1	9	46	20	3	7376	11896	100	2.76	331
730	Ma600	Beforsite	Mcb2	123	147	43	10.3	1.0	2.7	1.0	0.1	5.2	9	14	12	3849	22	3	7990	5520	100	4.86	426
731	Ma605	Beforsite	Mcb2	64	69	37	7.8	0.8	1.8	1.0	0.1	5.8	10	11	9	2609	2	3	8144	4800	100	5.37	242
732	Ma610	Beforsite, Ap?	Mcb2	265	409	253	56.5	13.2	7.3	2.3	0.2	0.5	51	1	6	1972	23	3	6540	9656	22040	3.83	1946
733	Ma615	Beforsite	Mcb2	84	126	52	13.4	4.0	2.9	1.3	0.1	2.7	28	6	225	1513	21	3	7806	8184	4152	4.35	383
734	Ma620	Beforsite	Mcb2	94	121	31	5.9	1.0	0.6	1.1	0.2	6.2	12	2	4	2896	26	3	8084	9910	29520	4.64	321
735	Ma625	Beforsite	Mcb2	347	558	261	38.9	8.0	2.0	1.2	0.1	4.3	23	1	2	100	2	3	7574	12236	3582	2.47	1659
736	Ma700	Beforsite	Mcb2	246	368	95	13.2	2.5	1.0	0.9	0.1	4.5	14	2	30	1413	2	3	7998	13818	11662	3.42	905
737	Ma705	Beforsite	Mcb2	257	3273	1311	194.2	38.1	10.7	2.3	0.3	6.2	75	1	220	20	4	3	1434	22060	421	6.23	9226
738	Ma525	Sovite	Mcs	227	417	199	38.4	9.2	3.2	3.9	0.5	0.5	63	8	6	315	2	17	1309	8512	13758	1.24	1163
739	Ma600	Beforsite	Mcb2	83	179	75	11.9	3.0	1.1	0.7	0.1	0.9	12	1	2	106	2	3	6408	17214	2794	2.52	454
740	Ma605	Beforsite/sovite	Mcb2	176	385	177	32.4	7.8	1.5	1.4	0.2	1.5	29	1	2	1093	2	3	5980	13738	11240	2.18	996
741	Ma610	Beforsite	Mcb2	249	569	282	59.9	13.4	4.1	2.5	0.3	0.5	53	1	13	2077	2	15	5458	7752	25680	3.45	1526
742	Ma615	Beforsite	Mcb2	16	184	73	14.0	3.1	1.2	0.8	0.1	2.1	13	2	4	1777	2	15	5170	12418	3406	4.00	454
743	Ma620	Beforsite	Mcb2	116	237	68	11.5	3.2	0.7	0.7	0.1	1.5	12	1	3	1092	2	4	6236	13506	3194	3.39	580
744	Ma625	Beforsite	Mcb2	71	181	78	18.1	3.8	1.9	0.9	0.1	2.5	15	1	6	1167	2	12	6154	7910	5246	3.50	465
745	Ma700	Beforsite	Mcb2	146	344	194	30.1	6.8	3.5	1.3	0.1	1.1	28	1	9	414	2	3	6086	12140	13010	2.19	867
746	Ma705	Beforsite	Mcb2	59	125	45	11.7	2.9	1.2	1.1	0.1	3.3	19	1	24	268	2	3	6878	12302	866	2.91	321
747	Ma710	Beforsite	Mcb2	148	363	151	34.8	8.0	3.1	1.5	0.2	0.5	31	1	2	94	2	3	6464	10666	15396	2.43	922
748	Ma715	Beforsite	Mcb2	71	148	53	11.1	2.2	0.8	0.6	0.1	3.9	9	1	2	372	2	3	7354	10864	3940	3.36	366
749	Ma720	Beforsite	Mcb2	722	1063	257	37.0	6.3	1.1	0.7	0.1	5.0	12	2	11	920	2	3	8584	16114	3938	3.77	2571
750	Ma725	Beforsite	Mcb2	484	934	374	86.5	19.1	4.2	5.7	0.7	7.6	89	2	6	905	2	3	5700	14326	7700	3.48	2409
751	Ma800	Beforsite	Mcb2	484	935	278	52.6	10.1	3.2	2.1	0.3	6.7	31	6	65	1161	2	5	8018	13336	889	3.98	2221
752	Ma805	Sovite	Mcs	1338	2121	663	175.2	34.6	9.3	10.4	1.4	3.5	134	1	28	126	2	3	10154	15640	5512	3.45	5500
753	Ma200	Syenite, porphyritic	Msw	58	71	22	4.3	0.9	0.7	0.9	0.1	0.7	14	17	10	353	4	24	1340	1190	2050	4.15	204
754	Ma210	Syenite	Msp	62	101	28	5.1	1.4	1.0	1.1	0.2	1.6	16	60	8	504	4	148	1110	2110	3930	4.35	237
755	Ma220	Syenite	Msp	61	86	23	3.9	0.9	0.8	0.9	0.1	2.1	14	34	9	688	6	169	939	1820	2440	4.61	227
756	Ma400	Sovite, (Hf)	Mcs	282	480	124	28.6	10.4	2.5	3.4	0.4	0.5	83	37	16	1530	2	6	1460	7120	13300	0.83	1159
757	Ma525	Beforsite, Py bearing	Mcb2	871	1379	409	101.4	30.4	10.0	6.5	0.7	6.6	115	3	181	695	4	3	9018	8348	5354	8.13	3829
758	Ma600	Beforsite, Dol	Mcb2	329	476	69	15.9	3.4	0.5	0.7	0.1	4.2	9	3	29	911	2	2	8552	10746	100	3.83	1694
759	Ma605	Beforsite	Mcb2	122	204	37	8.4	1.6	0.7	0.7	0.1	5.3	7	8	9	2179	2	3	7978	10452	100	3.94	467
760	Ma610	Beforsite	Mcb2	54	226	86	19.4	5.4	2.6	2.0	0.3	3.6	19	1	5	3020	2	3	7310	6450	13600	3.20	574
761	Ma615	Beforsite	Mcb2	230	448	166	30.0	6.1	3.2	1.5	0.2	4.2	26	2	10	820	2	3	8376	16216	10934	3.40	1194
762	Ma620	Beforsite	Mcb2	118	250	118	17.3	3.8	1.5	0.8	0.1	9.4	13	1	6	676	2	4	10278	12142	1807	3.43	654
763	Ma625	Beforsite	Mcb2	504	913	480	85.5	21.8	10.4	10.0	1.1	4.9	175	1	90	288	2	3	7592	11126	10482	4.05	2622
764	Ma700	Beforsite	Mcb2	484	886	427	67.1	15.0	3.6	3.9	0.5	5.5	56	1	86	32	2	3	14258	12858	367	5.04	2400
765	Ma705	Syenite, bre., carbonatized	Msu	1131	1559	498	99.0	23.3	9.2	8.5	1.0	2.3	143	3	41	283	2	5	4696	8450	14024	3.91	4218

### B-3 Geochemical Analyses of the Orange Area (18)

No.	Sample No.	Rock Name	Rock Code	La ppm	Ce ppm	Rd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm	Y ppm	U ppm	Th ppm	Nb ppm	Ta ppm	Zr ppm	Mn ppm	Sr ppm	P ppm	Fe %	T-203 ppm	
765	N 710	Syenite, bre., carbonatised	Msu	790	1590	654	145.7	31.3	8.5	2.8	0.4	9.8	47	40	1.1	5383	2	9	7632	9660	< 100	6.99	4105	
767	N 720	Beforsite, Pl	Mcb2	156	335	94	16.3	3.4	2.1	1.3	0.2	4.1	12	6	10	1020	2	6	3490	1990	8020	7.27	777	
768	N 820	Bre. rock with Cal network	Nsh	480	833	405	105.2	39.9	14.4	13.7	1.2	4.8	469	11	70	330	6	16	9090	1700	12900	4.04	2546	
769	N 900	Gneiss, Qtz-Fd	Ngn	35	48	13	4.3	1.9	1.1	1.2	0.2	25.9	18	3	10	72	2	51	869	295	5250	2.73	143	
770	N a110	Syenite, leuco-	Msw	59	61	20	4.1	1.2	0.7	0.6	0.1	< 0.5	10	118	8	1030	3	12	958	2880	3560	1.44	190	
771	N a120	Syenite, with fd mega-crystal	Msw	11	23	9	2.1	0.9	0.6	0.6	0.1	1.1	4	38	7	538	5	93	803	1610	2110	3.95	66	
772	N a200	Syenite, Hbl	Msw	19	50	17	3.8	0.9	0.8	2.1	0.2	0.8	6	110	20	1900	11	43	1650	1460	1950	3.06	125	
773	N a210	Syenite cut by Cal network	Msw	51	64	23	8.0	1.2	1.0	0.6	0.1	< 0.5	8	109	53	3020	7	21	858	1670	5830	1.17	195	
774	N a220	Syenite, Bt-(Ne?)	Msp	80	127	41	6.5	2.2	0.8	1.4	0.2	0.5	21	10	14	339	3	347	1250	1810	2350	3.97	333	
775	N a510	Syenite?	Msw	293	749	428	117.6	87.9	30.3	84.5	11.0	< 0.5	1280	6	332	45	2	4	47	3140	87400	0.07	2762	
776	N a520	Beforsite, Cal bearing	Mcb2	101	253	67	9.0	2.2	2.3	4.2	0.6	12.4	41	13	12	685	6	3	12400	1330	302	3.73	573	
777	N a500	Bre. rock cut by Cal veins	Msw	84	125	45	9.3	2.6	1.2	0.8	0.1	< 0.5	10	2	6	177	4	41	780	508	941	2.50	345	
778	N a510	Beforsite cut by Ank network	Mcb2	55	68	27	7.7	5.4	3.0	5.4	0.6	7.8	151	8	25	149	3	4	10500	991	1470	5.79	244	
779	N a520	Syenite, leuco-	Msw	59	91	31	5.8	1.8	1.1	1.6	0.2	< 0.5	17	10	9	257	10	382	1210	1210	510	2.80	252	
780	N a700	Syenite, porphyritic	Msw	80	118	35	6.1	2.0	1.1	1.8	0.2	< 0.5	20	6	8	218	7	180	1120	1490	901	2.36	315	
781	N a710	Green Hbl-Agt rock	Nsh	99	259	82	15.9	7.4	2.8	3.6	0.5	66.1	72	33	36	420	8	631	1380	365	2960	12.50	623	
782	N a720	Syenite, leuco-cut by Ank vein	Nsh	897	1594	405	86.2	31.2	10.7	6.2	0.5	1.8	202	38	119	822	7	8	3060	1410	3110	2.58	3862	
783	N a800	Hbl-Agt rock cut by An network	Nsh	261	334	220	37.7	15.2	10.1	10.6	1.2	46.3	227	2	60	234	7	249	1590	344	5180	12.40	1236	
784	N a820	Hbl-Agt rock cut by An network	Ngn	275	526	173	33.9	11.6	4.3	8.4	0.9	66.4	190	5	92	356	9	156	3450	410	4240	18.30	1345	
785	N c520	Beforsite, Cal bearing	Mcb2	494	927	392	81.3	27.0	3.4	3.3	0.4	6.1	56	5	86	1230	3	3	11268	10178	1886	7.30	2463	
786	N c500	Beforsite, Cal bearing	Mcb2	719	1297	702	113.4	47.6	10.1	7.2	0.8	12.3	151	16	147	1300	4	4	12614	11360	13268	7.41	3716	
787	N c610	Syenite	Msu	805	1434	870	71.5	13.8	3.6	3.2	0.3	3.5	79	17	74	1069	10	5	5252	1539	3060	3.79	4043	
788	N c620	Beforsite, Cal bearing Bt	Mcb2	965	1518	746	102.7	19.7	5.8	4.8	0.7	0.8	74	5	11	779	3	3	5856	14572	10214	7.41	4252	
789	N c700	Syenite	Msu	184	377	155	24.2	5.7	1.6	2.2	0.3	0.9	39	4	13	341	12	56	1308	1547	< 100	4.04	956	
790	O 100	Syenite, Ne porphyritic	Msw	34	64	22	5.2	1.4	0.7	1.1	0.1	1.3	12	2	6	152	6	354	1530	1300	1340	4.48	169	
791	O 200	Syenite, Ne porphyritic	Msw	82	129	44	12.6	1.7	2.9	1.7	0.3	< 0.5	22	8	26	271	18	415	1770	1210	1300	3.86	389	
792	O 300	Syenite, Ne? Bt-Ang	Msw	67	126	35	8.4	2.3	1.2	1.9	0.3	1.6	24	10	32	226	12	328	1650	1480	1990	4.76	317	
793	O 400	Syenite, Bt, porphyritic	Msw	18	27	8	2.6	0.9	0.5	0.6	< 0.1	< 0.5	3	3	4	71	2	23	535	1460	447	1.77	77	
794	O 500	Syenite, leuco-	Msw	95	155	72	20.3	7.6	3.1	1.3	0.2	1.6	103	1	9	63	2	41	837	338	4900	0.83	476	
795	O 600	Syenite, leuco-	Msw	36	36	24	5.0	2.1	0.9	0.6	< 0.1	0.5	22	22	22	33	492	5	11	470	148	1900	0.43	140
796	O 610	Hbl-Agt rock cut by An network	Ngn	21	28	11	4.3	0.9	1.0	1.6	0.4	55.5	15	3	10	208	16	142	1440	133	983	17.94	97	
797	O 620	Beforsite cut by Ank veins	Mcb2	72	132	55	15.7	7.0	1.5	2.3	0.3	2.9	21	3	17	27	2	3	2030	816	390	1.29	378	
798	O 700	Gneiss, Qtz-Fd	Ngn	64	125	46	15.0	9.3	3.3	6.6	1.0	< 0.5	174	28	141	952	2	4	413	594	18240	0.43	388	
799	O 800	Gneiss, Qtz-(Fd)	Ngn	63	103	24	5.1	1.6	1.0	1.5	0.3	6.8	19	2	21	37	2	30	634	232	649	3.81	259	
800	P 100	Syenite, Ne	Msw	27	39	14	3.6	1.1	0.8	0.7	< 0.1	< 0.5	6	7	10	170	5	118	1000	932	601	2.42	116	
801	P 200	Syenite, leuco-cut by Cal veins	Msw	94	123	39	6.9	2.3	1.4	1.6	0.2	< 0.5	20	17	13	404	3	24	2530	3540	3080	2.08	348	
802	P 400	Gneiss, cut by brown Cal veins	Ngn	111	183	36	7.2	2.2	1.2	1.6	0.2	5.7	20	5	28	57	2	70	1200	434	1330	4.41	437	
803	P 600	Gneiss, Qtz-Fd, cut by Cal veins	Ngn	30	44	12	3.0	1.0	0.8	1.1	0.2	4.9	12	7	23	19	2	654	472	296	698	2.30	123	
804	P 800	Gneiss, Bt-Qtz-Fd	Ngn	24	43	13	3.7	1.1	0.8	1.8	0.3	5.7	17	4	20	8	2	12	501	123	465	1.87	120	
805	T 1A	Beforsite, Ank	Mcd	3933	7912	2905	324.8	57.8	10.3	2.7	0.3	15.3	40	1	101	14	73	4	37700	12900	519	8.19	18932	
806	T 2A	Sovite	Mcs	315	144	29.3	4.1	5.7	4.8	0.5	2.2	49	7	8	2	2	2	698	1680	3890	200	2.33	959	
807	T 4A	Beforsite, Ank	Mcb1	75	97	42	8.9	3.0	1.4	1.2	0.2	5.7	10	1	13	2	2	3	7920	5310	215	3.50	300	
808	T 5A	Beforsite, Ank	Mcb1	100	116	52	9.9	0.5	1.9	0.9	0.2	8.1	14	6	9	7	2	3	6140	5470	156	2.78	365	
809	T 6A	Gneiss, Qtz-Fd, fenitised	Ngn	100	143	40	11.8	2.2	2.5	2.5	0.3	15.6	8	3	5	6	2	494	1610	160	690	7.67	402	
810	T 7A	Syenite, Ne, porphyritic	Msp	262	467	184	39.4	2.7	2.4	0.9	< 0.1	0.8	12	56	36	1290	2	10	1290	1700	567	0.90	1215	

B-3 Geochemical Analyses of the Orange Area (19)

No.	Sample No.	Rock Name	Rock Code	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Sc	Y	U	Th	Nb	Ta	Zr	Mn	Sr	P	Fe %	T-R203 ppm
811	T-8A	Beforsite, Ank	Mcd	3790	5230	1810	186.0	29.4	9.9	10.0	1.3	9.6	119	1	16	5	4	6	12860	12000	4830	4.72	13761
812	T-9A	Sovite, Hbl	Mcs	189	267	117	21.5	6.0	2.2	3.2	0.5	1.6	51	3	14	4	2	708	1260	6140	100	0.85	783
813	T-10A	Gneiss, Qtz-Fd, fenitized	Mgn	60	111	54	7.5	1.9	1.5	2.3	0.4	3.0	18	7	117	2	2	55	258	212	258	0.56	316
814	T-11A	Syenite	Msu	22	41	12	3.0	0.9	0.5	0.6	0.1	0.8	1	4	5	48	2	291	544	295	334	2.01	107
815	T-12A	Gneiss, Qtz-Fd, fenitized	Mgn	32	69	21	4.5	1.3	0.8	0.8	0.1	2.3	4	1	4	24	2	70	372	61	383	1.56	170
816	T-13A	Sovite-beforsite	Mcs	346	552	219	38.7	13.5	3.4	5.0	0.6	2.2	111	3	18	462	3	3	3120	7340	7770	0.72	1509
MJNO-1																							
817	1-0	Beforsite, weathered	Mcb1	42	79	22	5.2	0.9	0.7	0.9	0.1	7.4	9	4	3	56	2	3	8560	8360	100	5.71	196
818	1-5	Beforsite, weathered	Mcb1	142	228	66	8.4	1.2	1.6	0.7	0.1	6.4	8	5	9	167	4	3	8560	8710	100	7.83	568
819	1-10	Beforsite	Mcb1	55	91	28	4.9	0.8	0.6	0.1	5.5	8	8	28	6	269	8	4	8334	10008	625	4.85	233
820	1-15	Beforsite	Mcb1	10830	10023	1556	270.1	39.7	7.4	1.0	0.1	4.5	41	14	123	955	18	3	8500	10194	24240	5.41	27662
821	1-20	Beforsite	Mcb1	79	108	35	3.1	2.0	0.6	0.5	0.1	4.7	7	7	7	331	9	3	9636	11458	6070	5.39	289
822	1-25	Beforsite	Mcb1	79	165	31	2.0	1.5	0.5	0.4	0.1	4.7	4	15	6	872	18	3	5918	7526	100	6.58	349
823	1-30	Beforsite	Mcb1	36	110	37	4.9	1.6	0.7	0.5	0.1	4.7	7	3	11	149	7	3	8546	11780	2406	4.95	246
824	1-35	Beforsite, weathered	Mcb1	150	292	71	7.8	2.2	1.0	1.2	0.2	5.1	11	6	13	132	5	33	7158	1783	160	4.69	660
825	1-40	Beforsite	Mcb1	1020	1617	840	110.6	17.1	5.1	2.0	0.2	12.7	32	10	124	199	8	31	9778	3062	4364	8.58	4553
826	1-45	Beforsite	Mcb1	51	118	42	5.0	1.4	0.7	0.7	0.1	8.9	8	2	10	31	2	3	10296	1771	100	5.48	281
827	1-50	Beforsite	Mcb1	987	1312	366	51.3	11.0	2.6	0.9	0.1	3.6	16	10	53	850	15	12	5276	9282	17520	10.20	3380
828	1-55	Arkose, Bre. & carbonated	Nsh	1561	1862	682	103.7	25.1	9.2	13.4	1.9	11.2	188	24	155	1617	87	60	10004	4682	16386	10.52	5377
829	1-60	Arkose, Bre., cut by beforosite	Nsh	4105	4485	1222	155.3	32.4	11.6	16.1	2.2	10.1	187	31	89	822	30	85	8904	5280	17242	10.62	12428
830	1-65	Arkose, Bre. & carbonated	Nsh	598	1019	401	80.3	23.5	11.4	28.0	3.9	22.4	314	42	260	739	31	303	2840	4026	43760	10.08	2874
831	1-70	Arkose, Bre. & carbonated	Nsh	1309	2341	1047	271.8	80.3	37.3	36.5	4.3	10.0	710	24	657	344	13	44	1090	3414	67040	5.93	6882
832	1-75	Arkose, Bre. & carbonated	Nsh	125	217	70	9.6	3.3	1.5	0.9	0.1	0.7	15	14	14	163	11	37	191	4230	5412	2.89	946
833	1-80	Arkose, Bre. & carbonated	Nsh	143	265	108	21.8	5.2	2.4	2.5	0.3	15.2	30	12	10	118	6	221	463	260	6606	6.12	715
834	1-110	Syenite, carbonated	Msu	188	345	156	30.0	7.5	3.7	1.9	0.2	4.7	38	100	41	627	58	127	1242	411	11612	11.84	956
835	1-115	Syenite, carbonated	Msu	693	1828	429	118.2	30.6	12.6	8.0	1.0	1.7	171	88	79	576	33	233	836	2864	66440	9.31	3402
836	1-117	Syenite, carbonated	Msu	445	923	313	81.4	21.4	10.2	4.4	0.5	1.3	97	128	45	696	48	141	1023	2558	56520	11.17	2349
837	1-120	Syenite, carbonated	Msu	251	464	165	43.8	12.0	6.1	8.2	1.0	4.8	110	45	73	325	27	14	4704	4524	15464	2.25	1278
838	1-122	Syenite, carbonated	Msu	526	948	309	76.5	19.7	5.4	5.3	0.7	2.5	98	15	27	611	69	498	2471	3626	25700	8.09	2394
839	1-125	Syenite, carbonated	Msu	810	1250	346	133.1	34.5	9.9	6.7	0.8	5.9	155	54	52	1199	65	414	5476	4528	16688	2.27	2411
840	1-130	Syenite, carbonated	Msu	331	669	496	52.7	15.2	4.3	5.4	0.7	2.4	88	133	29	532	42	359	869	1840	41680	11.44	2038
842	1-135	Syenite, carbonated	Msu	995	1882	692	185.1	46.9	15.8	10.5	1.2	0.7	190	175	87	624	35	125	1705	3780	77380	10.61	4953
843	1-137	Syenite, carbonated	Msu	222	340	156	26.2	7.9	3.3	5.4	0.7	0.7	73	21	5	164	10	104	4064	6988	7778	3.49	995
844	1-140	Syenite, carbonated	Msu	257	483	170	35.9	10.0	4.5	7.2	1.0	1.1	105	81	51	1545	98	402	1940	3060	30500	5.27	1280
845	1-145	Syenite, carbonated	Msu	102	206	74	14.7	4.0	1.3	1.6	0.2	0.5	26	8	6	363	32	207	1115	2358	6684	3.21	522
846	1-147	Syenite, carbonated	Msu	344	784	272	51.8	13.5	4.3	5.4	0.7	0.5	90	14	30	278	31	42	3060	3885	20320	4.35	1895
847	1-150	Syenite, carbonated	Msu	962	1316	367	55.5	14.7	5.4	6.2	0.8	0.5	96	13	30	189	13	643	3558	2856	12380	3.74	3438
MJNO-2																							
848	2-0	Beforsite, An	Mcb1	229	360	108	19.6	4.1	1.8	0.7	0.1	5.9	15	3	17	103	5	10	8300	6414	2356	4.17	912
849	2-5	Beforsite, An	Mcb1	522	780	238	38.3	10.2	2.2	1.7	0.2	7.3	35	3	26	279	6	16	7658	5778	15005	5.68	1990
850	2-10	Beforsite, An	Mcb1	566	943	230	29.7	6.3	2.1	0.7	0.1	5.8	14	2	32	260	5	8	8130	7585	100	4.80	2206
851	2-15	Beforsite, An	Mcb1	60	106	32	5.9	1.6	0.9	1.0	0.1	4.9	13	3	15	1312	4	6	7216	7740	5124	3.92	298
852	2-17	Beforsite, An	Mcb1	86	173	48	7.0	1.8	0.9	0.7	0.1	5.4	9	2	14	345	2	10	7730	6672	2908	4.58	403
853	2-20	Beforsite, An	Mcb1	156	275	80	13.6	4.0	1.4	0.7	0.1	6.3	9	1	17	21	2	6	8146	6348	5934	3.91	674

B-3 Geochemical Analyses of the Orange Area (20)

No.	Sample No.	Rock Name	Rock Code	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm	Y ppm	U ppm	Th ppm	Ta ppm	Wb ppm	Zr ppm	Mn ppm	Sr ppm	P ppm	Fe %	F-R203 ppm		
854	2-22	Beforsite, An	Mcb1	131	264	64	9.7	2.9	0.9	0.7	0.1	5.2	11	1	53	310	9	8175	7130	2780	4.19	594			
855	2-25	Beforsite, An	Mcb1	263	567	132	16.9	3.6	1.5	1.3	0.2	5.6	17	6	29	1669	11	16	10970	6616	5254	7.23	1233		
856	2-27	Beforsite, An	Mcb1	172	270	82	17.9	4.6	1.5	1.8	0.2	8.9	28	17	52	1901	24	20	11222	6686	23360	5.43	700		
857	2-30	Beforsite, An	Mcb1	133	179	65	11.3	4.5	1.4	1.8	0.2	8.9	27	3	18	477	8	9	11352	7032	28660	6.06	509		
858	2-32	Beforsite, weathered	Mcb1	184	283	36	4.4	1.0	0.4	0.8	0.1	3.5	6	7	16	892	21	17	5762	3606	4010	6.62	637		
859	2-33	Beforsite, weathered	Mcb1	285	358	82	12.0	1.9	1.0	1.0	0.1	3.9	9	3	6	173	4	9	4616	4242	10918	5.79	918		
860	2-37	Beforsite, weathered	Mcb1	225	311	88	12.3	2.0	1.4	1.0	0.1	3.9	7	2	6	297	8	7	8190	7332	3952	4.40	804		
861	2-40	Beforsite, weathered	Mcb1	172	414	70	8.8	1.1	0.8	0.5	0.1	2.4	7	3	8	368	10	14	4994	3284	1935	5.53	825		
862	2-42	Beforsite, weathered	Mcb1	174	237	56	11.6	2.4	1.5	2.2	0.3	7.6	7	4	20	371	7	25	8516	8108	20190	5.74	615		
863	2-45	Beforsite, weathered	Mcb1	158	255	92	18.4	3.8	0.9	0.8	0.1	4.3	11	4	31	687	15	21	6324	4186	5244	5.27	667		
864	2-47	Beforsite, weathered	Mcb1	168	219	54	8.0	1.4	1.1	0.7	0.1	4.8	9	9	12	1538	19	23	14984	5432	8646	5.14	566		
865	2-50	Beforsite, weathered	Mcb1	215	334	70	10.9	1.8	1.2	0.8	0.1	3.7	10	3	10	234	6	41	6304	5050	4448	4.93	790		
866	2-55	Beforsite, weathered	Mcb1	275	349	104	16.0	4.7	1.3	1.3	0.2	7.5	19	2	40	244	5	29	10026	5810	2472	6.05	940		
867	2-60	Beforsite, weathered	Mcb1	168	223	66	9.7	2.0	1.2	1.6	0.2	3.8	19	3	7	114	2	54	1499	4630	3084	4.18	596		
868	2-65	Beforsite, weathered	Mcb1	23	35	24	5.8	0.6	1.4	2.7	0.4	4.7	17	17	1	247	16	848	1488	788	100	18.81	135		
869	2-67	Beforsite, weathered	Mcb1	103	190	48	7.3	1.3	1.2	1.7	0.2	5.7	13	12	32	432	13	519	4525	3150	102	14.85	451		
870	2-70	Beforsite, weathered	Mcb1	259	517	139	25.9	6.2	1.8	0.8	0.1	8.6	16	2	121	791	6	13	8854	5872	1478	5.78	1240		
871	2-72	Beforsite, An	Mcb1	108	189	51	12.2	3.5	1.5	1.8	0.3	7.2	23	17	55	3957	51	33	8022	7284	17070	4.78	474		
872	2-75	Beforsite, An	Mcb1	225	283	76	10.9	2.4	1.0	0.9	0.1	6.4	14	7	18	955	19	11	7528	7314	7030	5.02	747		
873	2-77	Beforsite, fractured	Mcb1	107	210	48	7.6	1.6	1.0	1.4	0.2	6.7	16	5	11	1657	4	21	7596	6610	4190	4.03	477		
874	2-80	Beforsite, fractured	Mcb1	360	494	135	19.5	4.2	1.8	1.9	0.2	4.6	22	8	20	555	14	157	8762	2838	8316	8.18	172		
875	2-85	Beforsite, fractured	Mcb1	206	302	74	10.1	2.4	0.9	1.2	0.2	5.1	17	6	34	2286	14	34	5984	4714	8518	5.05	745		
876	2-109	Beforsite, fractured	Mcb1	185	456	69	8.7	2.4	1.1	0.5	0.1	3.3	9	3	3	905	11	15	5020	3666	12580	5.10	909		
877	2-122	Beforsite, fractured	Mcb1	76	113	32	4.3	1.2	0.6	0.6	0.1	2.1	6	4	4	616	13	26	2888	1370	412	5.94	288		
878	2-135	Beforsite, fractured	Mcb1	58	83	26	4.3	1.0	0.6	0.6	0.1	8.0	7	7	3	60	2	10	9560	8202	2796	3.29	222		
MJNO-3																									
879	3-0	Beforsite, weathered	Mcb1	93	142	52	8.4	2.1	0.6	0.5	0.1	9.0	8	8	13	13	13	3	6796	9050	100	2.71	377		
880	3-5	Beforsite, An	Mcb1	233	410	142	20.8	4.1	2.0	1.0	0.1	7.7	14	3	53	147	7	13	10786	4420	100	8.42	1029		
881	3-10	Beforsite, sulfide rich	Mcb1	71	115	45	9.8	1.7	1.0	0.6	0.1	7.8	7	6	8	799	2	5	7686	7514	100	4.92	315		
882	3-15	Beforsite, sulfide rich	Mcb1	100	166	68	11.7	2.3	1.2	0.7	0.1	8.7	9	1	7	12	2	4	8302	7774	100	3.61	448		
883	3-20	Beforsite, sulfide rich	Mcb1	128	200	90	16.4	3.3	1.1	0.6	0.1	7.7	13	1	14	3	2	3	6320	12022	100	2.38	559		
884	3-25	Beforsite, weathered	Mcb1	157	223	88	10.0	3.2	1.0	0.6	0.1	5.9	8	1	18	4	2	6	8140	7770	100	4.71	609		
885	3-30	Beforsite, sulfide rich	Mcb1	74	134	50	6.9	1.7	0.7	0.5	0.1	10.3	6	1	8	21	3	6	8128	10056	100	5.13	941		
886	3-35	Beforsite, weathered	Mcb1	120	207	94	13.2	2.6	0.8	0.5	0.1	10.6	7	1	15	15	3	8	9594	5983	100	5.93	555		
887	3-40	Beforsite, weathered	Mcb1	100	147	51	8.5	1.6	0.9	0.5	0.1	9.7	6	14	8	1737	2	8	7292	17174	100	4.47	393		
888	3-45	Beforsite, weathered	Mcb1	101	191	59	8.1	1.8	0.8	0.5	0.1	8.0	7	14	13	3039	2	6	8160	10082	100	4.70	457		
889	3-50	Beforsite, sulfide rich	Mcb1	228	343	109	14.4	2.5	1.2	1.0	0.1	7.8	8	1	26	86	2	6	7498	10838	100	3.55	877		
890	3-55	Beforsite, sulfide rich	Mcb1	82	162	62	9.9	2.1	1.1	0.7	0.1	6.9	7	1	22	10	2	6	7134	9124	100	3.14	411		
891	3-60	Beforsite, weathered	Mcb1	91	154	71	9.8	2.1	1.0	0.8	0.1	5.1	6	3	6	1104	2	3	6410	8370	100	3.24	423		
892	3-65	Beforsite, weathered	Mcb1	58	142	45	6.2	1.4	0.8	0.9	0.1	6.4	6	9	13	2520	2	3	7500	8346	100	4.92	340		
893	3-70	Beforsite, sulfide rich	Mcb1	51	97	31	7.2	1.2	0.7	0.5	0.1	5.4	5	5	5	919	2	4	6298	6834	100	3.97	242		
894	3-75	Beforsite, sulfide rich	Mcb1	57	122	37	4.9	1.2	0.5	0.4	0.1	7.9	5	8	9	945	2	3	8089	8816	100	6.16	282		
895	3-80	Beforsite, sulfide rich	Mcb1	78	181	49	8.9	1.5	0.7	0.4	0.1	5.2	6	2	7	533	2	8	6403	8050	100	3.38	404		
896	3-85	Beforsite, weathered	Mcb1	48	105	33	5.6	1.0	0.5	0.4	0.1	4.4	5	7	5	1573	4	3	16630	6704	100	6.75	246		
897	3-90	Beforsite, weathered	Mcb1	69	162	50	7.2	1.4	0.7	0.4	0.1	4.3	6	1	4	449	2	11	5961	6814	100	4.35	369		

B-3 Geochemical Analyses of the Orange Area (21)

No.	Sample No.	Rock Name	Rock Code	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm	Y ppm	U ppm	Th ppm	Nb ppm	Ta ppm	Zr ppm	Mn ppm	Sr ppm	P ppm	Fe %	T-R203 ppm	
898	3-95	Beforsite, weathered	Mcb1	408	741	307	41.5	7.2	3.0	0.7	0.1	4.1	13	6	216	680	6	7	8564	12522	100	11.18	1904	
899	3-100	Beforsite, Fe oxide rich	Mcb1	117	204	61	7.9	1.9	0.7	0.6	0.1	6.9	8	2	5	28	2	14	8296	7996	100	5.51	494	
900	3-105	Beforsite, Fe oxide rich	Mcb1	274	744	343	45.3	7.6	1.6	0.5	0.1	6.6	10	3	94	1266	2	8	6122	7310	100	4.36	1789	
901	3-110	Beforsite, An	Mcb1	48	95	30	4.6	1.0	0.6	0.5	0.1	6.0	6	3	3	1416	2	6	7954	7494	100	4.36	230	
902	3-115	Beforsite, weathered	Mcb1	535	807	187	20.3	3.4	1.0	0.6	0.1	7.7	9	1	99	53	2	3	6980	11596	217	3.31	1916	
903	3-120	Beforsite, weathered	Mcb1	43	114	30	5.2	1.0	0.7	0.6	0.1	6.1	6	3	2	716	2	6	7828	6682	100	4.41	250	
904	3-125	Beforsite, sulfide rich	Mcb1	475	806	255	34.7	6.9	2.0	0.5	0.1	5.6	12	6	51	370	6	3	7715	5994	100	12.99	1972	
905	3-130	Beforsite, sulfide rich	Mcb1	90	187	59	9.3	2.1	1.0	0.4	0.1	5.8	7	1	5	70	2	3	5511	6578	100	2.79	443	
906	3-135	Beforsite, sulfide rich	Mcb1	198	326	55	7.7	1.9	0.9	0.5	0.1	5.9	7	1	6	162	2	2	3	5456	6870	100	3.06	730
907	3-140	Beforsite, sulfide rich	Mcb1	120	276	74	10.2	2.2	0.8	0.6	0.1	6.5	8	2	21	780	2	3	6154	6706	100	3.07	608	
908	3-145	Beforsite, sulfide rich	Mcb1	58	115	31	6.6	1.2	0.8	0.4	0.1	4.3	6	3	5	369	2	2	3	6330	6154	100	4.93	272
909	3-150	Beforsite, sulfide rich	Mcb1	119	236	71	11.3	2.3	0.9	0.6	0.1	7.3	9	1	12	292	2	3	5895	7415	100	2.73	557	
MJNO-4																								
910	4-0	Beforsite, weathered	Mcb1	46	107	28	5.4	0.8	0.7	0.8	0.1	4.4	5	3	15	33	2	3	5490	5812	100	2.74	243	
911	4-5	Beforsite, weathered	Mcb1	38	74	28	4.7	0.9	0.7	0.4	0.1	4.5	5	3	15	1574	13	4	6274	5460	100	3.91	190	
912	4-10	Beforsite, weathered	Mcb1	46	84	30	3.7	0.8	0.6	0.5	0.1	4.4	6	1	7	835	2	3	6932	5726	100	3.01	213	
913	4-15	Beforsite, sulfide rich	Mcb1	98	201	75	17.6	4.2	1.1	0.5	0.1	5.7	14	2	49	2831	11	14	5855	6318	6564	3.07	507	
914	4-20	Beforsite, sulfide rich	Mcb1	30	62	25	4.5	1.0	0.7	0.6	0.1	9.3	5	11	140	7391	113	23	4549	4956	10026	5.42	164	
915	4-25	Beforsite, Fe oxide rich	Mcb1	29	64	22	5.2	1.0	0.7	0.4	0.1	14.8	5	7	74	4598	94	8	4349	4756	6500	8.82	160	
916	4-30	Beforsite, Fe oxide rich	Mcb1	25	72	17	4.8	1.0	0.7	0.4	0.1	5.2	5	14	114	6098	103	44	5973	4502	100	5.18	158	
917	4-35	Beforsite, sulfide rich	Mcb1	99	178	41	6.9	1.5	0.7	0.5	0.1	6.2	7	13	12	5678	2	4	5716	5194	100	3.10	411	
918	4-40	Beforsite, Fe oxide rich	Mcb1	931	1384	277	53.3	10.0	1.2	0.7	0.1	6.3	15	1	71	116	2	3	6107	5212	100	3.34	3262	
919	4-45	Beforsite, weathered	Mcb1	112	199	75	12.6	2.9	1.0	0.6	0.1	8.7	11	5	10	1879	2	2	3	5528	5314	100	3.02	1302
920	4-50	Beforsite, weathered	Mcb1	129	230	47	8.9	2.0	1.1	0.9	0.1	8.3	13	4	11	216	3	3	3	5348	5634	100	2.81	512
921	4-55	Beforsite, weathered	Mcb1	116	201	46	8.1	2.1	1.1	0.5	0.1	5.8	9	12	14	5177	2	2	3	5952	5392	100	3.02	473
922	4-60	Beforsite, weathered	Mcb1	132	230	55	11.3	2.9	0.7	0.8	0.1	9.9	11	1	15	36	2	2	3	5746	4160	100	3.45	542
923	4-65	Beforsite	Mcb1	105	202	49	7.1	2.1	0.7	0.7	0.1	7.5	10	2	11	300	2	3	3	5616	6292	100	2.86	461
924	4-70	Beforsite	Mcb1	146	268	55	11.1	2.5	1.2	0.5	0.1	6.0	9	1	11	5	2	3	8026	7220	100	3.00	608	
925	4-75	Beforsite, weathered	Mcb1	86	160	34	7.6	1.7	1.0	0.6	0.1	7.2	10	12	12	1570	2	2	3	5812	3630	100	2.73	389
926	4-80	Beforsite	Mcb1	562	764	142	28.8	5.7	1.8	1.1	0.2	5.4	16	4	43	568	2	2	3	6173	5112	100	3.28	1858
927	4-85	Beforsite	Mcb1	190	324	64	11.4	2.5	1.2	1.0	0.1	6.5	13	11	24	3298	2	2	3	5745	5644	100	3.00	743
928	4-90	Beforsite	Mcb1	387	580	110	21.3	5.3	1.8	1.0	0.1	6.6	16	6	52	1965	2	2	3	6200	4484	100	3.57	1373
929	4-95	Beforsite, weathered	Mcb1	493	752	219	30.6	6.6	1.6	1.0	0.1	6.5	15	2	52	494	2	2	3	5822	5638	100	3.13	1870
930	4-100	Beforsite, weathered	Mcb1	80	165	64	8.5	1.7	0.8	0.8	0.1	5.3	11	28	13	7368	2	2	3	5298	6010	100	2.65	409
931	4-105	Beforsite	Mcb1	154	256	92	10.6	2.5	0.9	1.0	0.1	7.3	13	2	14	777	2	2	3	5058	5978	100	4.15	652
932	4-110	Beforsite, weathered	Mcb1	214	351	102	15.4	3.5	1.5	0.9	0.1	7.5	13	1	31	17	2	3	5995	7432	100	2.87	866	
933	4-115	Beforsite, weathered	Mcb1	276	382	130	10.7	2.3	0.9	0.7	0.1	6.5	11	2	74	414	2	2	3	6768	4996	100	3.72	939
934	4-120	Beforsite, weathered	Mcb1	48	87	34	7.0	1.2	0.7	0.6	0.1	5.9	9	5	4	1121	2	2	3	6400	5634	100	3.14	282
935	4-125	Beforsite	Mcb1	86	83	20	4.0	0.9	0.6	0.7	0.1	4.0	7	5	43	6324	2	2	3	5998	4930	100	5.53	211
936	4-130	Beforsite, weathered	Mcb1	81	145	46	6.6	1.1	1.1	0.6	0.1	5.6	7	1	3	126	2	2	3	5890	6234	100	2.93	360
937	4-135	Beforsite	Mcb1	25	45	18	5.4	0.7	0.7	0.5	0.1	4.9	6	1	1	225	2	2	3	8580	4934	100	4.39	127
938	4-140	Beforsite, weathered	Mcb1	92	146	49	9.4	1.2	0.7	0.7	0.1	7.3	8	1	4	8	2	2	3	6243	5556	100	2.92	383
939	4-145	Beforsite, sulfide rich	Mcb1	62	142	42	4.9	1.3	0.7	0.5	0.1	5.3	7	5	11	2577	2	2	3	6242	5890	100	3.49	322
940	4-150	Beforsite, sulfide rich	Mcb1	62	142	42	4.9	1.3	0.7	0.5	0.1	5.3	7	5	11	2577	2	2	3	6242	5890	100	3.49	322

B-3 Geochemical Analyses of the Orange Area (22)

No.	Sample No.	Rock Name	Rock Code	La ppm	Ce ppm	Nd ppm	Sm ppm	Ba ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm	Y ppm	U ppm	Th ppm	Nb ppm	Ta ppm	Zr ppm	Mn ppm	Sr ppm	P ppm	Fe %	T-R203 ppm	
941	5-0	Beforsite, weathered	Mcb1	177	292	93	18.5	3.6	1.5	0.7	0.1	6.3	11	4	9	175	4	3	7414	5418	100	6.91	742	
942	5-5	Beforsite, weathered	Mcb1	321	496	101	16.9	3.3	1.3	0.9	0.1	3.8	9	7	13	1347	9	9	5764	4314	2572	5.14	1167	
943	5-10	Beforsite, weathered	Mcb1	232	342	96	15.1	3.3	1.2	0.5	0.1	5.1	7	2	15	403	8	3	8584	6274	< 100	6.40	862	
944	5-15	Beforsite, weathered	Mcb1	291	397	72	12.8	2.6	0.9	1.0	0.1	3.7	8	1	28	21	2	3	6706	5172	< 100	3.28	960	
945	5-20	Beforsite, weathered	Mcb1	184	290	104	14.5	2.3	1.3	0.8	0.1	3.7	6	5	13	1180	4	3	6535	5358	< 100	4.36	750	
946	5-25	Beforsite, Phl rich	Mcb1	151	231	94	10.7	2.6	1.0	0.9	0.1	3.7	6	3	13	903	4	4	6519	5302	407	3.01	624	
947	5-30	Beforsite, Phl rich	Mcb1	102	165	50	11.4	2.2	0.7	0.4	0.1	3.9	5	1	5	182	3	3	7298	5784	130	4.45	419	
948	5-34	Beforsite, Phl rich	Mcb1	205	369	110	15.3	4.3	1.5	0.6	0.1	3.6	9	1	6	158	2	3	7443	6390	4504	2.94	876	
949	5-40	Beforsite, Phl rich	Mcb1	166	286	76	15.2	3.0	1.1	0.7	0.1	3.9	10	7	20	632	7	10	7447	5618	4480	3.56	689	
950	5-45	Beforsite, Phl rich	Mcb1	183	287	76	15.6	2.8	1.2	0.4	0.1	4.5	6	4	21	813	7	3	7297	4500	1119	5.12	685	
951	5-47	Beforsite, Phl rich	Mcb1	207	403	83	15.7	2.5	1.5	0.5	0.1	3.5	7	19	21	1009	11	6	5744	4232	2180	4.65	893	
952	5-50	Beforsite, Phl rich	Mcb1	143	280	64	14.5	2.5	1.0	0.4	0.1	4.2	6	8	33	3023	6	7	5408	4568	1688	4.77	633	
953	5-55	Beforsite, Phl rich	Mcb1	139	222	64	14.8	2.9	1.2	0.5	0.1	4.8	10	10	8	714	13	13	3056	4990	5860	5.85	561	
954	5-60	Beforsite, Phl rich	Mcb1	132	216	75	12.1	2.2	1.0	0.4	0.1	3.7	6	60	17	1594	14	17	5994	4234	1330	5.06	554	
955	5-65	Beforsite, Fe oxide rich	Mcb1	77	191	72	8.9	1.7	0.7	0.4	0.1	4.7	5	26	39	3590	8	9	6808	4734	< 100	4.28	446	
956	5-67	Beforsite, Fe oxide rich	Mcb1	45	87	34	6.6	1.2	0.7	0.4	0.1	4.9	5	2	4	482	2	2	3	5552	5382	< 100	2.34	226
957	5-70	Beforsite, Fe oxide rich	Mcb1	64	103	38	7.3	1.3	0.8	0.4	0.1	5.3	4	14	20	1579	12	3	5420	3900	< 100	4.69	274	
958	5-75	Beforsite, Fe oxide rich	Mcb1	80	129	46	9.7	1.3	0.9	0.4	0.1	4.0	5	1	1	34	2	3	6303	5556	< 100	2.94	340	
959	5-80	Beforsite, Fe oxide rich	Mcb1	84	130	40	6.7	1.2	0.6	0.4	0.1	3.8	5	3	9	459	7	3	3526	5010	< 100	4.31	331	
960	5-85	Beforsite, sulfide rich	Mcb1	164	185	68	13.1	2.4	1.0	0.5	0.1	4.3	6	1	18	603	7	9	5944	5342	3076	3.08	350	
961	5-90	Beforsite, sulfide rich	Mcb1	92	117	46	8.3	1.5	0.8	0.4	0.1	4.1	5	1	6	181	2	3	6863	6712	< 100	4.44	546	
962	5-92	Beforsite, sulfide rich	Mcb1	79	97	36	7.4	1.4	0.8	0.4	0.1	4.4	5	1	16	25	2	3	7372	6916	< 100	3.78	283	
963	5-96	Beforsite, sulfide rich	Mcb1	96	130	64	9.8	1.9	0.7	0.6	0.1	6.8	8	18	25	4611	12	4	5856	5620	4786	4.11	385	
964	5-100	Beforsite, sulfide rich	Mcb1	318	422	146	20.7	3.8	1.2	1.1	0.1	5.1	15	6	37	5756	4	4	5300	4750	1588	7.37	1140	
965	5-105	Beforsite, sulfide rich	Mcb1	467	914	540	110.2	27.6	8.4	4.6	0.3	0.5	104	1	5	1278	2	3	3568	8076	45520	4.44	2698	
966	6-0	Beforsite, weathered	Mcb2	926	1302	852	160.9	36.4	10.3	10.5	1.1	7.6	185	16	127	15090	2	3	2734	8062	40720	6.38	4259	
967	6-5	Beforsite, sulfide rich	Mcb2	212	359	180	43.5	10.5	2.9	2.5	0.3	1.0	46	1	10	1057	2	3	5998	8294	12532	2.80	1049	
968	6-10	Beforsite, sulfide rich	Mcb2	63	97	34	8.0	1.6	0.7	0.8	0.1	3.9	9	5	15	3511	2	3	6014	6366	< 100	4.13	263	
969	6-15	Beforsite, sulfide rich	Mcb2	66	88	32	5.1	0.8	0.8	0.8	0.1	7.4	7	11	8	4532	2	3	6318	5054	< 100	4.88	249	
970	6-20	Beforsite, sulfide rich	Mcb2	62	71	28	4.6	1.5	0.6	0.7	0.1	3.9	9	1	20	29	2	3	6730	7398	< 100	3.39	216	
971	6-25	Beforsite, sulfide rich	Mcb2	73	85	26	5.0	0.8	0.7	0.9	0.1	9.2	7	4	11	1094	2	3	6515	3968	< 100	4.87	244	
972	6-30	Beforsite, sulfide rich	Mcb2	52	60	26	4.6	1.0	0.7	0.7	0.1	4.5	8	4	17	2503	2	3	6188	7518	< 100	3.32	188	
973	6-35	Beforsite, sulfide rich	Mcb2	125	130	50	8.6	2.0	1.0	0.6	0.1	4.5	9	4	44	1963	2	3	6636	7062	< 100	2.95	402	
974	6-40	Beforsite, sulfide rich	Mcb2	177	200	76	13.4	2.4	0.6	0.5	0.1	0.5	6	4	28	502	4	3	1800	2522	5030	6.28	587	
975	6-45	Beforsite, Phl rich	Mcb2	59	76	32	8.2	2.2	0.9	0.9	0.1	1.9	19	2	96	582	2	2	6876	11502	4036	2.91	234	
976	6-50	Beforsite, sulfide rich	Mcb2	84	105	40	9.4	2.3	0.9	0.7	0.1	3.0	15	2	30	1055	2	3	7266	11596	12378	2.83	311	
977	6-55	Beforsite, sulfide rich	Mcb2	45	69	28	6.9	1.9	1.0	0.6	0.1	2.2	12	2	30	655	2	3	8284	8368	9606	3.14	202	
978	6-60	Beforsite, sulfide rich	Mcb2	65	110	50	13.4	2.8	1.0	0.7	0.1	3.3	12	4	53	1819	2	3	8034	7180	10424	4.36	315	
979	6-65	Beforsite, sulfide rich	Mcb2	407	622	240	45.9	14.6	4.0	0.9	0.1	5.0	26	6	330	1508	2	3	5258	5932	496	4.64	1694	
980	6-70	Beforsite, sulfide rich	Mcb2	168	196	74	14.0	3.4	1.5	0.8	0.1	2.9	15	6	50	484	2	3	6758	9340	4238	3.12	582	
981	6-75	Beforsite, Phl rich	Mcb2	112	149	50	10.9	2.5	1.2	0.7	0.1	4.1	11	4	48	2645	2	3	7650	7908	1991	3.63	417	
982	6-80	Beforsite	Mcb2	166	265	56	10.1	2.4	0.8	0.7	0.1	3.9	15	1	43	102	2	3	7788	9226	5144	3.01	624	
983	6-85	Beforsite	Mcb2	41	52	22	7.7	2.1	0.9	1.1	0.1	5.6	21	4	41	1297	2	3	7638	10898	21520	3.30	170	
984	6-90	Beforsite, sulfide rich	Mcb2	41	52	22	7.7	2.1	0.9	1.1	0.1	5.6	21	4	41	1297	2	3	7638	10898	21520	3.30	170	



B-3 Geochemical Analyses of the Orange Area (23)

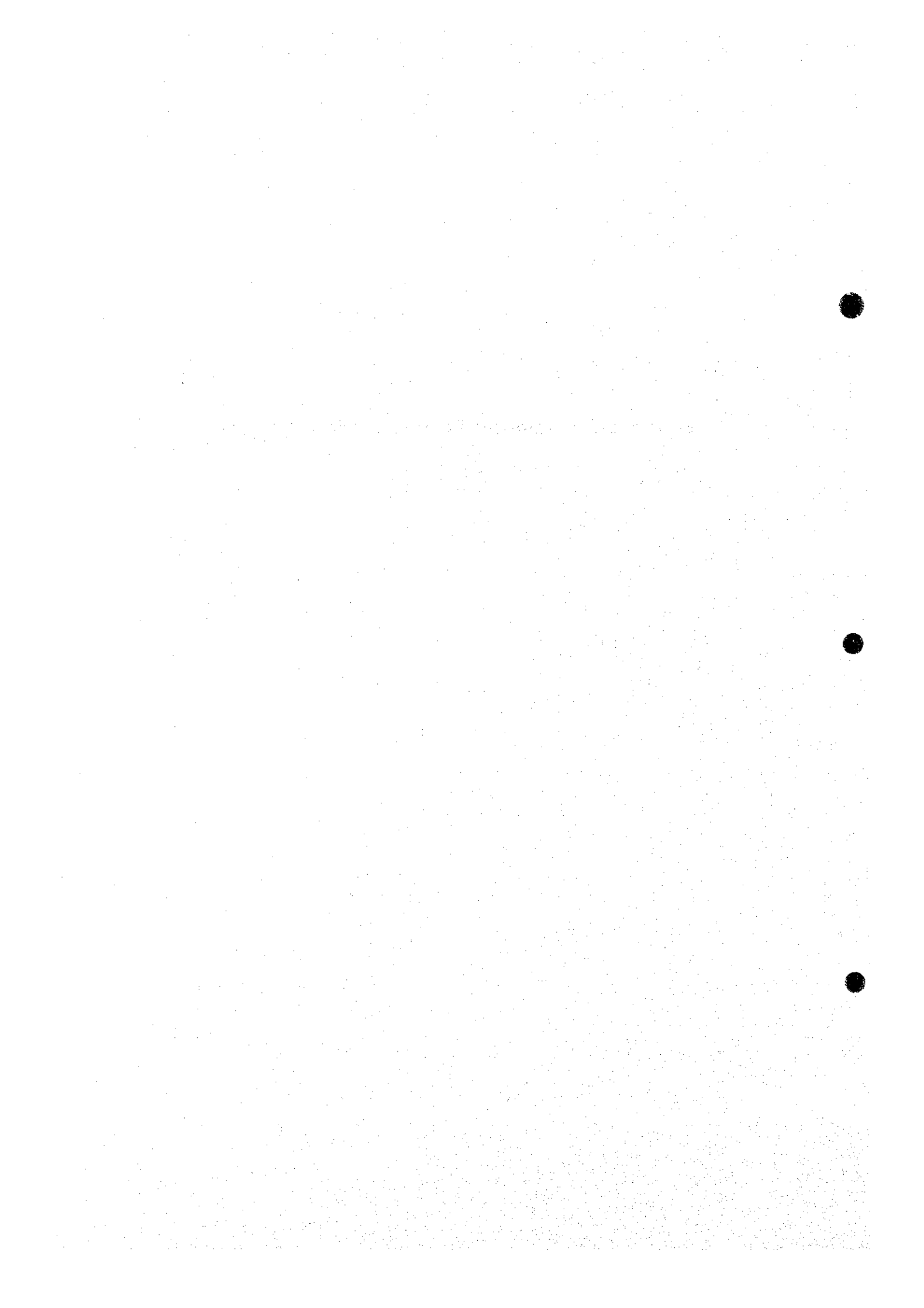
No.	Sample No.	Rock Name	Rock Code	La ppm	Ce ppm	Hf ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm	Y ppm	U ppm	Th ppm	Nb ppm	Ta ppm	Zr ppm	Hf ppm	Sr ppm	P ppm	Fe %	T-203 ppm		
985	6-95	Beforsite, sulfide rich	Mcb2	190	220	80	15.9	3.4	1.5	3.2	0.4	9.0	31	1	7	1477	<	2	5	7182	9568	25600	3.31	657	
986	6-100	Beforsite, sulfide rich	Mcb2	253	363	172	31.7	7.4	1.8	1.2	0.1	5.8	28	1	5	588	<	2	3	6948	9534	7014	2.16	1053	
987	6-105	Beforsite, sulfide rich	Mcb2	174	299	146	38.2	9.8	2.4	1.9	0.2	7.0	36	1	4	892	<	2	3	6444	6462	11086	2.60	869	
988	6-110	Beforsite, Ap rich	Mcb2	188	264	154	30.0	9.9	2.7	2.9	0.3	13.1	43	1	4	3622	<	2	3	6816	11540	6932	3.33	879	
989	6-115	Beforsite, Ap rich	Mcb2	188	264	154	30.0	9.9	2.6	2.3	0.3	7.3	43	1	7	2360	<	2	3	6222	7312	12660	2.51	846	
990	6-120	Beforsite, Ap rich	Mcb2	112	159	86	20.7	5.7	2.6	2.4	0.3	4.6	32	1	3	216	<	2	3	6470	7502	4056	2.07	518	
991	6-125	Beforsite, Ap rich	Mcb2	307	499	228	61.7	15.9	5.1	6.2	0.7	9.0	89	1	3	3508	<	2	3	4516	9756	11490	2.33	1471	
992	6-130	Beforsite, Ap rich	Mcb2	330	477	266	74.8	19.4	5.8	7.3	0.8	5.9	104	1	7	6388	<	2	3	3590	10600	15492	2.17	1549	
993	6-135	Beforsite, Ap rich	Mcb2	139	206	144	32.0	14.4	4.6	4.5	0.4	3.1	73	1	10	10660	<	2	3	4440	8054	23700	3.65	744	
994	6-142	Beforsite, Phl rich	Mcb2	368	744	325	63.2	16.5	8.7	7.4	1.0	1.8	111	1	8	163	<	2	3	6038	13392	3040	1.40	2023	
995	6-145	Beforsite, Phl rich	Mcb2	218	444	188	36.4	8.7	5.0	3.6	0.5	1.0	54	4	3	639	<	2	3	3346	8578	1561	2.29	1188	
996	6-150	Syenite	Msu	890	1425	482	74.2	15.2	7.2	6.0	0.8	1.6	73	1	10	4065	<	2	3	5572	13214	5064	2.40	3675	
MJNO-7																									
997	7-0	Beforsite, weathered	Mcb2	179	474	221	50.5	12.3	5.5	2.6	0.3	0.6	51	2	30	5887	<	5	3	5274	5336	20640	2.06	1248	
998	7-5	Beforsite, Ap rich	Mcb2	249	505	218	43.5	9.9	4.5	3.6	0.4	3.4	59	1	44	773	<	2	4	10734	3480	6782	5.93	1946	
999	7-10	Beforsite, Ap rich	Mcb2	125	303	109	30.9	8.0	4.1	3.2	0.4	2.0	53	3	27	3566	<	2	23	7152	4186	6226	3.57	779	
1000	7-15	Beforsite, Ap rich	Mcb2	28	49	18	5.0	0.6	1.0	2.4	0.4	6.8	17	4	4	1015	<	4	4	15122	1243	<	100	7.79	144
1001	7-20	Beforsite, Ap rich	Mcb2	79	177	56	8.3	1.7	0.6	1.2	0.2	6.5	10	53	94	62200	<	2	210	11330	2454	<	109	9.03	411
1002	7-25	Boerite	Kad	140	271	68	11.2	2.5	1.2	1.8	0.3	5.3	14	3	15	1340	<	3	3	14184	1773	<	100	7.38	628
1003	7-30	Beforsite	Mcb2	141	341	139	32.0	8.1	3.0	1.7	0.2	1.1	33	1	9	1558	<	2	3	5500	5528	11974	3.58	868	
1004	7-35	Beforsite, Fe oxide rich	Mcb2	88	198	57	11.5	2.9	1.1	0.5	0.1	1.2	11	1	3	325	<	2	3	7208	5828	4392	2.93	457	
1005	7-40	Beforsite, Fe oxide rich	Mcb2	107	231	64	16.0	3.3	1.5	0.7	0.2	0.9	14	1	7	101	<	2	3	7820	5856	4392	2.89	541	
1006	7-45	Beforsite, Fe oxide rich	Mcb2	73	166	56	13.1	3.1	1.3	0.8	0.2	0.9	14	1	1	144	<	2	3	7122	5834	3478	2.72	405	
1007	7-50	Beforsite, Ap rich	Mcb2	192	482	165	45.4	11.9	6.0	1.8	0.2	2.7	43	1	4	672	<	2	3	5338	5124	19272	2.41	1189	
1008	7-55	Beforsite, Ap rich	Mcb2	292	698	246	74.2	18.9	6.9	3.5	0.4	1.1	83	1	20	447	<	2	3	5614	6198	30720	2.26	1756	
1009	7-60	Beforsite, Ap rich	Mcb2	246	594	306	49.9	11.7	5.0	1.9	0.2	4.4	41	1	4	1884	<	2	3	6196	5984	15084	3.23	1226	
1010	7-65	Beforsite, Ap rich	Mcb2	201	459	224	43.1	10.7	4.0	1.7	0.2	4.4	41	1	5	1223	<	2	3	6050	5720	16856	2.40	1213	
1011	7-70	Beforsite, Ap rich	Mcb2	184	418	260	43.5	10.8	4.8	1.9	0.2	2.7	42	1	8	4165	<	2	3	5688	6192	30640	2.54	1851	
1012	7-75	Beforsite, Ap rich	Mcb2	303	639	372	72.0	17.9	7.1	2.5	0.3	0.8	62	1	1	127	<	2	3	7522	6176	448	2.04	320	
1013	7-80	Beforsite, Ap rich	Mcb2	67	121	48	7.5	1.9	1.1	0.7	0.1	1.1	10	1	1	127	<	2	3	7522	6176	448	2.04	320	
1014	7-85	Beforsite, Ap rich	Mcb2	212	389	202	49.8	12.0	5.1	1.6	0.2	7.1	42	2	5	1985	<	2	7	4668	5196	20840	4.04	1153	
1015	7-90	Beforsite, Ap rich	Mcb2	148	371	152	35.6	9.0	4.8	1.6	0.2	2.0	34	1	2	146	<	2	3	6608	6532	14628	2.48	953	
1016	7-95	Beforsite, Ap rich	Mcb2	116	225	92	20.0	5.4	2.7	1.0	0.1	2.2	21	1	3	821	<	2	3	6942	4926	7096	3.18	605	
1017	7-100	Beforsite, Ap rich	Mcb2	109	247	104	25.4	6.2	2.4	1.1	0.1	2.7	23	1	4	936	<	2	3	6544	4862	9252	2.82	646	
1018	7-105	Beforsite, Ap rich	Mcb2	254	565	216	59.2	14.9	6.8	2.1	0.2	1.1	52	1	2	200	<	2	3	6358	6462	26560	2.52	1456	
1019	7-110	Beforsite, Ap rich	Mcb2	47	87	30	6.3	1.9	0.9	0.6	0.1	0.7	10	1	1	18	<	2	3	7632	5914	1364	2.90	226	
1020	7-115	Beforsite, Ap rich	Mcb2	204	445	168	47.9	11.4	6.2	1.8	0.2	1.0	42	1	2	82	<	2	3	6180	5646	19030	2.24	1166	
1021	7-120	Beforsite, Ap rich	Mcb2	219	394	174	50.3	12.5	4.2	1.9	0.2	1.1	46	1	3	276	<	2	3	6482	5792	19086	2.91	1115	
1022	7-125	Beforsite, Ap rich	Mcb2	168	375	146	42.8	10.7	4.2	1.7	0.2	0.6	39	1	7	1557	<	2	3	5498	5012	15140	3.99	1300	
1023	7-130	Beforsite, Ap rich	Mcb2	247	466	190	56.6	13.4	4.9	2.0	0.2	1.3	50	1	2	701	<	2	3	6944	6584	22440	3.09	1300	
1024	7-135	Beforsite, Ap rich	Mcb2	166	305	128	37.2	9.5	3.3	1.4	0.2	1.2	35	1	2	218	<	2	4	3182	4088	17162	4.00	848	
1025	7-140	Beforsite, Ap rich	Mcb2	201	373	156	47.0	11.4	3.0	1.8	0.2	1.1	41	1	2	453	<	2	3	5706	6218	17576	3.16	1025	
1026	7-145	Beforsite, Ap rich	Mcb2	122	203	84	24.1	6.1	2.6	1.1	0.1	2.2	22	1	1	95	<	2	3	6760	6554	9036	2.41	580	
1027	7-150	Beforsite, Ap rich	Mcb2	208	405	156	47.1	11.0	2.7	3.2	0.4	2.7	42	1	2	1549	<	2	3	6038	7190	15360	2.81	1075	

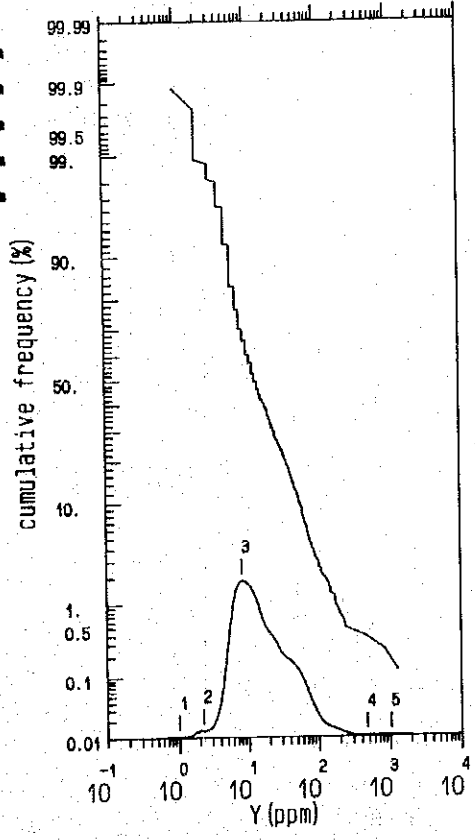
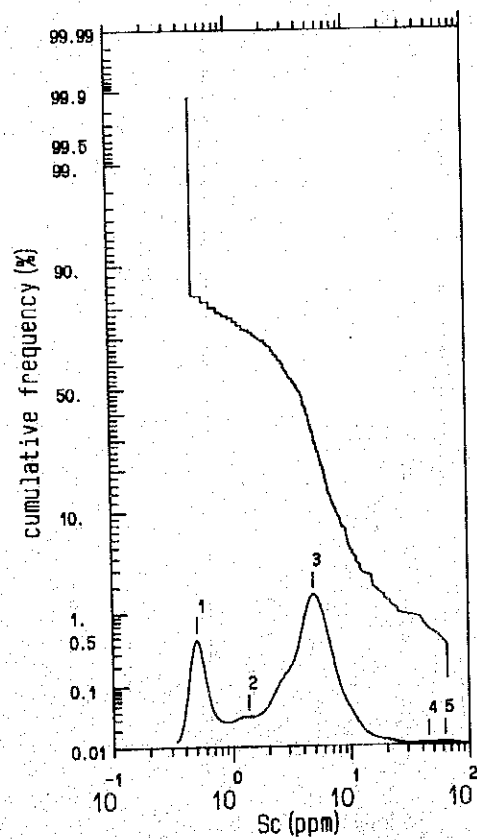
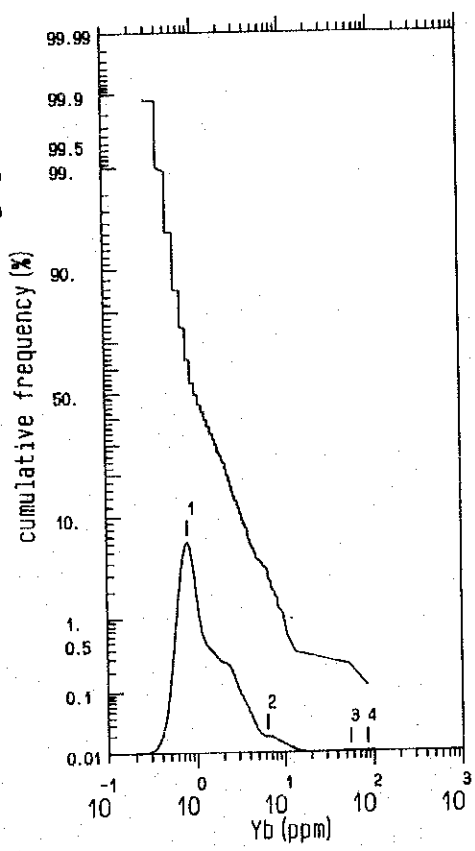
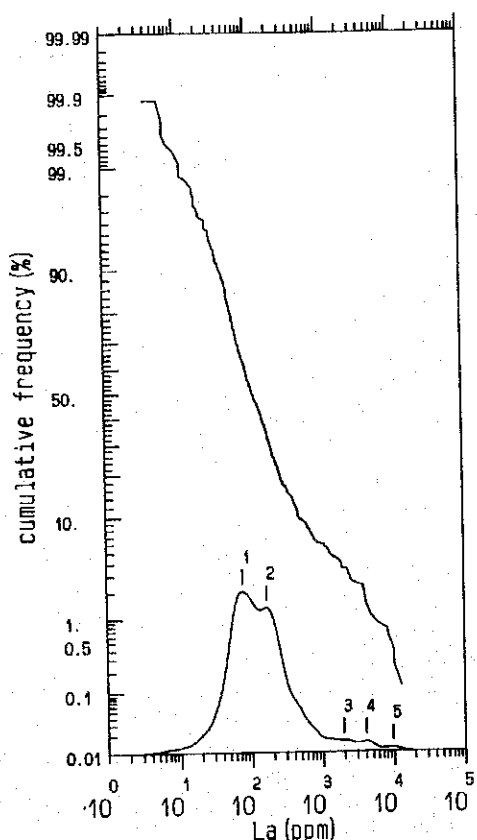
B-3 Geochemical Analyses of the Orange Area (24)

Sample No.	Rock Name	Rock Code	La	Ce	Nd	Sm	Eu	Tb	Yb	Lu	Sc	Y	U	Th	Nb	Ta	Zr	Mn	Sr	P	Fe %	T-203 ppm
1028	Beforsite, weathered	Mcb2	98	168	68	20.9	5.2	1.8	1.0	0.1	0.8	22	1	1	1134	2	3	7824	6538	8204	2.98	473
1029	Beforsite, weathered	Mcb2	225	393	158	49.0	11.7	6.6	2.1	0.2	1.4	45	2	6	424	2	3	6212	6538	24200	4.68	1121
1030	Beforsite	Mcb2	34	53	18	4.0	0.5	1.3	4.1	0.5	10.6	27	1	6	40	2	3	6852	1920	733	7.66	166
1031	Beforsite	Mcb2	5	12	6	2.0	0.5	0.8	2.9	0.4	7.9	19	3	1	455	2	3	11044	1152	100	6.74	50
1032	Slate, Bre. # carbonated	Ash	34	54	18	4.6	2.0	0.7	1.7	0.3	3.1	22	2	9	74	2	14	10974	631	4130	4.22	154
1033	Slate, Bre. # carbonated	Ash	51	83	28	6.7	2.3	1.0	1.0	0.1	2.2	13	1	1	73	2	3	7416	6270	479	3.77	228
1034	Beforsite, Phl rich	Mcb2	228	362	160	47.3	11.4	4.1	1.9	0.2	4.0	45	2	3	569	2	13	2014	4284	28980	5.03	1062
1035	Beforsite, Phl rich	Mcb2	169	274	114	31.2	8.1	4.2	1.5	0.2	1.7	33	14	7	2135	5	31	7392	1502	17436	6.81	794
1036	Beforsite, Phl rich	Mcb2	191	310	124	36.2	8.9	3.7	1.5	0.2	4.1	33	6	5	1245	2	26	2096	1652	18498	7.74	880
1037	Beforsite, Phl rich	Mcb2	40	65	26	6.3	1.8	0.7	0.7	0.1	20.6	8	1	2	660	2	172	7048	3918	8652	5.51	184
1038	Beforsite, Phl rich	Mcb2	47	77	32	6.9	2.6	1.0	0.8	0.1	25.5	10	1	1	61	2	183	1005	401	5174	7.15	221
1039	Beforsite, Phl rich	Mcb2	73	126	52	12.0	3.8	1.0	0.7	0.1	19.3	16	1	2	65	2	273	1364	534	6892	7.98	346
1040	Beforsite, Phl rich	Mcb2	264	465	208	54.1	16.8	5.5	2.7	0.3	14.4	65	3	6	352	2	22	3024	3820	34280	4.85	1331
1041	Beforsite, Ap rich	Mcb2	65	99	42	11.6	3.1	1.0	0.8	0.1	1.1	13	1	2	1010	2	3	8124	5242	5238	3.12	289
1042	Beforsite, Ap rich	Mcb2	128	214	109	27.3	7.1	3.1	1.4	0.2	2.4	27	1	3	904	2	15	7300	6254	10170	2.72	635
1043	Beforsite, Ap rich	Mcb2	204	408	205	46.1	11.0	3.7	2.0	0.3	5.4	44	1	6	3128	2	15	5995	14024	17220	3.70	1146
1044	Beforsite, Ap rich	Mcb2	296	445	224	69.1	17.3	7.7	2.7	0.3	1.3	64	1	3	759	2	3	4992	5998	34880	2.33	1407
1045	Beforsite, Ap rich	Mcb2	171	267	126	40.0	9.8	4.0	1.6	0.2	1.5	35	1	5	1137	2	20	2794	3088	21380	4.28	1018
1046	Beforsite, Ap rich	Mcb2	206	335	156	43.6	11.3	6.9	1.9	0.2	24.1	41	1	6	640	2	17	5326	5260	19330	3.55	756
1047	Beforsite, Ap rich	Mcb2	150	240	116	36.6	9.3	4.5	1.5	0.2	6.2	34	1	4	1641	2	4	6982	6068	4116	2.64	251
1048	Beforsite, Ap rich	Mcb2	59	80	36	10.2	2.7	1.4	0.6	0.1	1.6	11	1	3	1783	2	3	6232	6330	17712	4.17	849
1049	Beforsite, Phl rich	Mcb2	183	282	136	43.1	10.9	2.2	1.8	0.2	0.8	40	1	2	84	2	4	7158	6330	8176	3.53	435
1050			92	146	64	18.0	4.7	2.4	1.0	0.1	2.7	19	1	3	1542	2	5	6920	6142	8942	1.90	655
1051			137	219	92	27.8	7.4	4.6	1.3	0.1	2.7	28	1	5	3873	2	3	7974	6952	15644	2.76	196
1052			45	65	28	6.9	2.1	1.0	0.6	0.1	1.6	10	1	2	303	2	3	8112	5860	1418	3.15	524
1053			145	170	74	15.8	4.2	1.2	0.9	0.1	0.9	14	1	3	52	2	3	7522	6300	2418	2.90	283
1054			69	90	40	11.0	2.8	1.4	0.7	0.1	1.2	12	1	2	154	2	3	6505	5954	14778	3.02	720
1055			165	242	112	24.4	9.0	2.3	1.6	0.2	1.4	33	1	3	444	2	3	6618	6712	20220	2.10	843
1056			194	240	142	47.8	12.5	3.6	1.9	0.2	1.4	44	1	2	194	2	8	7120	5536	10208	3.30	440
1057			91	129	72	23.6	5.7	3.2	1.1	0.1	2.9	23	1	2	618	2	4	7374	4970	4408	2.94	232
1058			60	73	40	9.9	3.0	1.4	1.2	0.2	1.4	17	1	1	110	2	3	6720	5880	15536	3.04	879
1059			186	312	124	36.6	9.1	3.6	1.8	0.2	2.0	34	1	3	1470	2	3	6720	5880	15536	3.04	879

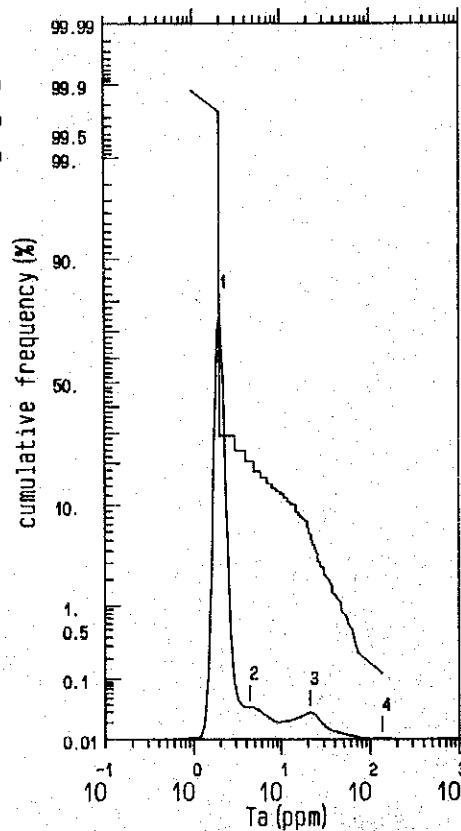
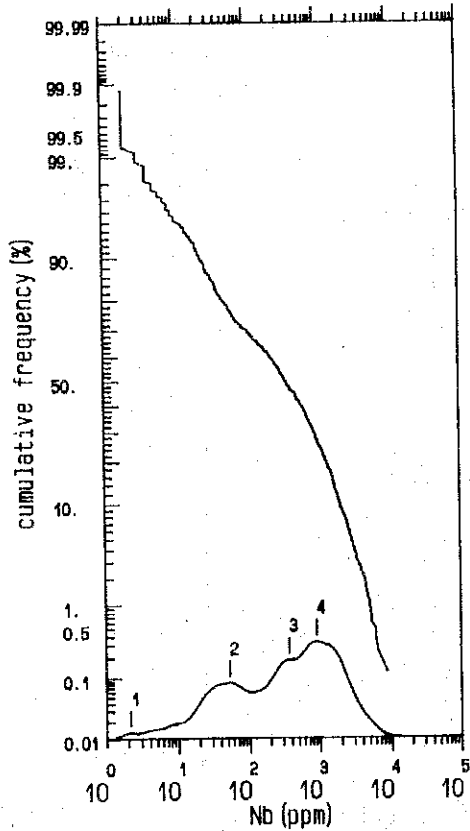
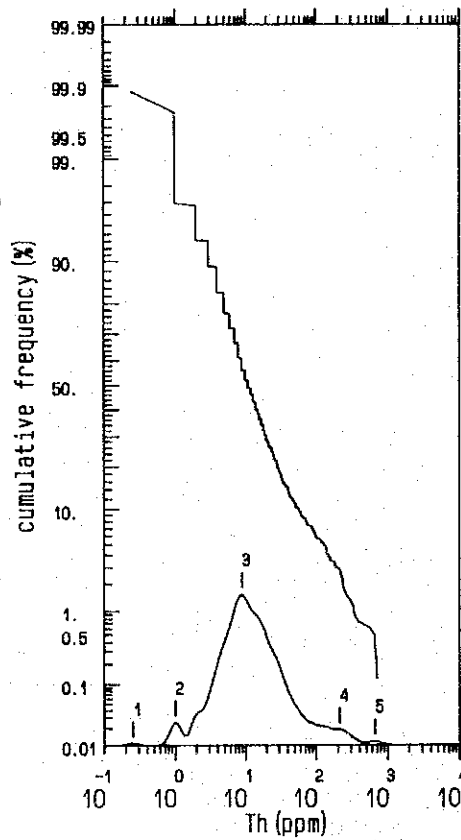
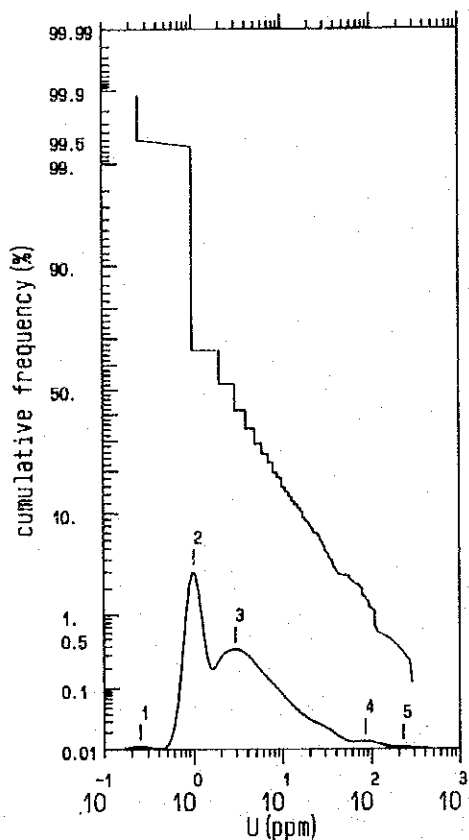


**B-4 Scatter Diagrams for Geochemical Analyses  
of the Orange Area**

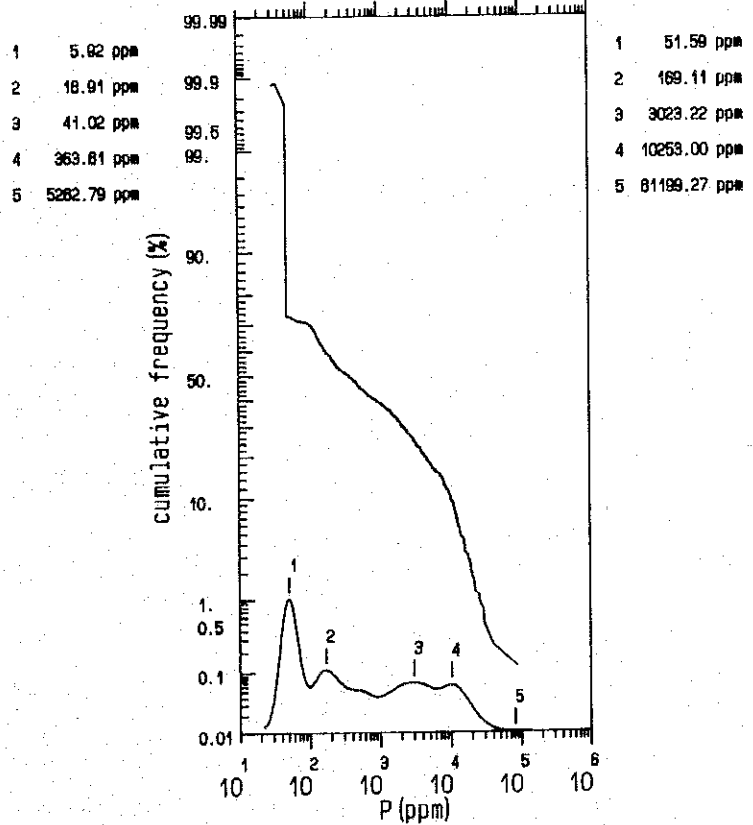
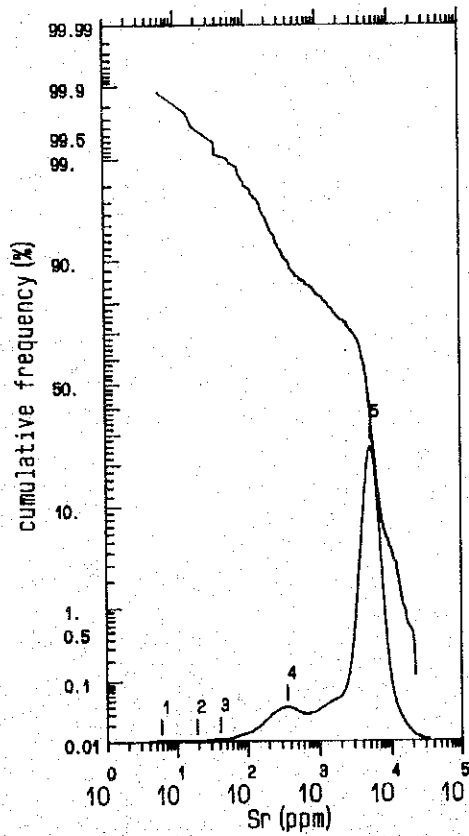
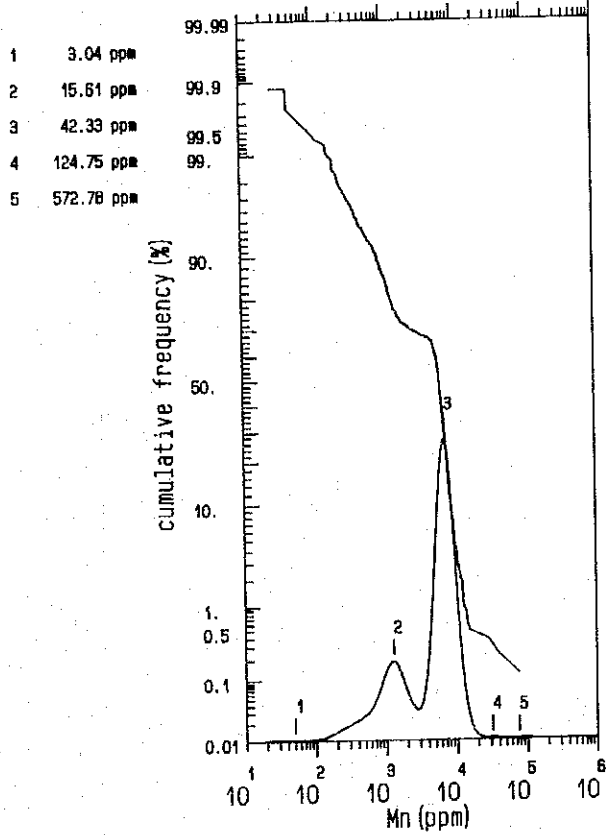
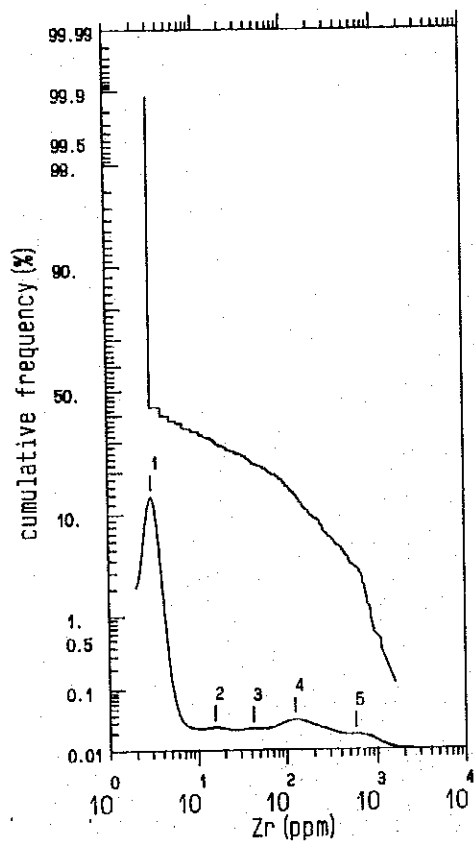




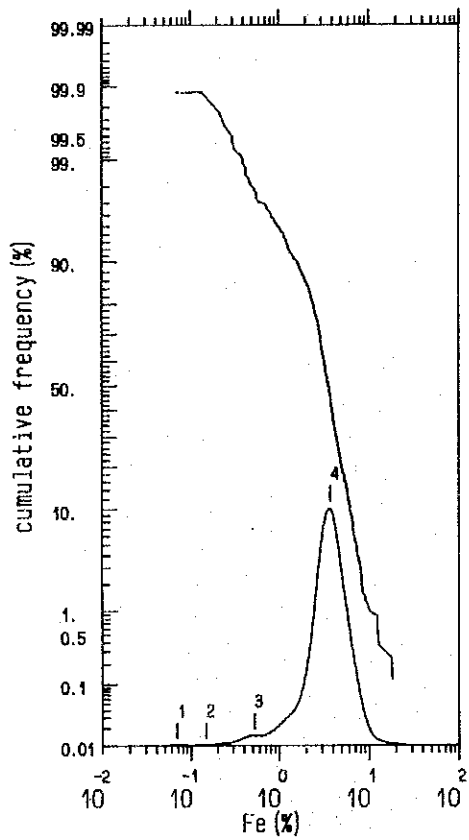
**B-4 Frequency and Cumulative Frequency for Geochemical Analyses of the Orange Area (1)**



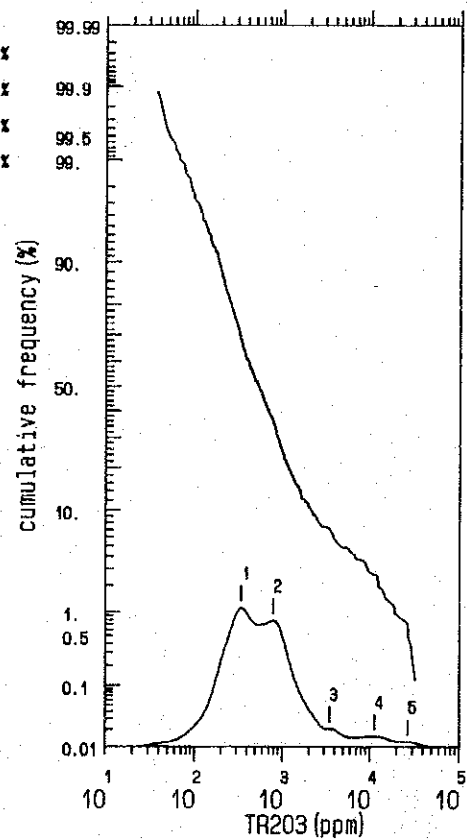
**B-4 Frequency and Cumulative Frequency for Geochemical Analyses of the Orange Area (2)**



**B-4 Frequency and Cumulative Frequency for Geochemical Analyses of the Orange Area (3)**



- 1 0.07 %
- 2 0.15 %
- 3 0.52 %
- 4 3.74 %

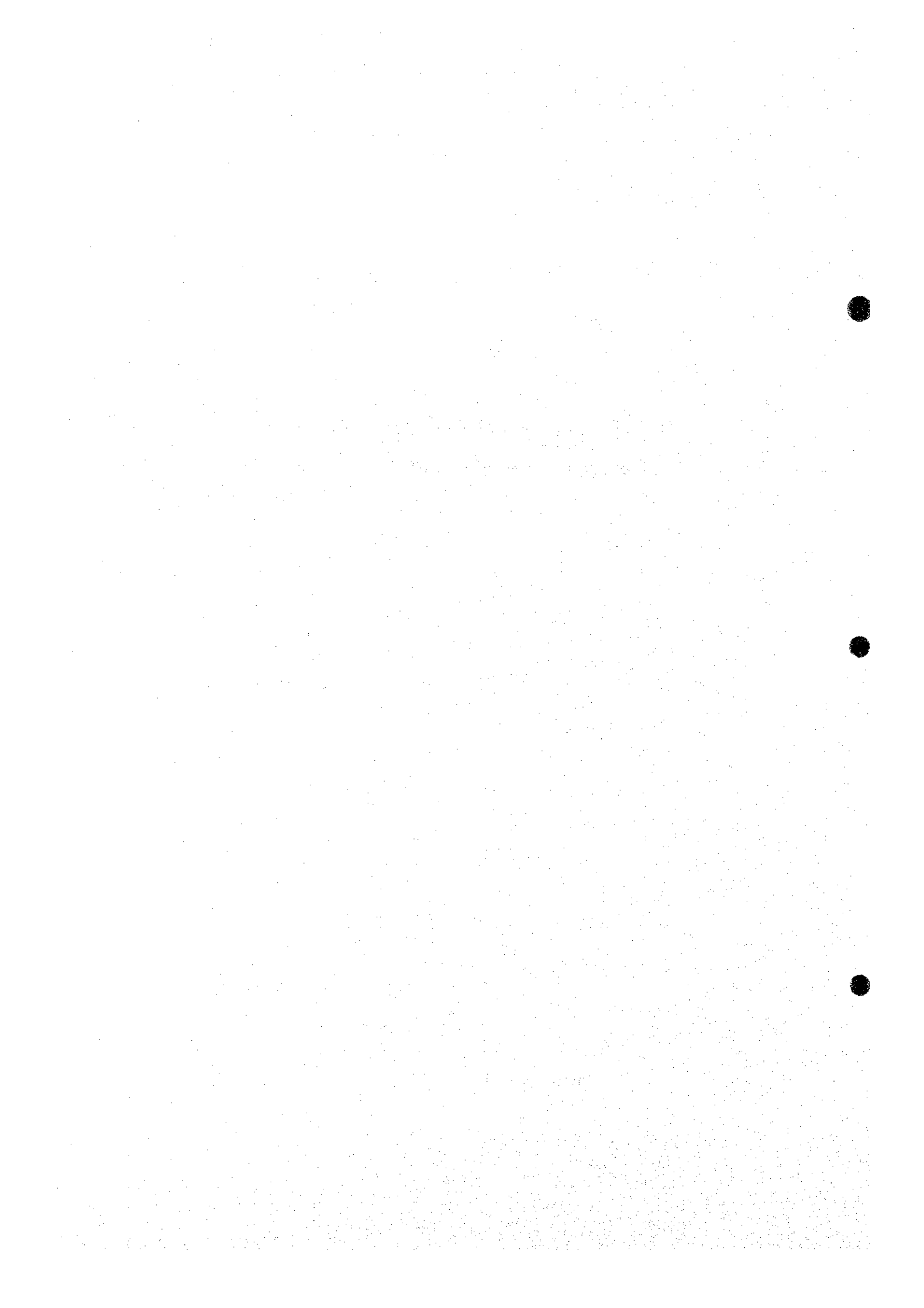


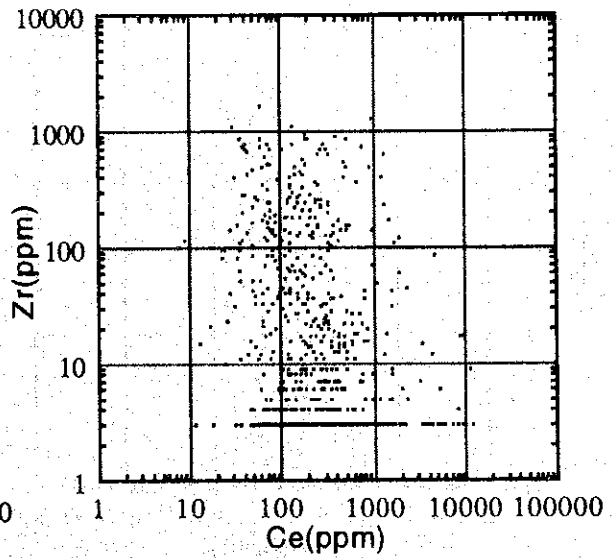
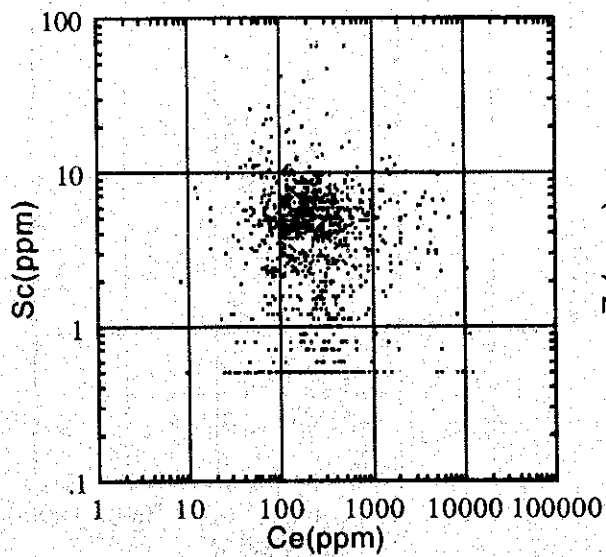
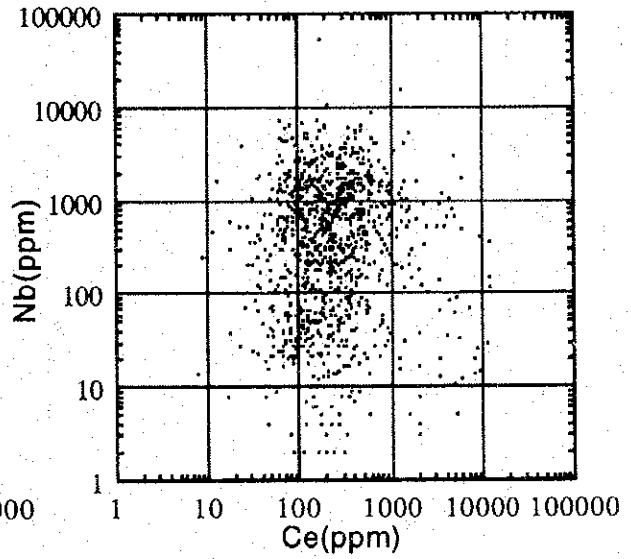
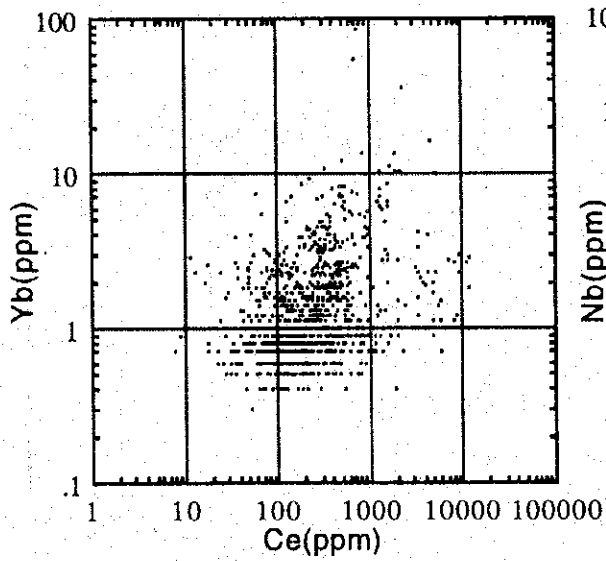
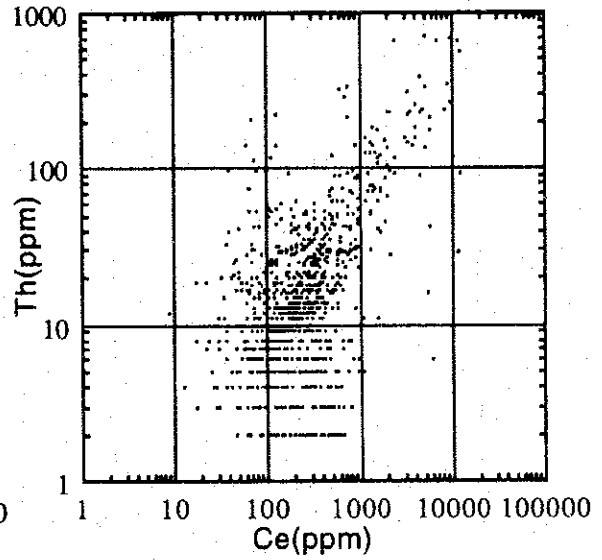
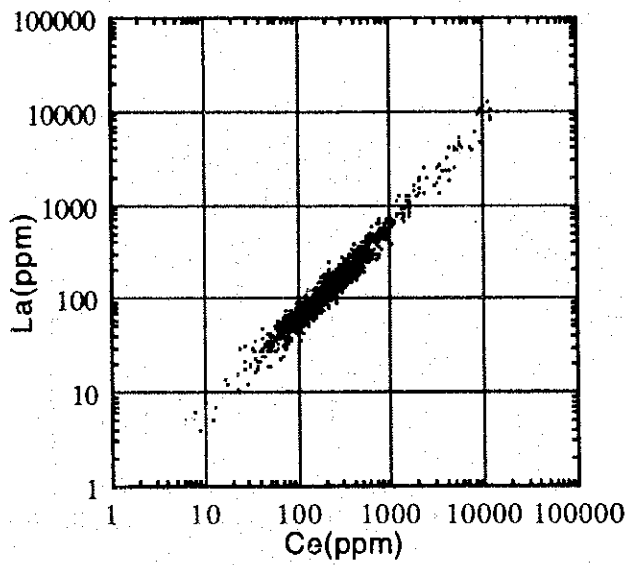
- 1 346.33 ppm
- 2 794.13 ppm
- 3 3495.25 ppm
- 4 11437.90 ppm
- 5 27016.30 ppm

**B-4 Frequency and Cumulative Frequency for Geochemical Analyses of the Orange Area (4)**

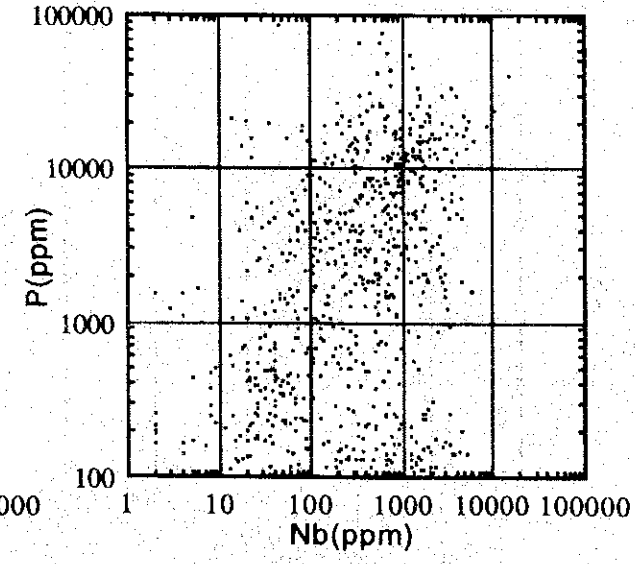
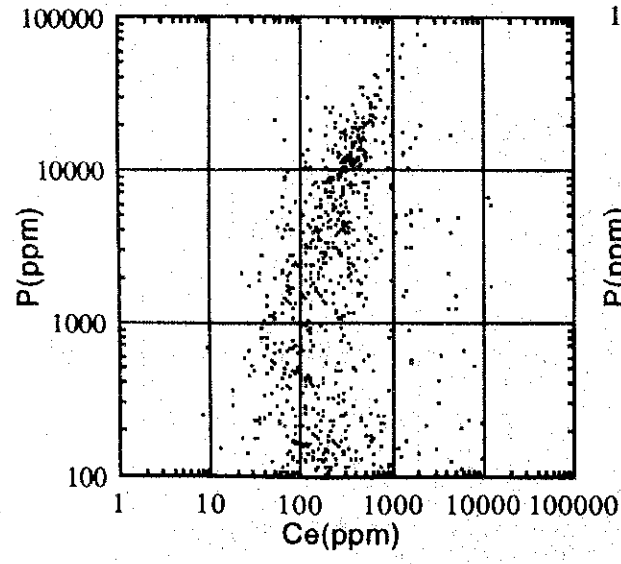
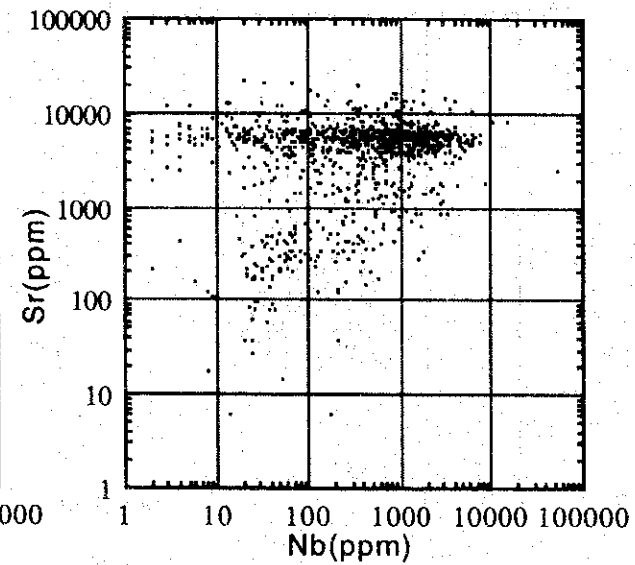
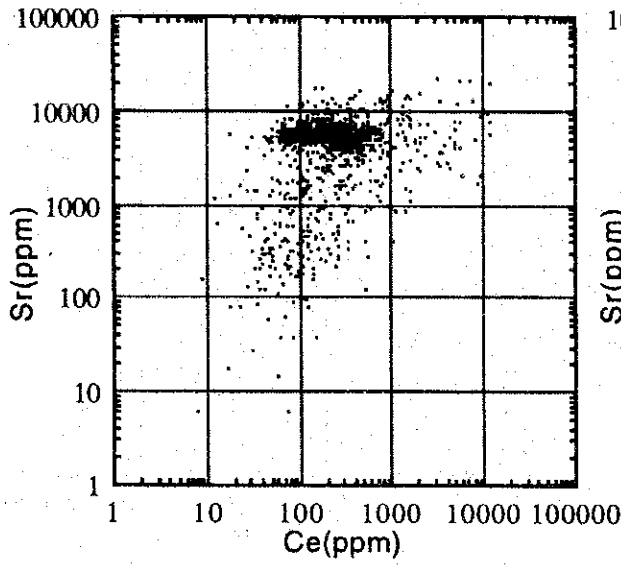
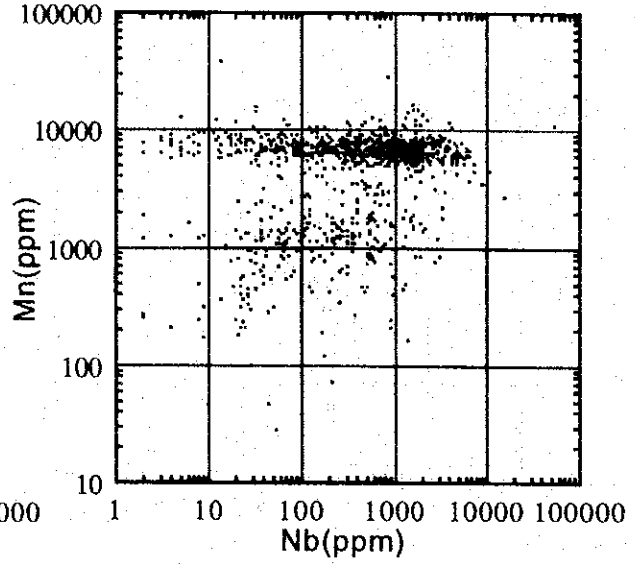
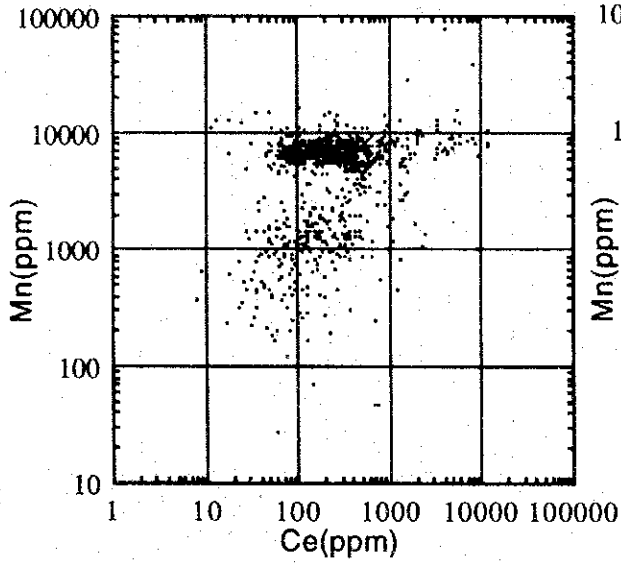
**B-5 Frequency and Cumulative Frequency  
for Geochemical Analyses of the Orange Area**





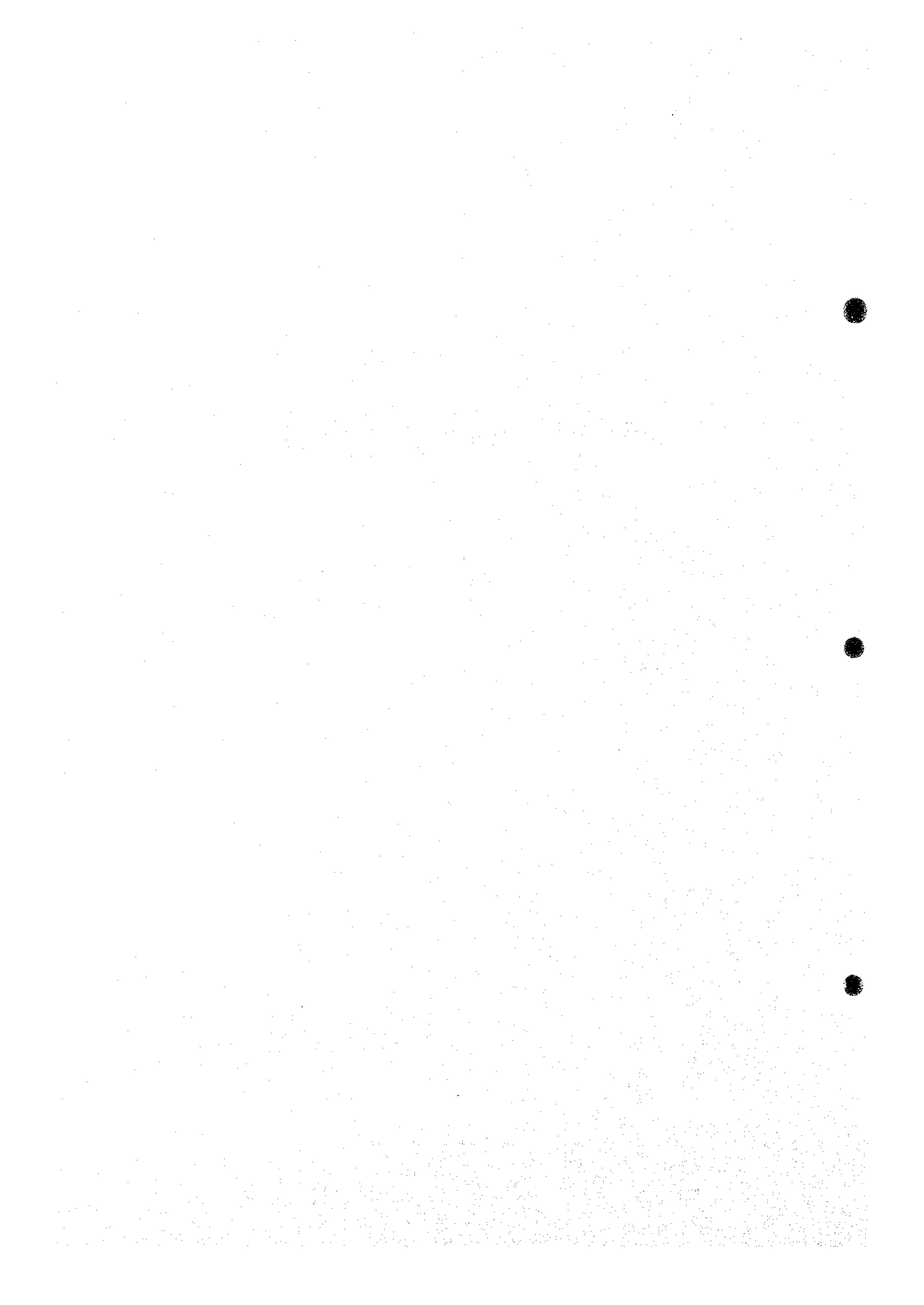


**B-5 Scatter Diagrams for Geochemical Analyses of the Orange Area (1)**



**B-5 Scatter Diagrams for Geochemical Analyses of the Orange Area (2)**

## **B-6 Drilling Logs of the Orange Area**



Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
5	#####	weathered beforsite (Mcbl)	0.0m-6.5m light brown (5YR 5/6) to light brownish gray (5YR 6/1) beforsite( $\phi=2$ to 3mm) with brownish Fe hydroxides	2	1-5(G)	5.0	5.5	0.5
10	#####	beforsite (Mcbl)	6.5-35.0m very light gray (N8) beforsite( $\phi=2$ to 3mm) with dark green, dusky brown, and black minerals which are impregnated( $\phi=2$ to 3 mm) and scattered(d=3 to 5cm)	0	1-10(G)	10.0	10.5	0.5
15	#####		clear flow banding( $\angle 60$ to $70^\circ$ )		1-15(G)	15.0	15.5	0.5
20	#####		1-20(G, W)		20.0	20.5	0.5	
25	#####		24.5-28.0m rich in scattered dusky brown (5YR 2/2) minerals( $\phi=2$ to 5cm)		1T-1(T) 1-25(G) 1X-1(X)	25.0 25.0 26.0	25.1 25.5 26.1	0.1 0.5 0.1
30	#####	weathered beforsite (Mcbl)	30.4-31.4m rich in impregnated pyrite( $\phi=1$ to 2mm)	1	1-30(G, W)	30.0	30.5	0.5
35	#####		1-35(G)		35.0	35.5	0.5	
40	#####		35.0-40.5m light brownish gray (5YR 6/1) to brownish gray (5YR 4/1) beforsite( $\phi=2$ to 3mm) with brownish Fe hydroxides		1-40(G)	40.0	40.5	0.5
45	#####	beforsite (Mcbl)	40.5-52.0m very light gray (N8) beforsite ( $\phi=2$ to 3mm) with black, dusky brown, and dark green minerals which are dotted(d=2 to 3mm and spotted(d=5 to 30 cm), and with a few pyrites( $\phi=1$ to 2mm) $\angle 60^\circ$	0	1-45(G, W) 1R-1(I)	45.0 45.0	45.5 45.1	0.5 0.1
50	#####		40.5-42.0m & 48.0-50.6m rich in dark green, dusky brown, and black minerals( $\phi=1$ to 3mm) clear boundary ( $\angle 45^\circ$ )		1-50(G)	50.0	50.5	0.5
55	.....	brecciated arkose (Nsh)	52.0-66.0m very light gray(N8) brecciated arkose ( $\phi=1$ to 2mm) with beforsite networks which matrix is rich in black and dusky minerals	1	1-55(G)	55.0	55.5	0.5
60	.....		1-60(G, W) 1X-2(X)		60.0 60.0	60.5 60.1	0.5 0.1	
65	.....		1-65(G)		65.0	65.5	0.5	
70	.....		66.0-81.5m light gray(N7) brecciated arkose ( $\phi=1$ to 2mm) with a few light gray beforsite veinlets (10 to 30 cm wide) which contain a few black and dusky brown minerals		1-70(G)	70.0	70.5	0.5
75	.....	arkose (Nsh)	67.0-70.6m & 76.5-80.5m brown to light brown fractured arkose	1	1-75(G)	75.0	75.5	0.5
80	.....		1-80(G)		80.0	80.5	0.5	
85	.....		81.5-91.5m light gray(N7) massive arkose ( $\phi=1$ to 2mm) with pyrite dissemination		1T-3(T)	85.0	85.1	0.1
90	.....	arkose (Nsh)	84.0m & 87.5m calcite veinlets(5mm wide)	1				
95	.....		91.5-95.5m pale red(10R 6/2) massive arkose with pale red Fe oxides dissemination 95.5-109.6m light gray(N7) arkose ( $\phi=1$ to 2mm max. 5mm) with pyrite dissemination					
100	.....							

Remarks: (C):Geochemical Analysis, (W):Whole Rock Analysis, (T):Polished Thin Section, (E):EPMA Analysis  
(X):X-ray Diffraction Analysis, (I):Oxygen and Carbon Isotope Analysis  
Weathering: 0:fresh, 1:weakly altered, 2:moderately altered 3:strongly altered

B-6 Drilling Logs of the Orange Area (1)

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weath- ering	Sampling Number & (Type of Test)	Sampling Interval			
						From (m)	to (m)	Width (m)	
105	.....	arkose (Nsh)	95.5-109.6m light gray(N7) arkose ( $\phi=1$ to 2mm max. 5mm) with pyrite dissemination  clear boundary ( $\angle 60^\circ$ )	1					
110	>>>>	carbonated syenite (Nsu)	109.6-114.7m very light gray(N8) carbonated syenite. ( $\phi=2$ to 3mm) with calcite(sovite), pyrite, black, and dusky brown minerals		1-110(G)	110.0	110.5	0.5	
115	>>>>		109.6-118.7m very light gray(N8) carbonated syenite ( $\phi=2$ to 3mm) with black minerals		1-115(G)	115.0	115.5	0.5	
	>>>>				1-117(G)	117.3	117.8	0.5	
120	>>>>			118.7-122.5m very light gray carbonated syenite with calcite(sovite)		1-120(G, W)	120.0	120.5	0.5
	>>>>			122.5-123.5m very light gray(N8) carbonated syenite with black minerals		1-122(G)	122.3	122.8	0.5
125	>>>>			123.5-125.5m very light gray carbonated syenite with calcite(sovite)	0	1-125(G)	125.0	125.5	0.5
	>>>>					1X-3(X)	126.0	126.1	0.1
	>>>>					1-127(G)	127.3	127.8	0.5
130	>>>>			125.5-129.5m very light gray carbonated syenite with abundant black and sulfides minerals		1-130(G, W)	130.0	130.5	0.5
	>>>>					1T-4(T)	131.5	131.6	0.1
	>>>>		130.0-131.0m clear flow banding( $\angle 45^\circ$ ) very light gray carbonated syenite with calcite(sovite)		1-132(G)	132.3	132.8	0.5	
135	>>>>		131.0-138.0m very light gray(N8) carbonated syenite ( $\phi=2$ to 3mm) with abundant black and sulfides minerals		1-135(G)	135.0	135.5	0.5	
	>>>>				1-137(G)	137.3	137.8	0.5	
140	>>>>		138.0-150.4m very light gray(N8) carbonated syenite ( $\phi=2$ to 3mm) with abundant dark green, pale green, brown, and sulfides minerals		1-140(G, W)	140.0	140.5	0.5	
	>>>>				1-145(G)	145.0	145.5	0.5	
145	>>>>				1-147(G)	147.3	147.8	0.5	
	>>>>				1T-5(T)	148.4	148.5	0.1	
	>>>>				1X-4(X)	148.4	148.5	0.1	
150	>>>>		150.4m		1-150(G, W)	150.0	150.5	0.5	

B-6 Drilling Logs of the Orange Area (2)



M J N O - 2

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
					2-0(G)	0.0	0.3	0.3
5			0.0-9.0m dusky brown(5YR 2/2) to grayish brown (5YR 3/2) ankeritic beforosite( $\phi=2$ to 3 mm) with dark green blocks (d=2 to 3mm, max.10cm) which contain pale green clayey mineral, black Fe oxide, and brown hydroxide( $\phi=1$ to 2mm)		2-5(G)	5.0	5.5	0.5
10					2-10(G)	10.0	10.5	0.5
15		ankeritic beforsite (Mcb1)	9.0-31.0m dusky brown(5YR 2/2) to grayish brown, (5YR 3/2) partly dusky red(5R 3/4) ankeritic beforosite( $\phi=2$ to 3mm max.5mm) with dusky red to black Fe oxides and brown minerals( $\phi=1$ to 2mm)	1	2T-1(T)	15.0	15.1	0.1
	2-15(G)				15.0	15.5	0.5	
	2-17(G)				17.3	17.8	0.5	
20					2-20(G, W)	20.0	20.5	0.5
					2-22(G)	22.3	22.8	0.5
25					2-25(G)	25.0	25.5	0.5
					2-27(G)	27.3	27.8	0.5
30			2-30(G, W)	30.0	30.5	0.5		
35		weathered beforsite (Mcb1)	31.0-49.0m light brownish gray(5YR 6/1) beforosite ( $\phi=2$ to 3mm) with black, dusky brown minerals rich part(d=3 to 5cm max.20cm) partly contain dark to pale green rich parts	1	2-32(G)	32.3	32.8	0.5
	2X-1(X)				32.2	32.3	0.1	
	2-35(G)				35.0	35.5	0.5	
	2-37(G)				37.3	37.8	0.5	
40					2-40(G, W)	40.0	40.5	0.5
					2-42(G)	42.3	42.8	0.5
45					2-45(G)	45.0	45.5	0.5
		46.5-49.0m fractured zone	2-47(G)	47.3	47.8	0.5		
50			2-50(G, W)	50.0	50.5	0.5		
55			49.0-68.5m grayish brown(5YR 3/2) to dusky brown (5YR 2/2) beforosite( $\phi=1$ to 2mm), fractured with brown Fe hydroxides( $\phi=1$ 2mm) and partly black Fe oxides	1	2-55(G)	55.0	55.5	0.5
60					2-60(G, W)	60.0	60.5	0.5
65			68.5-71.5m light brownish gray beforosite with black and dusky brown minerals		2-65(G, W)	65.0	65.5	0.5
70					2-70(G, W)	70.0	70.5	0.5
75		ankeritic beforsite (Mcb1)	71.5-77.5m grayish brown to dusky brown ankeritic beforsite( $\phi=1$ to 2mm)	1	2-72(G)	72.3	72.8	0.5
	2-75(G, W)				75.0	75.5	0.5	
	2T-2(T)				75.0	15.0	0.1	
80		fractured beforsite (Mcb1)	77.5-120.0m light gray(N7) to brownish gray(5YR 4/1) to dark gray(N4) beforosite( $\phi=1$ to 2mm) with black Fe oxide, brown phlogopite and white mica fractured(clayey, sandy to powdery)	1	2-77(G)	77.3	77.8	0.5
	2-80(G)				80.0	80.5	0.5	
85								2-95(G)
90								
95								
100								

B-6 Drilling Logs of the Orange Area (3)

Depth (m)	Geologic Column	Rock Name (Rock Code)	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
105	#####	fractured beforsite (Ncbl)	77.5-120.0m  light gray(N7) to brownish gray(5YR 4/1) to dark gray(N4) beforsite( $\phi$ =1 to 2mm) with black Fe oxide, brown phlogopite and white mica fractured(clayey, sandy to powdery)	1	2-109(G)	109.0	109.5	0.5
110	#####							
115	#####		120.0-136.0m very light gray (N8) to light brownish gray(5YR 5/6) beforsite( $\phi$ =1 to 2mm) fractured(clayey, powdery and sandy)		2X-2(X)	118.0	118.1	0.1
120	#####							
125	#####		2-122(G)		122.0	122.5	0.5	
130	#####							
135	#####	2X-3(X)	127.0	127.1	0.1			
140	V V V V V							
145	V V V V V	trachyte dyke (Ktd)	136.0-150.4m very light gray quartz( $\phi$ =1 to 2mm) trachyte dyke, altered siliciously	1	2-135(G) 2X-4(X)	135.0 135.0	135.5 135.1	0.5 0.1
150	V V V V V							
			150.4m					

B-6 Drilling Logs of the Orange Area (4)

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number	Sampling Interval		
						From (m)	to (m)	Width (m)
5	#.#.#.#.# #.#.#.#.# #.#.#.#.#	weathered beforsite (Mcbl)	0.0-4.5m 1 gray(N7) to light brwnish gray beforsite( $\phi$ =2mm max.5mm) with Fe oxides spots(d=2 to 3cm) to networks	1	3-0(G)	0.0	0.3	0.3
			4.5-9.4m ankeritic grayish brown(5YR 3/2) ankeritic beforsite( $\phi$ =2 to 3mm max.5mm)	1	3-5(G) 3X-1(X)	5.0 5.7	5.5 5.8	0.5 0.1
10	#1#1#1#1# #1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcbl)	9.4-12.5m very light gray beforsite with sulfides, black and dusky red Fe oxides	0 to 1	3-10(G)	10.0	10.5	0.5
15	#1#1#1#1# #1#1#1#1# #1#1#1#1#		12.5-13.3m light brwnish gray beforsite 13.3-16.0m very light gray beforsite with sulfides dissemination					
20	#1#1#1#1# #1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcbl)	16.0-17.4m light brwnish gray beforsite	0 to 1	3-20(G, W) 3R-1(I) 3X-2(X) 3T-1(T) 3-25(G)	20.0 23.2 23.2 23.4 23.4 23.5 25.0	20.5 23.4 23.3 23.5 25.5	0.5 0.1 0.1 0.1 0.5
25	#1#1#1#1# #.#.#.#.# #.#.#.#.#		17.4-20.4m very light gray(N8) beforsite ( $\phi$ =5 to 15mm) with sulfides and grayish brown Fe hydroxides(d=5 to 15mm) 20.4-25.4m very light gray(N8) beforsite ( $\phi$ =5 to 15mm) with sulfides, black Fe oxides, brownish gray Fe hydroxides(d=5 to 15mm)					
30	#1#1#1#1# #.#.#.#.# #.#.#.#.#	weathered beforsite(Mcbl)	27.3-30.3m very light gray beforsite ( $\phi$ =5 to 15mm) with sulfides and Fe oxide.	0	3-30(G)	30.0	30.5	0.5
35	#.#.#.#.# #.#.#.#.# #.#.#.#.#	weathered beforsite (Mcbl)	30.3-46.0m light brownish gray(5YR 6/1) beforsite ( $\phi$ =1 to 2mm max.10mm) with gray brown Fe hydroxides(d=3 to 5cm)	1	3-35(G) 3-40(G, W) 3-45(G)	35.0 40.0 45.0	35.5 40.5 45.5	0.5 0.5 0.5
40	#.#.#.#.# #.#.#.#.# #.#.#.#.#		46.0-52.0m very light gray(N8) beforsite( $\phi$ =2 to 3mm max.20mm) with sulfides and black Fe oxides					
50	#1#1#1#1# #1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcbl)	52.0-53.3m light brownish gray beforsite ( $\phi$ =3 to 5mm max.30mm)	1	3-55(G)	55.0	55.5	0.5
55	#1#1#1#1# #1#1#1#1# #1#1#1#1#	weathered beforsite(Mcbl)	53.3-56.1m very light gray beforsite( $\phi$ =3 to 50mm) with sulfides and Fe oxide	0				
60	#1#1#1#1# #1#1#1#1# #1#1#1#1#	weathered beforsite (Mcbl)	56.1-60.1m light brownish gray(5YR 6/1) beforsite ( $\phi$ =2 to 3mm) with brown Fe hydroxides	1	3-60(G, W)	60.0	60.5	0.5
65	#1#1#1#1# #1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcbl)	60.1-63.0m very light gray(N8) beforsite ( $\phi$ =2 to 3mm) with sulfides, Fe oxide, light brown and pale green minerals	0	3-65(G)	65.0	65.5	0.5
70	#1#1#1#1# #1#1#1#1# #1#1#1#1#	weathered beforsite (Mcbl)	63.0-69.0m clear flow banding ( $\angle 70^\circ$ ) light brownish gray(5YR 6/1) beforsite ( $\phi$ =2 to 3mm max.20mm) with grayish brown Fe hydroxides	1				
75	#1#1#1#1# #1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcbl)	69.0-82.3m clear flow banding ( $\angle 70^\circ$ ) very light gray(N8) beforsite( $\phi$ =3 to 5mm max.20mm) with dotted sulfides, black Fe oxides, light brown and pale green minerals	0	3-70(G) 3T-3(T) 3-75(G) 3T-4(T, E)	70.0 70.1	70.1	0.1
80	#1#1#1#1# #1#1#1#1# #1#1#1#1#		82.3-85.5m light brownish gray(5YR 6/1) beforsite ( $\phi$ =1 to 2mm) with brwon Fe oxides					
85	#1#1#1#1# #1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcbl)	85.5-90.0m very light gray(N8) beforsite ( $\phi$ =1 to 2mm) with dotted sulfides, black Fe oxides, light brown and pale green minerals	0	3-80(G, W) 3-90(G)	80.0	80.5	0.5
90	#1#1#1#1# #1#1#1#1# #1#1#1#1#		90.0-98.2m light brownish gray(5YR 6/1) beforsite ( $\phi$ =1 to 2mm) with grayish brown Fe oxides					
95	#.#.#.#.# #.#.#.#.# #.#.#.#.#	weathered beforsite (Mcbl)	98.2-106.9m light brwnish gray beforsite with Fe oxide and Fe hydroxides	1	3-100(G, W)	100.0	105.5	0.5
100	#2#2#2#2# #2#2#2#2#	Fe oxides-rich beforsite(Mcbl)						

B-6 Drilling Logs of the Orange Area (5)

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number	Sampling Interval		
						From (m)	to (m)	Width (m)
100	#2#2#2#2#2#	Fe oxides-rich beforsite (Mcbl)	98.2-106.9m light brownish gray(5YR 5/6) beforsite ( $\phi=1$ to 2mm)with dotted black Fe oxides, grayish brown Fe hydroxides	1	3-105(G)	105.0	105.5	0.5
105	#2#2#2#2#2#		106.9-112.0m					
110	#1#1#1#1#1#	ankeritic beforsite (Mcbl)	graysih brownish(5YR 3/2) to yellowish brown(10YR 4/2) ankeriteic beforsite( $\phi=1$ to 2mm max. 5mm) with graysih brown Fe oxides	1	3-110(G)	110.0	110.5	0.5
115	#1#1#1#1#1#		112.0-120.6m					
120	#1#1#1#1#1#	weathered beforiste (Mcbl)	light brwonish gray(5YR 6/1) to brownish gray(5YR 4/1) beforsite( $\phi=1$ to 2mm) with graysih brown Fe hydroxides, black Fe oxides, and sulfides	1	3-115(G)	115.0	115.5	0.5
125	#1#1#1#1#1#		120.6-121.8m					
130	#1#1#1#1#1#	sulfides-rich beforsite(Mcbl)	very light gray beforsite ( $\phi=1$ to 2mm) with sulfides and Fe oxide	0	3-120(G,W)	120.0	120.5	0.5
135	#1#1#1#1#1#		121.8-130.0m					
140	#1#1#1#1#1#	weathered and sulfides-rich beforsite (Mcbl)	112.0-120.6m l brwonish gray(5YR 6/1) to brownish gray(5YR 4/1) beforsite( $\phi=1$ to 2mm) with graysih brown Fe hydroxies, black Fe oxides, and sulfides	1	3-125(G)	125.0	125.5	0.5
145	#1#1#1#1#1#		130.0-135.0m					
150	#1#1#1#1#1#		150.3m		3-130(G)	130.0	130.5	0.5
	#1#1#1#1#1#		135.0-140.0m					
	#1#1#1#1#1#				3-135(G) 3X-3(X)	135.0 135.0	135.5 135.1	0.5 0.1
	#1#1#1#1#1#		140.0-145.0m					
	#1#1#1#1#1#				3-140(G,W)	140.0	140.5	0.5
	#1#1#1#1#1#		145.0-150.0m					
	#1#1#1#1#1#				3-145(G) 3T-5(T) 3R-5(I)	145.0 146.7 146.7	145.5 146.8 146.8	0.5 0.1 0.1
	#1#1#1#1#1#		150.0-150.3m					
	#1#1#1#1#1#				3-150(G)	150.0	150.5	0.5

B-6 Drilling Logs of the Orange Area (6)

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
					4-0(G)	0.0	0.3	0.3
5		weathered beforsite (Mcbl)	0.0-14.3m light brownish gray(5YR 5/6) to very light gray(N8) beforsite( $\phi$ =1 to 2mm) with spots(5x20cm) by grayish brown Fe hydroxides	1	4-5(G)	5.0	5.5	0.5
10					4-10(G)	10.0	10.5	0.5
15		sulfides-rich beforsite (Mcbl)	14.3-20.3m clear flow banding( $\angle$ 70°) very light gray(N8) beforsite( $\phi$ =1 to 2 mm) with dotted to spotted(d=2 to 3cm) sulfides, brownish black Fe oxides, and a few yellowish brown minerals	0	4-15(G) 4T-4(T)	15.0 15.0	15.5 15.1	0.5 0.1
20					4-20(G, W) 4X-1(X) 4T-1(T)	20.0 20.6 20.6	20.5 20.7 20.7	0.5 0.1 0.1
25		Fe oxides-rich beforsite (Mcbl)	20.3-30.5m clear flow banding( $\angle$ 70°) very light gray(N8) beforsite( $\phi$ =1 to 2 mm) with dotted to spotted(d=2 to 3cm) black Fe oxides, yellowish brown minerals and a few sulfides	0	4-25(G)	25.0	25.5	0.5
30					4-30(G, W) 4T-2(T)	30.0 30.0	30.5 30.1	0.5 0.1
35		sulfides-rich beforsite (Mcbl)	30.5-37.5m very light gray(N8) beforsite( $\phi$ =1 to 2 mm) with dotted sulfides and black Fe oxides( $\phi$ =1 to 2mm)	0	4-35(G) 4R-1(I)	35.0 35.0	35.5 35.1	0.5 0.1
40		Fe oxides-rich beforsite (Mcbl)	37.5-45.0m very light gray(N8) beforsite( $\phi$ =2 to 3 mm max. 10mm) with dotted black Fe oxides (1 to 2mm) and a few sulfides(d=1 to 2mm) partly light grayish brown weathered beforsite with Fe hydroxides spots	0 to 1	4-40(G, W)	40.0	40.5	0.5
45					4-45(G)	45.0	45.5	0.5
50		weathered beforsite (Mcbl)	45.0-66.0m light brownish gray(5YR 6/1) to light gray(N7) beforsite( $\phi$ =1 to 2mm, max. 10mm) with grayish brown Fe hydroxides spots (d=5 to 10cm)	1	4-50(G)	50.0	50.5	0.5
55					4-55(G)	55.0	55.5	0.5
60					4-60(G, W)	60.0	60.5	0.5
65		beforsite (Mcbl)	66.0-72.0m very light gray(N8) beforsite( $\phi$ =2 to 3 mm max. 10mm) with a few dotted sulfides and black Fe oxides( $\phi$ =1 to 2mm)	0	4-65(G)	65.0	65.5	0.5
70					4-70(G)	70.0	70.5	0.5
75		weathered beforsite (Mcbl)	72.0-78.5m light brownish gray(5YR 6/1) to light gray(N7) beforsite( $\phi$ =1 to 2mm, max. 50mm) with grayish brown Fe hydroxides spots (d=5 to 10cm)	1	4-75(G)	75.0	75.5	0.5
80					4-80(G, W)	80.0	80.5	0.5
85		beforsite (Mcbl)	78.5-84.0m very light gray(N8) beforsite( $\phi$ =2 to 3 mm max. 20mm) with a few dotted sulfides and black Fe oxides( $\phi$ =1 to 2mm) 84.0-86.0m light brownish gray beforsite ( $\phi$ =2 to 3mm max. 20mm) with Fe hydroxide 86.0-93.0m very light gray(N8) beforsite( $\phi$ =2 to 3 mm max. 10mm) with a few dotted sulfides and black Fe oxides( $\phi$ =1 to 2mm)	0	4-85(G)	85.0	85.5	0.5
90					4-90(G)	90.0	90.5	0.5
95		weathered beforsite (Mcbl)	93.0-101.5m light brownish gray(5YR 6/1) to light gray(N7) beforsite( $\phi$ =2 to 3mm, max. 10mm) with grayish brown Fe hydroxides spots (d=5 to 10cm)	1	4-95(G)	95.0	95.5	0.5
100					4-100(G, W)	100.0	105.5	0.5

B-6 Drilling Logs of the Orange Area (7)

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weath- ering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
100	#####		101.5-106.0m					
105	#####	beforsite (Mcbl)	very light gray(N8) beforsite( $\phi=1$ to 2 mm max. 30mm) with a few dotted sulfides and black Fe oxides( $\phi=1$ to 2mm)	0	4-105(G)	105.0	105.5	0.5
110	#####		106.0-122.0m					
115	#####	weathered beforsite (Mcbl)	light brownish gray(5YR 6/1) to light gray(N7) beforsite( $\phi=2$ to 3mm, max. 50mm) with grayish brown Fe hydroxides spots (d=5 to 10cm)	1	4-110(G) 4-115(G)	110.0 115.0	110.5 115.5	0.5 0.5
120	#####				4-120(G, W)	120.0	120.5	0.5
125	#####	beforsite (Mcbl)	122.0-127.0m very light gray(N8) beforsite( $\phi=1$ to 2 mm max. 5mm) with a few dotted sulfides and black Fe oxides( $\phi=1$ to 2mm)	0	4-125(G)	125.0	125.5	0.5
130	#####	weathered beforsite (Mcbl)	127.0-132.5m light brownish gray(5YR 6/1) to light gray(N7) beforsite( $\phi=1$ to 2mm, max. 5mm) with grayish brown Fe hydroxides spots (d=5 to 10cm)	1	4-130(G)	130.0	130.5	0.5
135	#####	beforsite (Mcbl)	132.5-136.5m very light gray beforsite ( $\phi=1$ to 2mm max. 5mm) with a few dotted sulfides and black Fe oxide( $\phi=1$ to 2mm)	0	4-135(G)	135.0	135.5	0.5
140	#####	weathered beforsite (Mcbl)	136.5-143.0m light brownish gray(5YR 6/1) to light gray(N7) beforsite( $\phi=1$ to 2mm, max. 5mm) with grayish brown Fe hydroxides spots (d=5 to 10cm) clear flow banding ( $<60$ to $70^\circ$ )	1	4-140(G, W)	140.0	140.5	0.5
145	#####	sulfides-rich beforsite (Mcbl)	143.0-150.2m very light gray(N8) beforsite( $\phi=1$ to 2 mm max. 30mm) with dotted sulfides, green clayey, greenish gray minerals( $\phi=1$ to 3 mm)	0	4-145(G) 4T-3(T) 4X-2(X)	145.0 146.9 148.7	145.5 147.0 148.8	0.5 0.1 0.1
150	#####				4-150(G)	150.0	150.5	0.5

B-6 Drilling Logs of the Orange Area (8)

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
5	*#*#*#*# *#*#*#*# *#*#*#*# *#*#*#*# *#*#*#*#				5-0(G)	0.0	0.3	0.3
					5-5(G)	5.0	5.5	0.5
					5-10(G)	10.0	10.5	0.5
					5-15(G)	15.0	15.5	0.5
					5-20(G)	20.0	20.5	0.5
10	*#*#*#*# *#*#*#*#	weathered beforiste (Mcbl)	0.0-24.0m grayish brown(5YR 3/2) to brownish gray (5YR 4/1) beforiste( $\phi=1$ to 2mm, max. 3 cm) with dark green rock breccia(d=3 to 5cm max. 10cm) white calcite veinlets(W=1 to 2mm)	1	5-25(G)	25.0	25.5	0.5
					5-30(G, W)	30.0	30.5	0.5
15	*#*#*#*# *#*#*#*#				5-34(G)	34.0	34.5	0.5
					5X-1(X)	35.0	35.1	0.1
20	*#*#*#*# *#*#*#*#				5-40(G, W)	40.0	40.5	0.5
					5-45(G)	45.0	45.5	0.5
25	#3#3#3#3# #3#3#3#3#	phlogopite-rich beforiste (Mcbl)	24.0-34.0m light gray(N7) beforiste( $\phi=1$ to 3mm) with irregular spots(d= 2 to 3cm max. 10 cm) by dark green minerals, and with dots(d=1 to 2 mm) by yellowish brown, and pale green minerals	0	5-47(G)	47.3	47.8	0.5
					5-50(G, W)	50.0	50.5	0.5
30	#3#3#3#3# #3#3#3#3#				5-55(G)	55.0	55.5	0.5
					5X-2(X)	55.0	55.1	0.1
35	L L L L L L L L L L L L L L L L L L L L	dolerite dyke (Kdd)	34.0-39.0m dark green dolerite dyke	1	5-60(G, W)	60.0	60.5	0.5
					5-65(G)	65.0	65.5	0.5
40	#3#3#3#3# #3#3#3#3#	phlogopite-rich beforiste (Mcbl)	39.0-41.5m light greenish gray beforiste with pale to dark green, and brownish black Fe oxide minerals 41.5-55.0m light greenish gray(5GY 8/1) beforiste ( $\phi=1$ to 2mm, max. 10mm) with spots(d=3 to 5cm, max 40cm) of dark green, black, pale to dark green, and dark yellowish minerals clear flow banding( $\angle 70^\circ$ )	0	5-67(G)	67.3	67.8	0.5
					5-70(G, W)	70.0	70.5	0.5
45	#3#3#3#3# #3#3#3#3#				5-75(G)	75.0	75.5	0.5
					5-80(G, W)	80.0	80.5	0.5
50	#3#3#3#3# #3#3#3#3#				5E-1(T)	84.7	84.8	0.1
					5-85(G)	85.0	85.5	0.5
55	#3#3#3#3# #3#3#3#3#	Fe oxide-rich beforiste (Mcbl)	59.7-83.8m clear flow banding( $\angle 70^\circ$ ) very light gray(N8) beforiste( $\phi=1$ to 2mm) with black Fe oxides and sulfides, bearing spots(d=1 to 5cm) of dark green minerlas clear flow banding( $\angle 70^\circ$ )	0	5T-1(T)	88.5	88.6	0.1
					5-90(G, W)	90.0	90.5	0.5
60	#2#2#2#2# #2#2#2#2#				5E-2(T)	92.2	92.3	0.1
					5-92(G)	92.3	92.8	0.5
65	#2#2#2#2# #2#2#2#2#				5-95(G)	95.0	95.5	0.5
					5T-2(T)	96.1	96.2	0.1
70	#2#2#2#2# #2#2#2#2#				5-100(G, W)	100.0	105.5	0.5
75	#2#2#2#2# #2#2#2#2#							
80	#2#2#2#2# #2#2#2#2#							
85	#1#1#1#1# #1#1#1#1#	sulfides-rich beforiste (Mcbl)	88.8-86.2m very light gray beforiste( $\phi=$ 1 to 2mm) with dotted sulfides and dark green brecciated syenite(d=5.30cm)	0				
90	#2#2#2#2# #2#2#2#2#	Fe oxide-rich beforiste(Mcbl)	86.2-88.7m very light gray beforiste( $\phi=$ 1 to 2mm) with bk Fe ox. and sulfides	0				
95	#1#1#1#1# #1#1#1#1#	sulfides-rich beforiste (Mcbl)	88.7-105.1m clear flow banding( $\angle 0^\circ$ ) very light gray(N8) to light gray(N7) beforiste( $\phi=1$ to 2mm) with dotted sulfides(pyrite, pyrothite)	0				
100	#1#1#1#1# #1#1#1#1#		96.1-96.2m sulfides veinlets(W=2cm)					

B-6 Drilling Logs of the Orange Area (9)



Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weath- ering	Sampling Number & (Type of Test)	Sampling Interval								
						From (m)	to (m)	Width (m)						
100	#1#1#1#1# #1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb1)	88.7-105.1m very light gray(N8) to light gray(N7) beforsite( $\phi$ =1 to 2mm) with dotted sulfides(pyrite, pyrrhotite)	0	5-105(G)	105.0	105.5	0.5						
105	#1#1#1#1# >>>> >>>> >>>>	syenite (Msu)	105.1-108.4m dark green metamorphosed syenite with sulfides(pyrite, pyrrhotite)	0										
110	+ + + + + + + + + + + + + + + + + + + +	micro-granite (Mgr)	108.4-150.3m very light gray quartz( $\phi$ = 1 to 2mm) beraing micro-granite with dotted sulfides(pyrrhotite) and black Fe oxide	1										
115	+ + + + + + + + + + + + + + + + + + + +													
120	+ + + + + + + + + + + + + + + + + + + +													
125	+ + + + + + + + + + + + + + + + + + + +													
130	+ + + + + + + + + + + + + + + + + + + +													
135	+ + + + + + + + + + + + + + + + + + + +													
140	+ + + + + + + + + + + + + + + + + + + +													
145	+ + + + + + + + + + + + + + + + + + + +													
150	+ + + + +								150.3m					

B-6 Drilling Logs of the Orange Area (10)

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weath- ering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
5	#1#1#1#1# #1#1#1#1#	weathered beforsite (Mcb2)	0.0-3.8m grayish brown(5YR 3/2) beforsite ( $\phi=1$ to 2mm)	2	6-0(G)	0.0	0.3	0.3
			3.8-20.0m very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm) partly light brownish gray weathered		6-5(G)	5.0	5.5	0.5
10	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	20.0-41.0m clear flow banding( $\angle 60^\circ$ )	0 to 1	6-10(G,W)	10.0	10.5	0.5
					6-15(G)	15.0	15.5	0.5
15	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	20.0-41.0m clear flow banding( $\angle 70^\circ$ ) very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0 to 1	6-15(G)	15.0	15.5	0.5
					6T-1(T)	17.5	17.6	0.1
20	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	20.0-41.0m clear flow banding( $\angle 70^\circ$ ) very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0 to 1	6-20(G)	20.0	20.5	0.5
					6-25(G)	25.0	25.5	0.5
25	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	20.0-41.0m clear flow banding( $\angle 70^\circ$ ) very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0 to 1	6-30(G,W)	30.0	30.5	0.5
					6-35(G)	35.0	35.5	0.5
30	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	20.0-41.0m clear flow banding( $\angle 70^\circ$ ) very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0 to 1	6-40(G)	40.0	40.5	0.5
					6-45(G)	42.2	42.3	0.1
35	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	20.0-41.0m clear flow banding( $\angle 70^\circ$ ) very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0 to 1	6X-1A(X)	42.3	43.4	0.1
					6-50(G,W)	50.0	50.5	0.5
40	#3#3#3#3# #3#3#3#3#	phlogopite-rich beforsite (Mcb2)	41.0-53.0m very light gray(N8) beforsite( $\phi=5$ to 10mm) with dotted pale green minerals ( $\phi=5$ to 7mm), dark brown minerals( $\phi=$ 5 to 10mm), brown minerals( $\phi=3$ to 5mm), black Fe oxide( $\phi=1$ to 2mm), and sulfides (marcasite, pyrite)	0	6-45(G)	45.0	45.5	0.5
					6-55(G)	55.0	55.5	0.5
45	#3#3#3#3# #3#3#3#3#	phlogopite-rich beforsite (Mcb2)	41.0-53.0m very light gray(N8) beforsite( $\phi=5$ to 10mm) with dotted pale green minerals ( $\phi=5$ to 7mm), dark brown minerals( $\phi=$ 5 to 10mm), brown minerals( $\phi=3$ to 5mm), black Fe oxide( $\phi=1$ to 2mm), and sulfides (marcasite, pyrite)	0	6-60(G)	60.0	60.5	0.5
					6-65(G)	65.0	65.5	0.5
50	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	53.0-73.0m very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0	6-70(G,W)	70.0	70.5	0.5
					6-75(G)	75.0	75.5	0.5
55	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	53.0-73.0m very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0	6-80(G)	80.0	80.5	0.5
					6-85(G)	85.0	85.5	0.5
60	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	53.0-73.0m very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0	6-90(G,W)	90.0	90.5	0.5
					6-95(G)	95.0	95.5	0.5
65	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	53.0-73.0m very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0	6-75(G)	75.0	75.5	0.5
					6-80(G)	80.0	80.5	0.5
70	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	53.0-73.0m very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0	6-85(G)	85.0	85.5	0.5
					6-90(G,W)	90.0	90.5	0.5
75	#3#3#3#3# #3#3#3#3#	phlogopite-rich beforsite (Mcb2)	73.0-77.0m very light gray beforsite with dotted pale green, dark brown, brown minerals, black Fe oxide, and sulfides with black slate breccia( $d=2$ to 3m)	0	6-95(G)	95.0	95.5	0.5
					6-100(G)	100.0	105.5	0.5
80	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	77.0-85.5m very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with a few dotted sulfide and black Fe oxide minerals( $\phi=1$ to 2mm)	0	6-80(G)	80.0	80.5	0.5
					6-85(G)	85.0	85.5	0.5
85	#3#3#3#3# #3#3#3#3#	phlogopite-rich beforsite (Mcb2)	85.5-88.0m very light gray beforsite with pale green, brown minerals, Fe oxide and sulfides(pyrite), with slate breccia	0	6-90(G,W)	90.0	90.5	0.5
					6-95(G)	95.0	95.5	0.5
90	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	88.0-101.0m clear flow banding( $\angle 60^\circ$ ) very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0	6-90(G,W)	90.0	90.5	0.5
					6-95(G)	95.0	95.5	0.5
95	#1#1#1#1# #1#1#1#1#	sulfides-rich beforsite (Mcb2)	88.0-101.0m clear flow banding( $\angle 60^\circ$ ) very light gray(N8) beforsite( $\phi=1$ to 2 mm max.5mm) with dotted sulfide(pyrite) and black Fe oxide minerals( $\phi=1$ to 2mm)	0	6-95(G)	95.0	95.5	0.5
					6-100(G)	100.0	105.5	0.5
100	#1#1#1#1#	sulfides-rich beforsite (Mcb2)	clear flow banding( $\angle 60^\circ$ )	0	6-100(G)	100.0	105.5	0.5

B-6 Drilling Logs of the Orange Area (11)

Depth (m)	Geologic Colum	Rock Name & (Rock Code)	Description	Weath- ering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
100	#1#1#1#1# #4#4#4#4#		101.0-109.0m very light gray(N8) beforisite( $\phi=1$ to 2 mm max.5mm) with spots( $d=1$ to 3cm max. 30cm) of dark brown minerlas(phlogopite) and pale green apatite( $\phi=1$ to 5mm)	0	6-105(G) 6X-2(X)	105.0 105.5	105.5 105.6	0.5 0.1
105	#4#4#4#4# #4#4#4#4# #4#4#4#4# #4#4#4#4# #4#4#4#4#	apatite-rich beforiste (Mcb2)						
110	L L L L L #4#4#4#4#	dolerite(Kdd)	109.0-110.3m black hard dolerite dyke	0	6-110(G, W)	110.0	110.5	0.5
115	#4#4#4#4# #4#4#4#4# #4#4#4#4# #4#4#4#4# #4#4#4#4# #4#4#4#4#	apatite-rich beforiste (Mcb2)	110.3m-121.5m clear flow banding( $\angle 60^\circ$ ) very light gray(N8) beforisite( $\phi=1$ to 2 mm max.5mm) with dotted pale green, brown to dark brown(phlogopite), pale to dark green, and sulfides(pyrrhotite) minerals( $\phi=1$ to 2 max.5mm)	0	6-115(G) 6R-1(L) 6T-2(T, E)	115.0 115.0 117.0	115.5 115.1 117.1	0.5 0.1 0.1
120	#4#4#4#4# #4#4#4#4#		clear flow banding( $\angle 60^\circ$ )		6-120(G) 6T-3(T)	120.0 121.3	120.5 121.4	0.5 0.1
125	L L L L L L L L L L #4#4#4#4#	dolerite dyke(Kdd)	121.5-124.0m black hard to soft(fractured) dolerite	1				
130	#4#4#4#4# #4#4#4#4# #4#4#4#4# #4#4#4#4#	apatite-rich beforiste (Mcb2)	124.0-130.0m very light gray(N8) beforisite( $\phi=1$ to 2 mm max.5mm) with dotted apatite, sulfide phlogopite, and phlogoite, later calcite clear boundary( $\angle 70^\circ$ )	0	6-125(G)	125.0	125.5	0.5
135	L L L L L L L L L L #4#4#4#4# #4#4#4#4# #4#4#4#4#	dolerite(Kdd)	130.0-131.0m black hard dolerite dyke	0				
140	L L L L L L L L L L L L L L L	dolerite (Kdd)	131.0-132.8m very light gray beforisite with apatite, sulfide, phlogopite	0	6-129(G, W)	129.0	129.5	0.5
145	#3#3#3#3# #3#3#3#3# #3#3#3#3#	phlogopite-rich beforiste (Mcb2)	132.8-135.5m black hard dolerite dyke	0	6-135(G)	135.0	135.5	0.5
150	L L L L L > > > > > > > > > > > >	dolerite(Kdd)	135.5-136.8m very light gray beforisite with apatite, sulfide, phlogopite	0				
			136.3-141.8m black hard dolerite dyke clear boundary( $\angle 70^\circ$ )	0	6-140(G)	140.0	140.5	0.5
			141.8-145.8m very light gray beforisite with phlogopite and sulfides clear boundary( $\angle 70^\circ$ )	0	6-142(G)	142.3	142.8	0.5
			145.8-147.2m black hard dolerite dyke	0	6-145(G)	145.0	145.5	0.5
			147.2-150.5m very light gray syenite with phlogopite and sulfides	0	6T-4(T)	148.7	148.8	0.1
		syenite (Msu)	150.5m	0	6-150(G, W)	150.0	150.5	0.5

B-6 Drilling Logs of the Orange Area (12)

MJNO-7

Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
	#.#.#.#.#	weathered beforsite(Mcb2)	0.0-2.0m very light gray to light brownish gray beforsite( $\phi=1$ to 2mm)	1	7-0(G)	0.0	0.3	0.3
5	#1#1#1#1#				7-5(G)	5.0	5.5	0.5
10	#1#1#1#1#	sulfides-rich beforsite (Mcb2)	2.0-24.5m very light gray(N8) beforsite( $\phi=1$ to 2 mm) with dotted sulfides(pyrite), black Fe oxide minerals( $\phi=1$ to 2mm)	0	7-10(G, W)	10.0	10.5	0.5
15	#1#1#1#1#				7-15(G)	15.0	15.5	0.5
20	#1#1#1#1#				7-20(G)	20.0	20.5	0.5
25	#1#1#1#1#		clear boundary( $\angle 50^\circ$ ) 24.5-30.5m		7-25(G)	25.0	25.5	0.5
30	L L L L L	dolerite dyke (Kdd)	black hard dolerite dyke	0	7-30(G, W)	30.0	30.5	0.5
35	#2#2#2#2#				7-35(G)	35.0	35.5	0.5
40	#2#2#2#2#	Fe oxide-rich beforsite (Mcb2)	30.5-48.0m very light gray(N8) beforsite( $\phi=1$ to 2mm) with black Fe oxides and sulfide minerals( $\phi=1$ to 2mm)		7-40(G)	40.0	40.5	0.5
45	#2#2#2#2#				7-45(G) 7T-2(T, E)	45.0 46.0	45.5 46.1	0.5 0.1
50	#4#4#4#4#				7-50(G, W)	50.0	50.5	0.5
55	#4#4#4#4#				7-55(G)	55.0	55.5	0.5
60	#4#4#4#4#	apatite-rich beforsite (Mcb2)	48.0-71.5m very light gray(N8) beforsite( $\phi=2$ to 3mm max.5mm) with dotted pale green apatite( $\phi=3$ to 5mm), sulfide(pyrite) ( $\phi<1$ mm), black Fe oxide( $\phi<1$ mm), and pale to bluish green minerals( $\phi=3$ to 5mm)	0	7-60(G)	60.0	60.5	0.5
65	#4#4#4#4#				7-65(G)	65.0	65.5	0.5
70	#4#4#4#4#				7-70(G, W)	70.0	70.5	0.5
75	#3#3#3#3#	phlogopite-rich beforsite(Mcb2)	71.5-72.5m very light gray beforsite with spots( $d=2$ to 5cm) of phlogopite 72.5-79.0m very light gray beforsite with dotted pale green apatite( $\phi=3$ to 5mm), sulfide ( $\phi<1$ mm), black Fe oxide( $\phi<1$ mm), and pale to bluish green minerals( $\phi=3$ to 5 mm)	0	7-75(G)	75.0	75.5	0.5
80	#4#4#4#4#				7-80(G)	80.0	80.5	0.5
85	#4#4#4#4#	apatite-rich beforsite (Mcb2)	79.0-83.0m very light gray beforsite with dotted pale green apatite, and black Fe oxide 83.0-86.0m clear flow banding( $\angle 60^\circ$ ) very light gray beforsite with dotted apatite, phlogopite, and amphibole 86.0-93.0m very light gray beforsite with dotted pale green apatite( $\phi=3$ to 5mm), and a few sulfides(pyrite)	0	7-85(G) 7X-3(X)	85.0 85.0	85.5 85.1	0.5 0.1
90	#4#4#4#4#				7-90(G, W)	90.0	90.5	0.5
95	#1#1#1#1#	sulfides-rich beforsite(Mcb2)	93.0-95.0m very light gray beforsite with dotted pyrite, phlogopite and apatite	0	7-95(G)	95.0	95.5	0.5
100	#4#4#4#4#	apatite-rich beforsite (Mcb2)	95.0-101.0m very light gray to light brownish gray beforsite with apatite, Fe oxides, pyrite and phlogopite	0	7-100(G)	100.0	105.5	0.5

## B-6 Drilling Logs of the Orange Area (13)

Depth (m)	Geologic Column	Rock Name	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
100	#4#4#4#4#4#							
105	#4#4#4#4#4#		101.0-120.0m very light gray(N8) beforosite( $\phi=2$ to 3mm max.5mm) with dotted pale green apatite( $\phi=3$ to 5mm), sulfide(pyrite) ( $\phi<1mm$ ), black Fe oxide( $\phi<1mm$ ), and pale to bluish green minerals( $\phi=3$ to 5mm)		7-105(G)	105.0	105.5	0.5
110	#4#4#4#4#4#				7-110(G, W)	110.0	110.5	0.5
115	#4#4#4#4#4#				7-115(G)	115.0	115.5	0.5
120	#4#4#4#4#4#		120.0-128.5m very light gray(N8) beforosite( $\phi=2$ to 3mm max.5mm) with dotted pale green apatite( $\phi=3$ to 5mm), and spots(d=3 to 5 cm max.20cm) of dark brown phlogopite, dark green amphibole		7-120(G)	120.0	120.5	0.5
125	#4#4#4#4#4#	apatite-rich beforsite (Wcb2)	128.5-133.0m very light gray to light brownish gray beforsite with apatite, Fe oxide, pyrite, phlogopite	0	7-125(G)	125.0	125.5	0.5
130	#4#4#4#4#4#		133.0-139.0m very light gray beforosite( $\phi=2$ to 3mm, max 5mm) with apatite( $\phi=3$ to 5mm), and spots(d=5 to 10cm max.20cm)of phlogopite and amphibole		7-130(G, W) 7T-4(T)	129.0 129.3	129.5 129.4	0.5 0.1
135	#4#4#4#4#4#		139.0-146.0m clear flow banding( $\angle 65^\circ$ ) very light gray to light brownish gray beforsite with apatite, Fe oxides, pyrite, phlogopite		7-135(G) 7X-1A(X) 7X-1B(X)	135.0 136.6 136.7	135.5 136.7 136.8	0.5 0.1 0.1
140	#4#4#4#4#4#				7-140(G)	140.0	140.5	0.5
145	#4#4#4#4#4#		146.0-150.5m very light gray beforiste with apatite, pyrite, phlogopite, and dark green mineral		7-145(G) 7R-1(I) 7X-2(X)	145.0 145.0 148.0	145.5 145.1 148.1	0.5 0.1 0.1
150	#4#4#4#4#4#		150.5m		7-150(G, W)	150.0	150.5	0.5

B-6 Drilling Logs of the Orange Area (14)

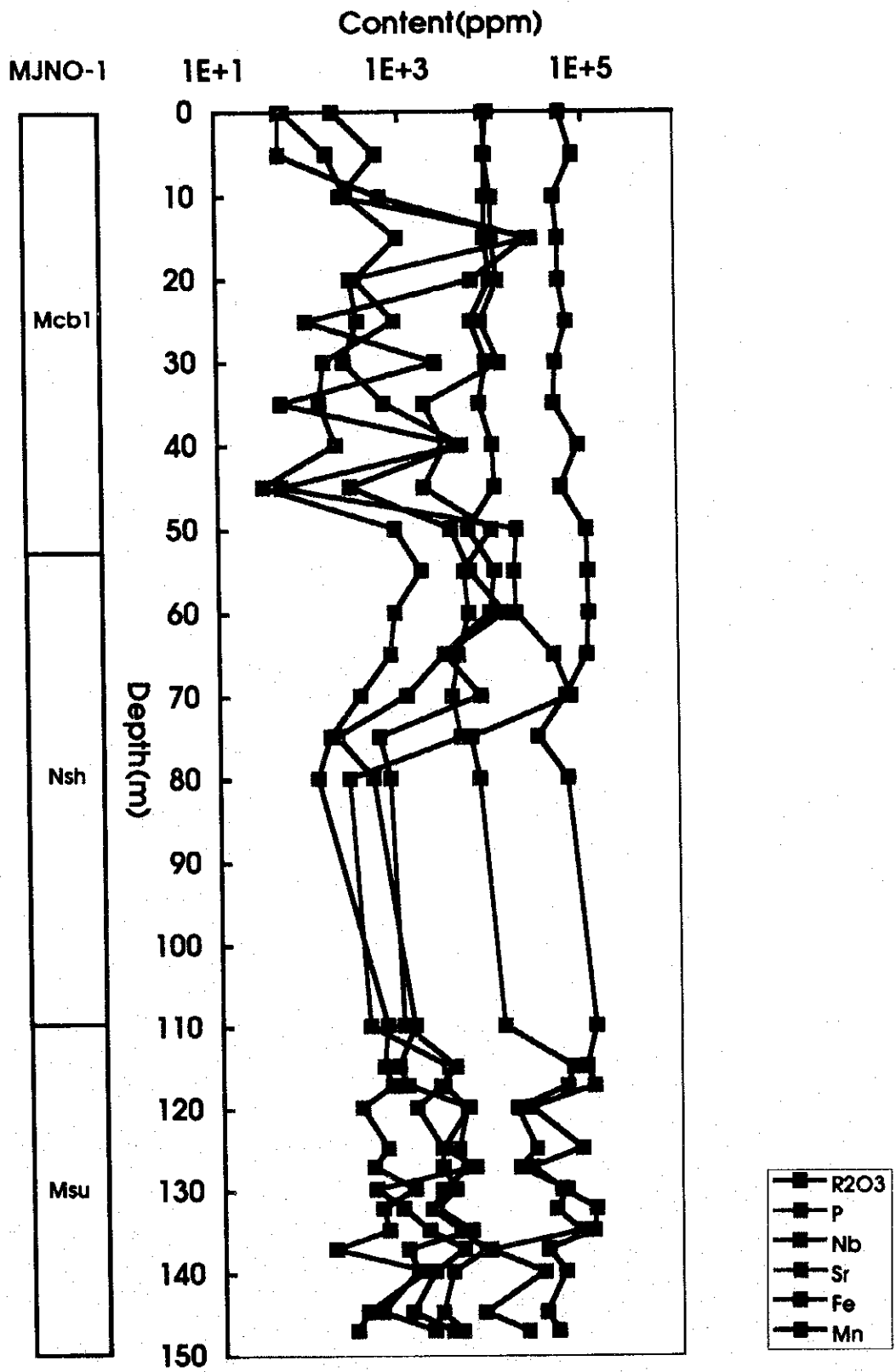
Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
5	#.#.#.#.#	weathered beforsite (Mcb2)	0.0-4.0m	1	8-0(G)	0.0	0.3	0.3
	#.#.#.#.#		light brownish gray beforsite(1-2mm) with dusky brown and black minerals		8-3(G)	3.0	3.5	0.5
	#.#.#.#.#		4.0-12.2m		1			
	slate (Nsh)	dark green well foliated slate with abundant dark green and black metamorphic minerals						
10								
15	#.#.#.#.#	beforsite (Mcb2)	12.2-17.0m	0	8-12(G)	12.0	12.5	0.5
	#.#.#.#.#		clear flow banding( $\angle 0^\circ$ ) light gray(N7) to very light gray(N8) beforsite( $\phi = 1$ to 2mm) with pyrite dissemination		8-15(G)	15.0	15.5	0.5
20	△△△	brecciated slate (Nsh)	17.0-27.3m	1	8-20(G)	20.0	20.5	0.5
	△△△		dark gray to black brecciated slate with very light gray(N8) beforsite networks and later stage brown to dark brown, and dark green minerals veinlets (W=5 t 30cm)					
	△△△							
25	△△△			0	8-25(G,W)	25.0	25.5	0.5
30	#3#3#3#3#	phlogopite-rich beforsite (Mcb2)	27.3-43.0m	0	8-30(G)	30.0	30.5	0.5
	#3#3#3#3#		clear flow banding( $\angle 60^\circ$ ) very light gray(N8) beforsite( $\phi = 1$ to 2mm) accompanied with brown to dark brown rich parts and pale to dark green rich parts in irregular by amphibole and phlogopite weak pyrite dissemination		8-35(G)	35.0	35.5	0.5
	#3#3#3#3#				8X-1(X)	35.0	35.1	0.1
40	#3#3#3#3#			0	8-40(G)	40.0	40.5	0.5
	#3#3#3#3#		43.0-56.5m					
45	#3#3#3#3#			0	8-45(G)	45.0	45.5	0.5
	#3#3#3#3#		very light gray(N8) beforsite( $\phi = 1$ to 2mm) accompanied with brown mineral rich parts and dark green rich parts in irregular by amphibole and phlogopite weak pyrite dissemination		8-50(G,W)	50.0	50.5	0.5
50	#3#3#3#3#			0	8-55(G)	55.0	55.5	0.5
	#3#3#3#3#				8T-2(T)	55.0	55.1	0.1
	#3#3#3#3#				8X-2(X)	55.0	55.1	0.1
60	L L L L L	dolerite dyke (Kdd)	56.5-61.5m	0	8-61(G)	60.0	60.5	0.5
	L L L L L	black to dark green dolerite						
65	#3#3#3#3#	apatite-rich beforsite (Mcb2)	61.5-62.5m	0	8-65(G)	65.0	65.5	0.5
	#3#3#3#3#		very light gray(N8) beforsite( $\phi = 2$ to 3 mm) rich in pale green apatite and with pale to dark green, black minerals and sulfides(pyrite, pyrrhotite)		8-67(G,W)	67.3	67.8	0.5
	#4#4#4#4#		62.5-70.2m		8-70(G)	70.0	70.5	0.5
70	#3#3#3#3#	phlogopite-rich beforsite(Mcb2)	70.2-72.5m	0	8-75(G)	75.0	75.5	0.5
	#3#3#3#3#		very light gray beforsite with brown phlogopite and amphibole		8T-3(T)	75.0	75.1	0.1
75	#4#4#4#4#	apatite-rich beforsite (Mcb2)	72.5-90.5m	0	8-80(G,W)	80.0	80.5	0.5
	#4#4#4#4#		very light gray(N8) beforsite( $\phi = 3$ to 5 mm) rich in pale green apatite( $\phi = 5$ mm max 5cm) and with pale to dark green minerals and sulfides (pyrite and pyrrhotite)		8-85(G)	85.0	85.5	0.5
	#4#4#4#4#		84.5-84.8m: dark green to black slate breccia		8T-4(T)	87.3	87.4	0.1
80	#4#4#4#4#			0	8-90(G,W)	90.0	90.5	0.5
	#4#4#4#4#							
85	#3#3#3#3#	phlogopite-rich beforsite (Mcb2)	90.5-93.8m	0	8-95(G)	95.0	95.5	0.5
	#3#3#3#3#		very light gray beforsite with brown, dark green, and black minerals patches (d=10 to 50cm)					
90	#4#4#4#4#	apatite-rich beforsite (Mcb2)	93.8-97.5m	0				
	#4#4#4#4#		very light gray(N8) beforsite ( $\phi = 3$ to 5mm) with pale green apatite ( $\phi = 5$ mm, max 3 to 5cm) and sulfides					
95	#3#3#3#3#	phlogopite-rich beforsite(Mcb2)	97.5-99.5m	0	8-100(G,W)	100.0	105.5	0.5
	#3#3#3#3#		very light gray beforsite with phlogopite, amphibole, magnetite					

B-6 Drilling Logs of the Orange Area (15)

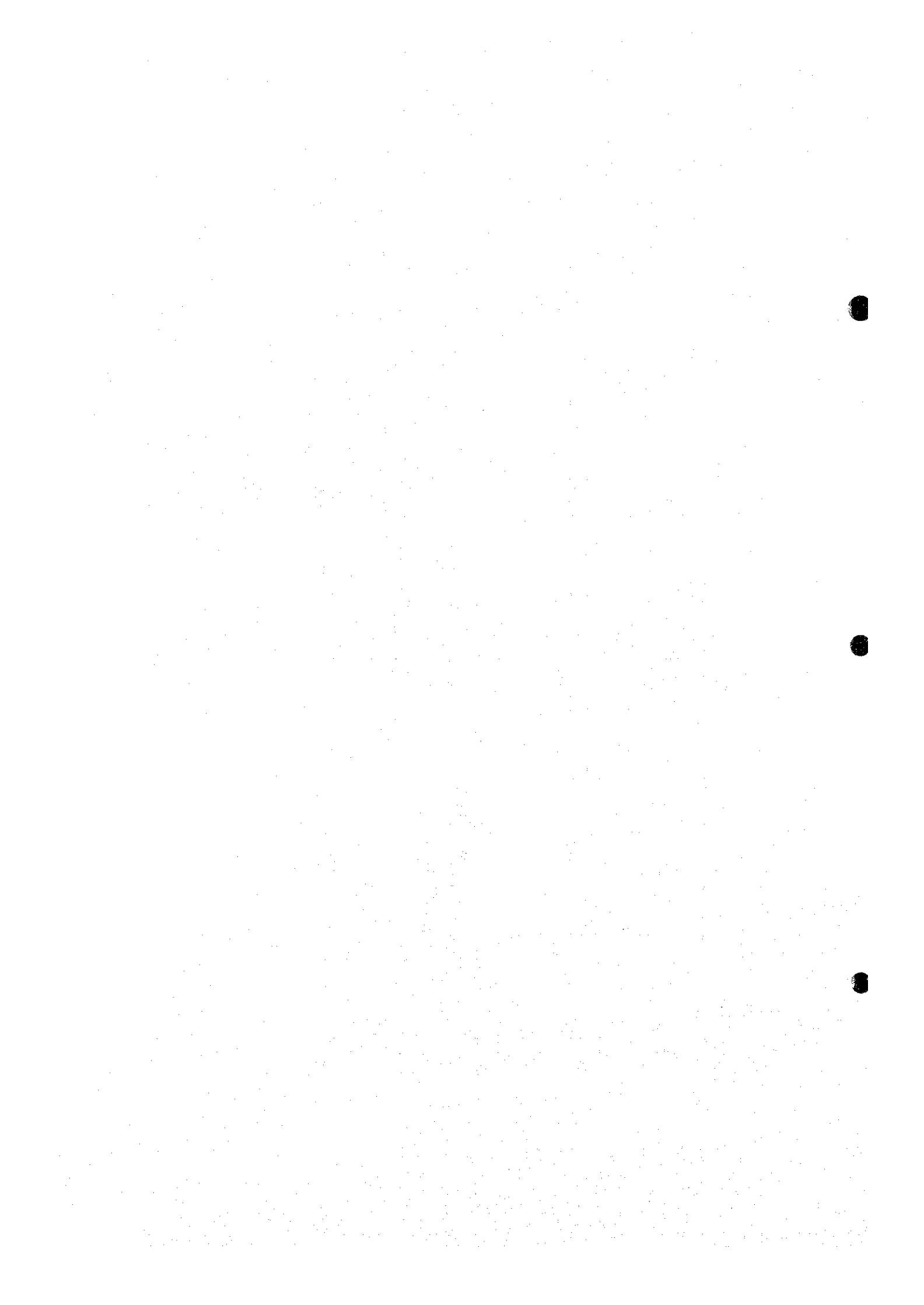
Depth (m)	Geologic Column	Rock Name & (Rock Code)	Description	Weathering	Sampling Number & (Type of Test)	Sampling Interval		
						From (m)	to (m)	Width (m)
100	#4#4#4#4#		99.5-137.5m					
105	#4#4#4#4#		very light gray(N8) beforosite( $\phi$ =2 to 3 mm) rich in pale green apatite and with pale to dark green, black minerals, and sulfides(pyrite, and pyrrhotite)		8-105(G)	105.0	105.5	0.5
110	#4#4#4#4#		102.0-103.0m pale green apatite rich parts		8-110(G)	110.0	110.5	0.5
115	#4#4#4#4#		104.0 to 106.0m sulfides (pyrite and pyrrhotite) rich parts		8-115(G)	115.0	115.5	0.5
120	#4#4#4#4#	apatite-rich beforosite (Mcb2)	116.2 to 116.8m brown, dark green and black minerals rich parts	0	8-120(G, W) 8R-1(I)	120.0 120.0	120.5 120.1	0.5 0.1
125	#4#4#4#4#				8-125(G)	125.0	125.5	0.5
130	#4#4#4#4#				8-130(G)	129.0	129.5	0.5
135	#4#4#4#4#				8-135(G)	135.0	135.5	0.5
	#4#4#4#4#		clear contact boundary ( $\angle 60^\circ$ )		8-137(G, W)	137.3	137.8	0.5
140	Y Y Y Y V Y Y Y Y V Y Y Y Y V Y Y Y Y V	trachyte dyke (Ktd)	137.5-145.5m light gray trachyte dyke	0	8T-5(T)	142.8	142.9	0.1
145	Y Y Y Y V		clear contact boundary ( $\angle 60^\circ$ )		8-145(G)	145.0	145.5	0.5
150	#3#3#3#3# #3#3#3#3# #3#3#3#3# #3#3#3#3#	phlogopite-rich beforosite (Mcb2)	145.5-150.4m very light gray beforosite( $\phi$ = 2 to 3mm max. 1 to 2cm) with phlogopite, magnetite 150.4m	0	8-150(G)	150.0	150.5	0.5

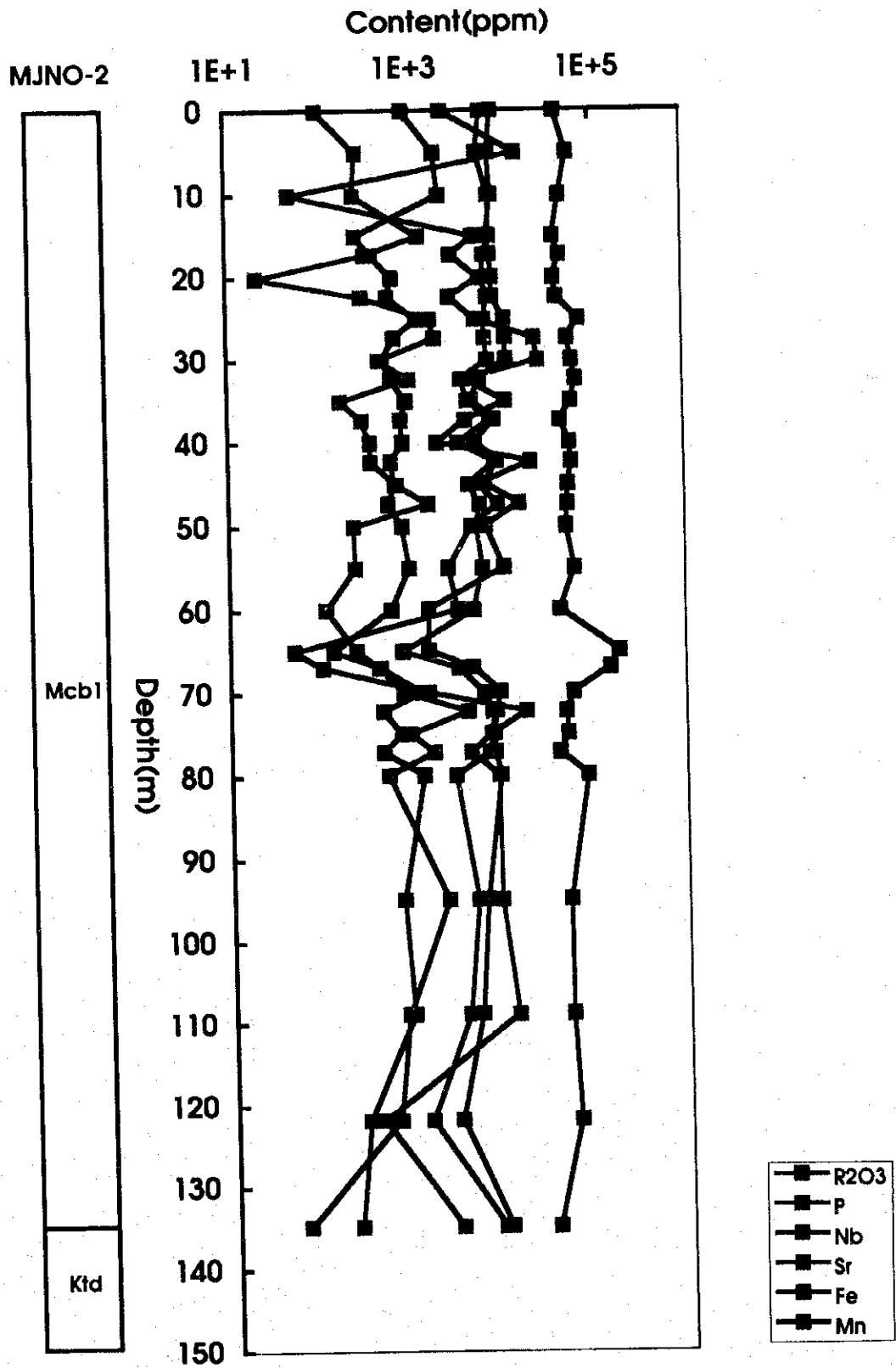
B-6 Drilling Logs of the Orange Area (16)



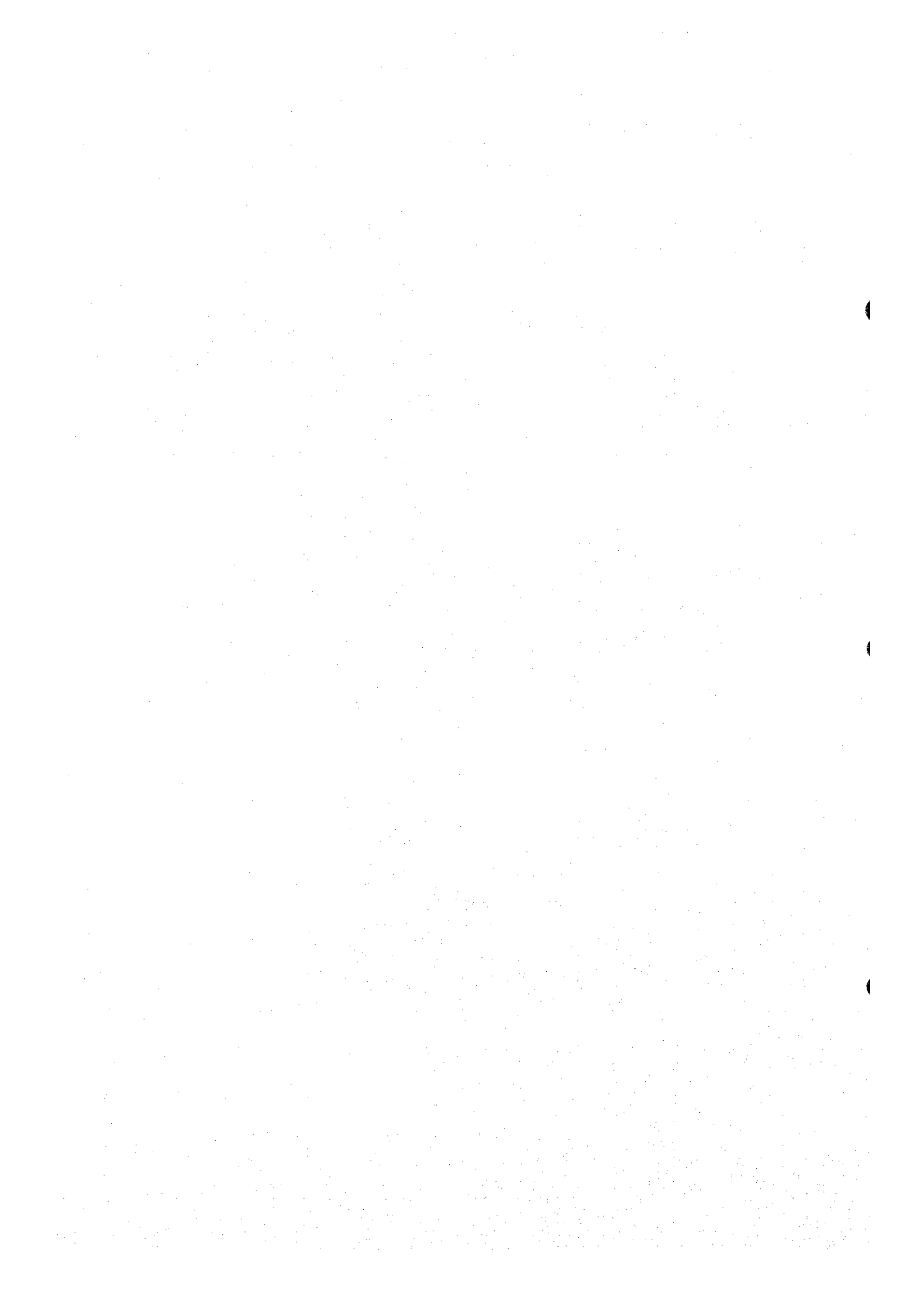


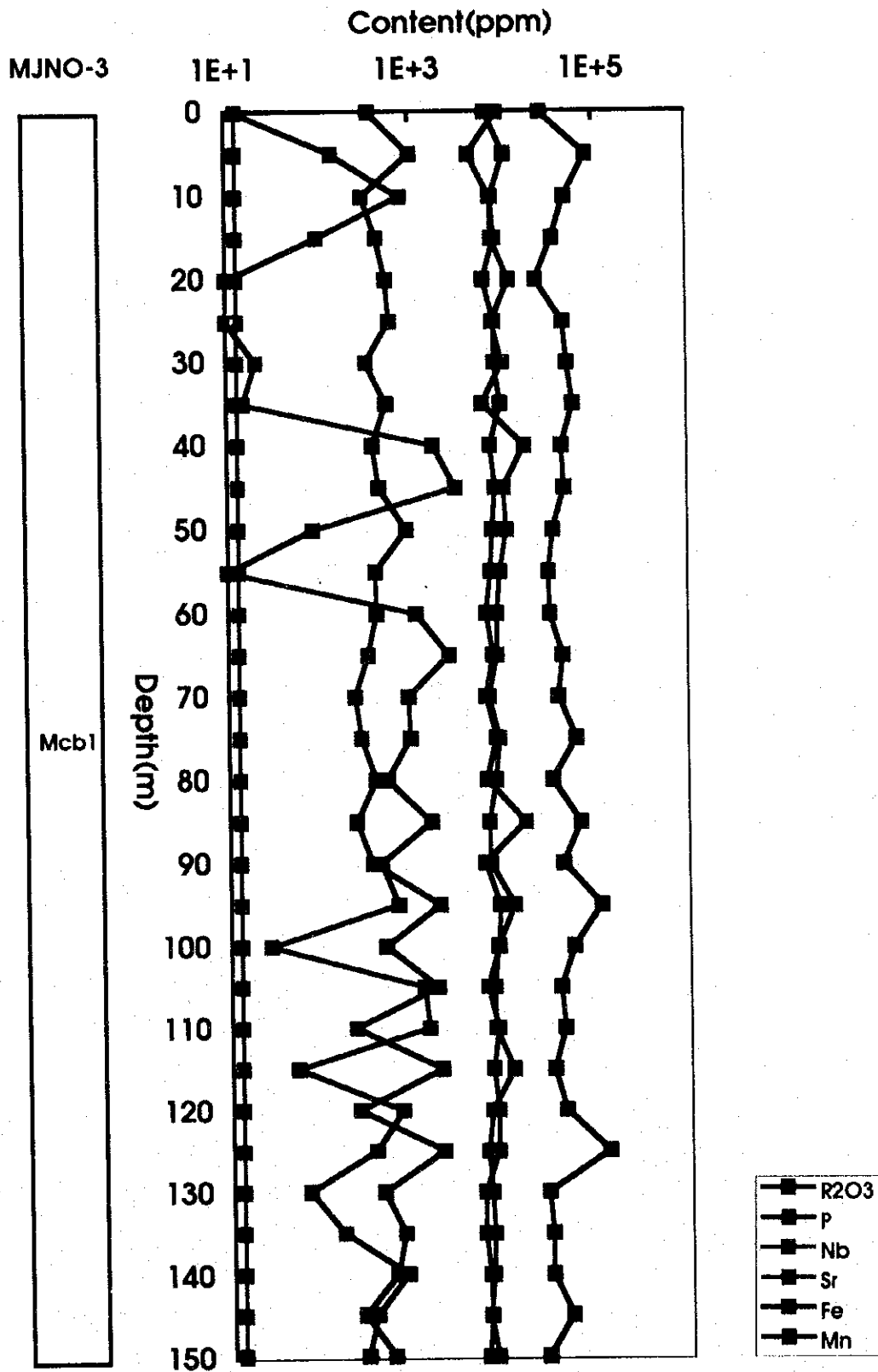
B-7 Geochemical Distribution along Drilling Cores (1)



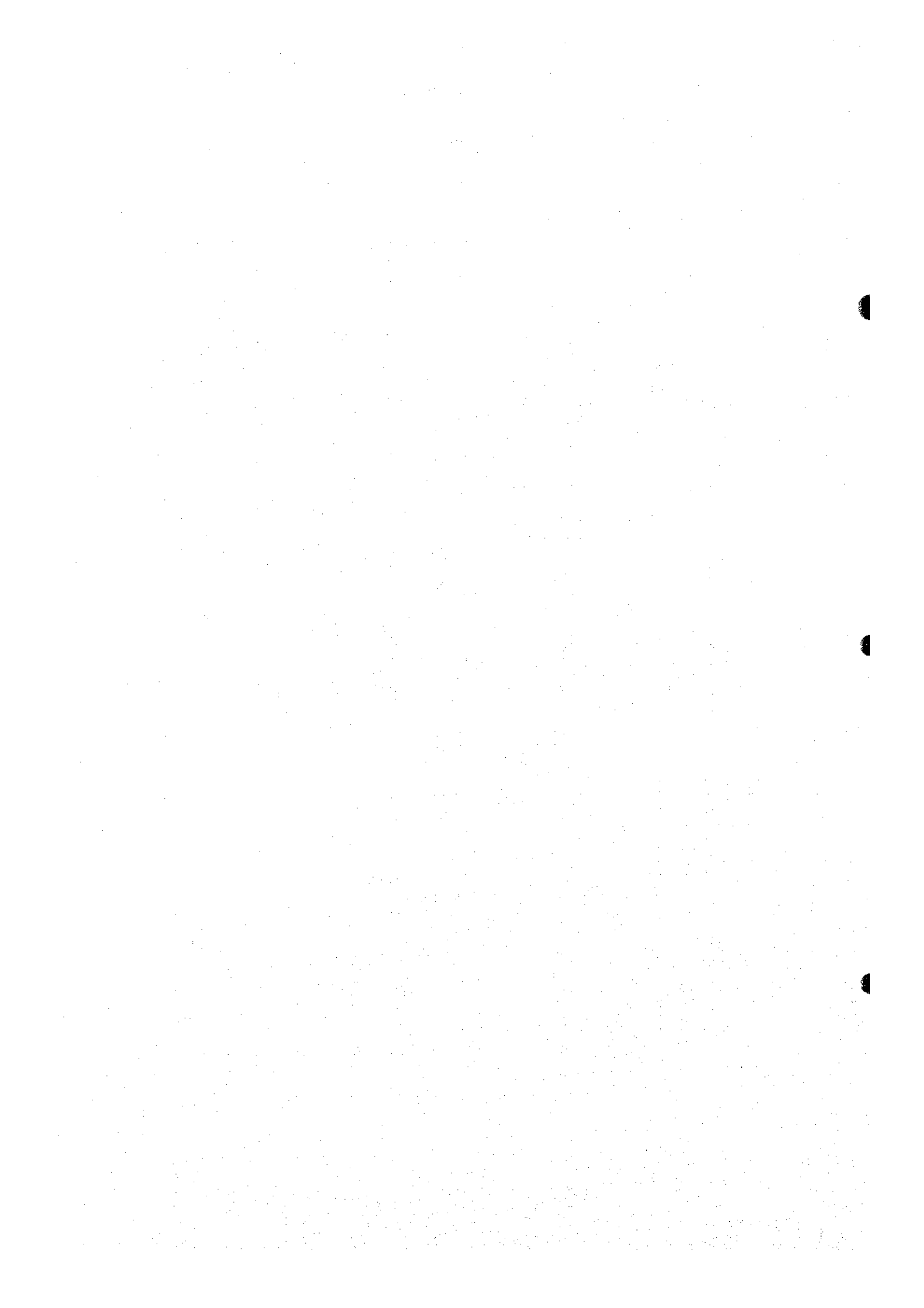


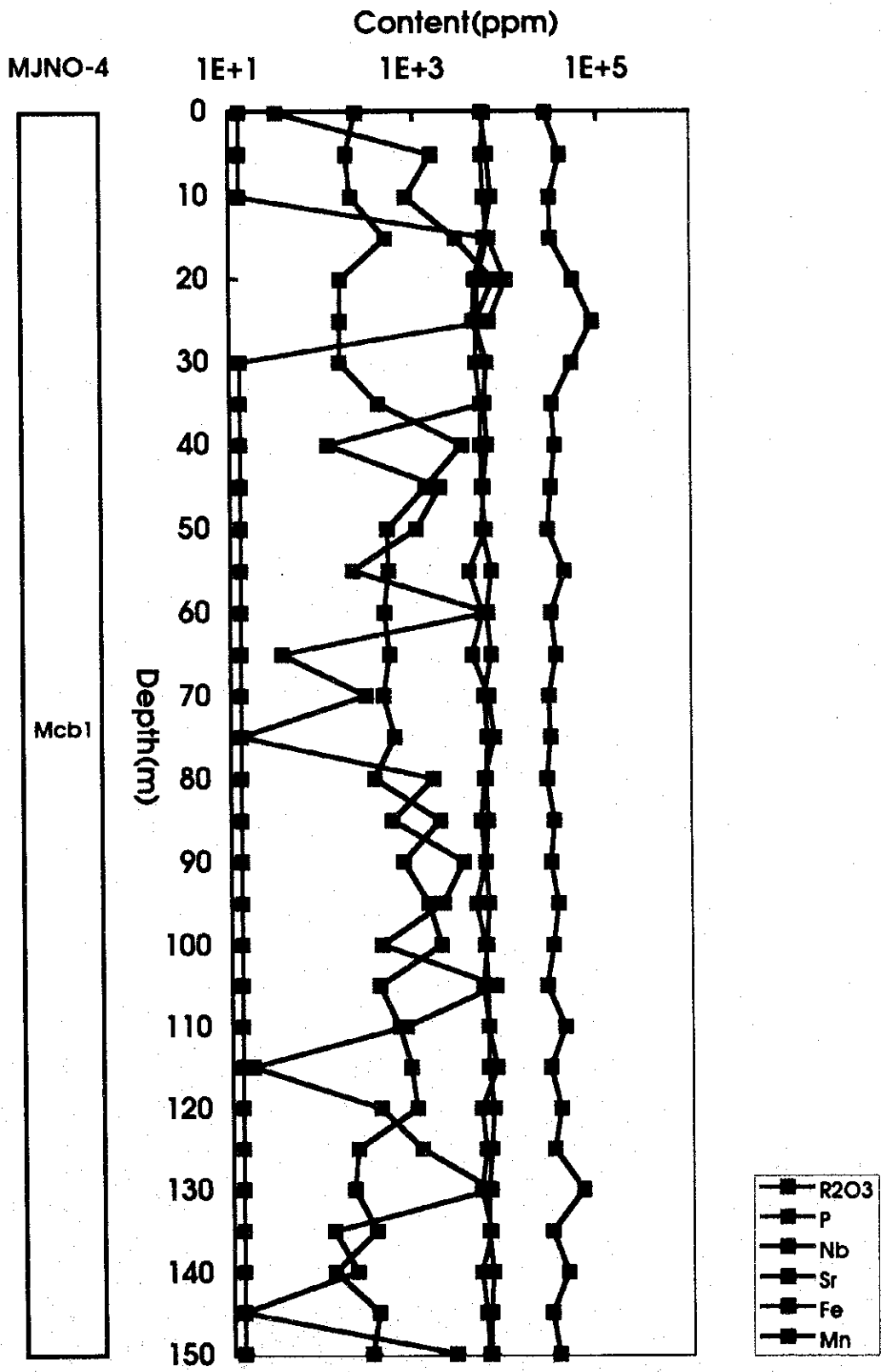
B-7 Geochemical Distribution along Drilling Cores (2)



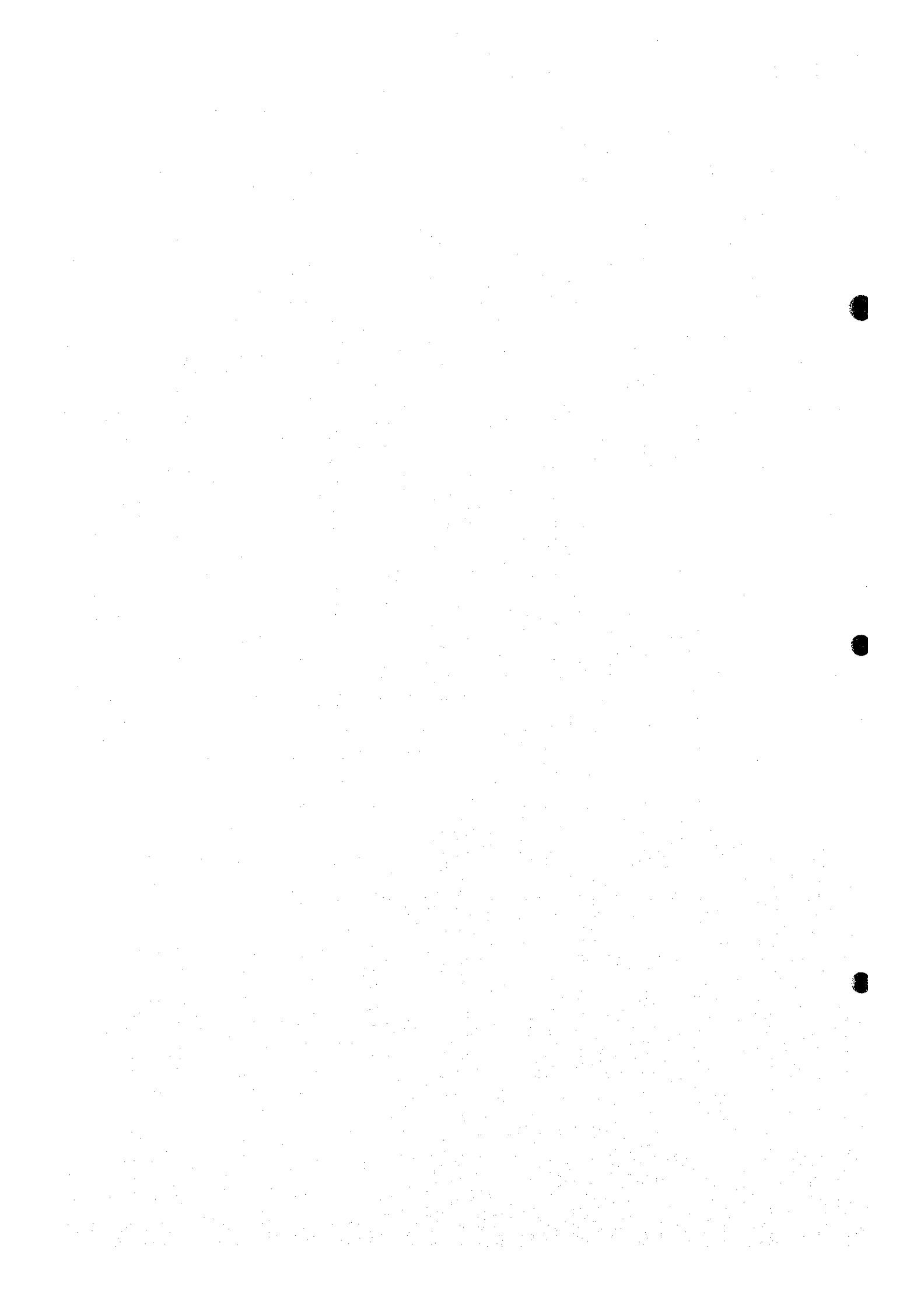


B-7 Geochemical Distribution along Drilling Cores (3)

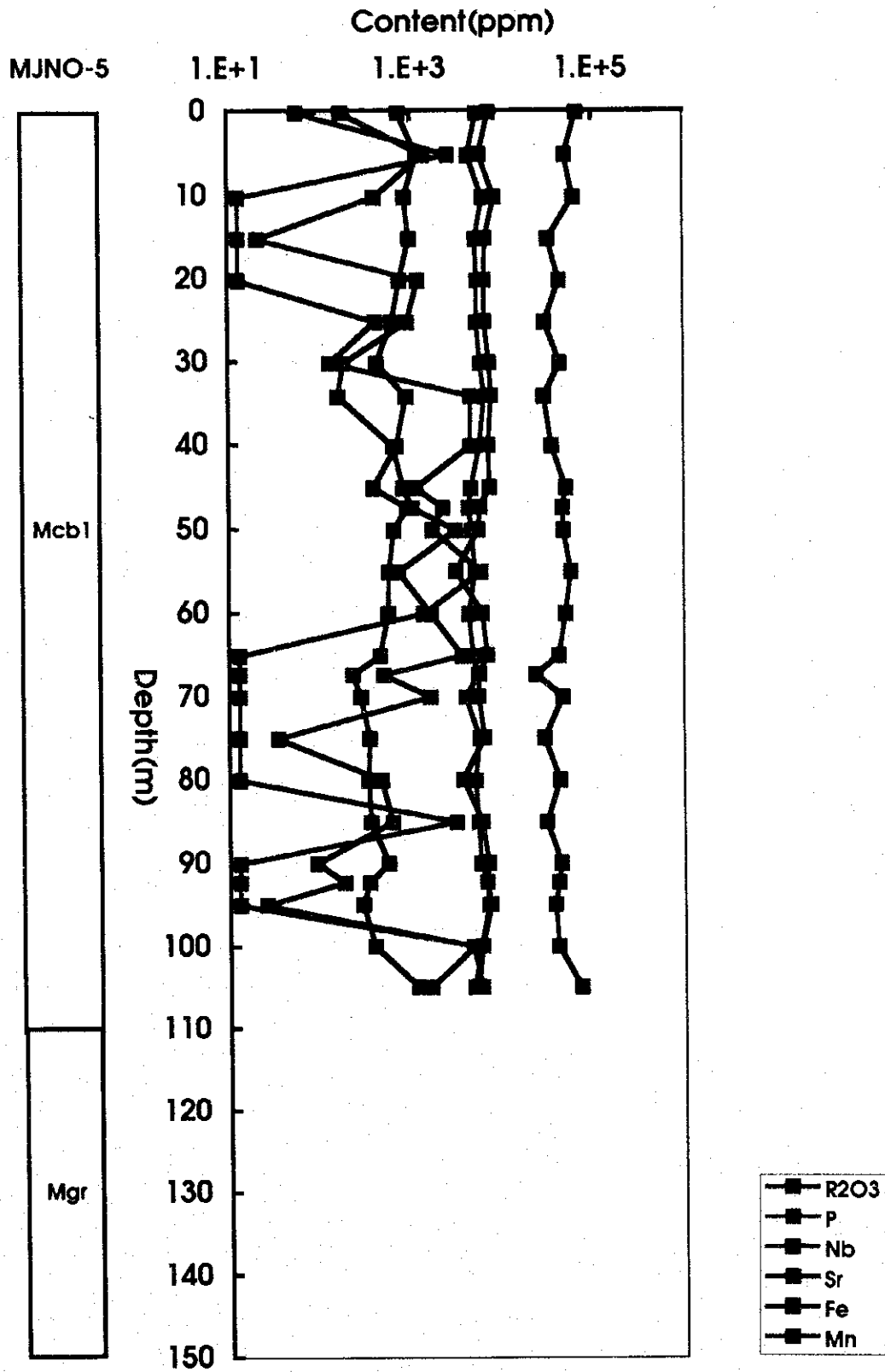




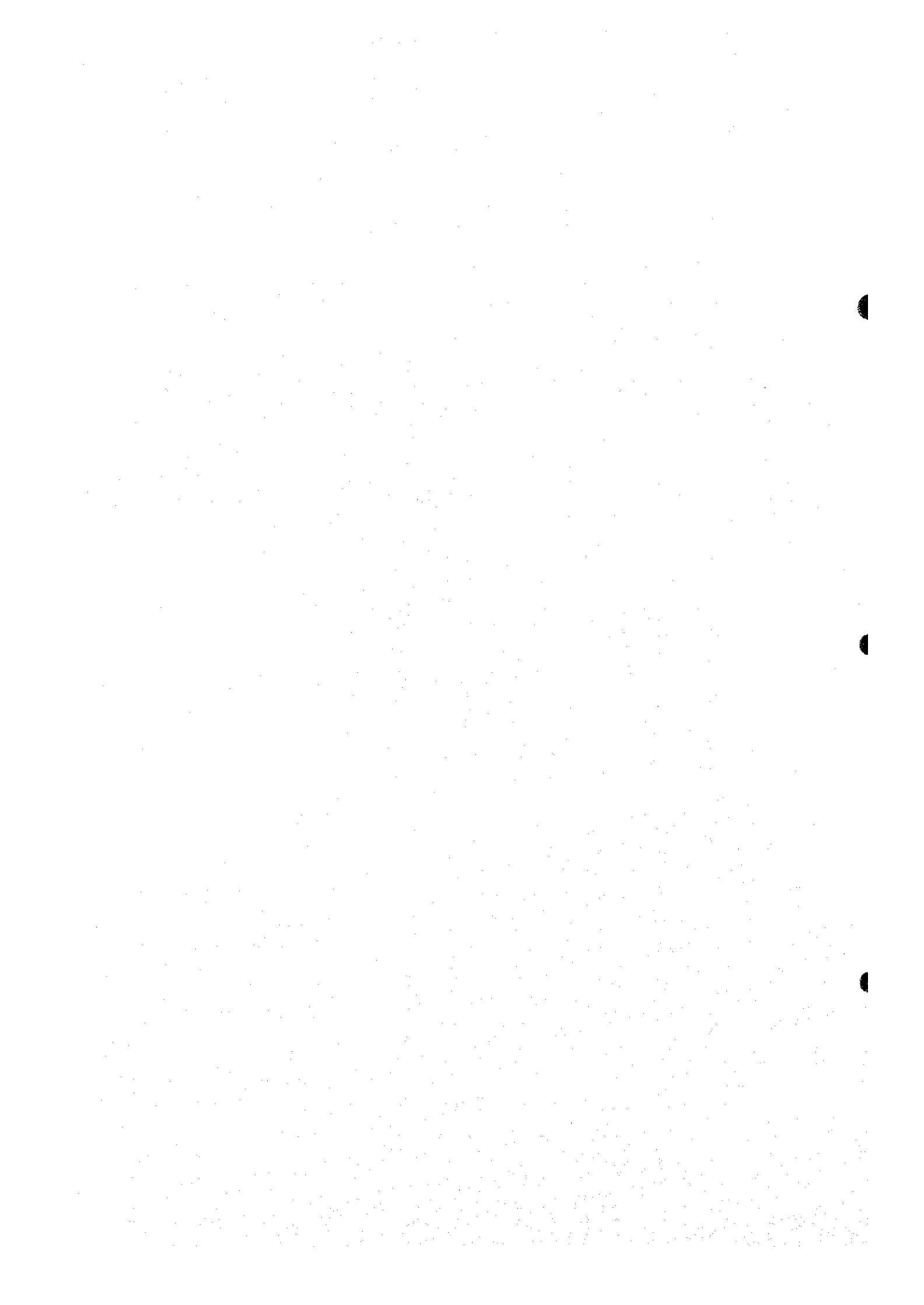
B-7 Geochemical Distribution along Drilling Cores (4)

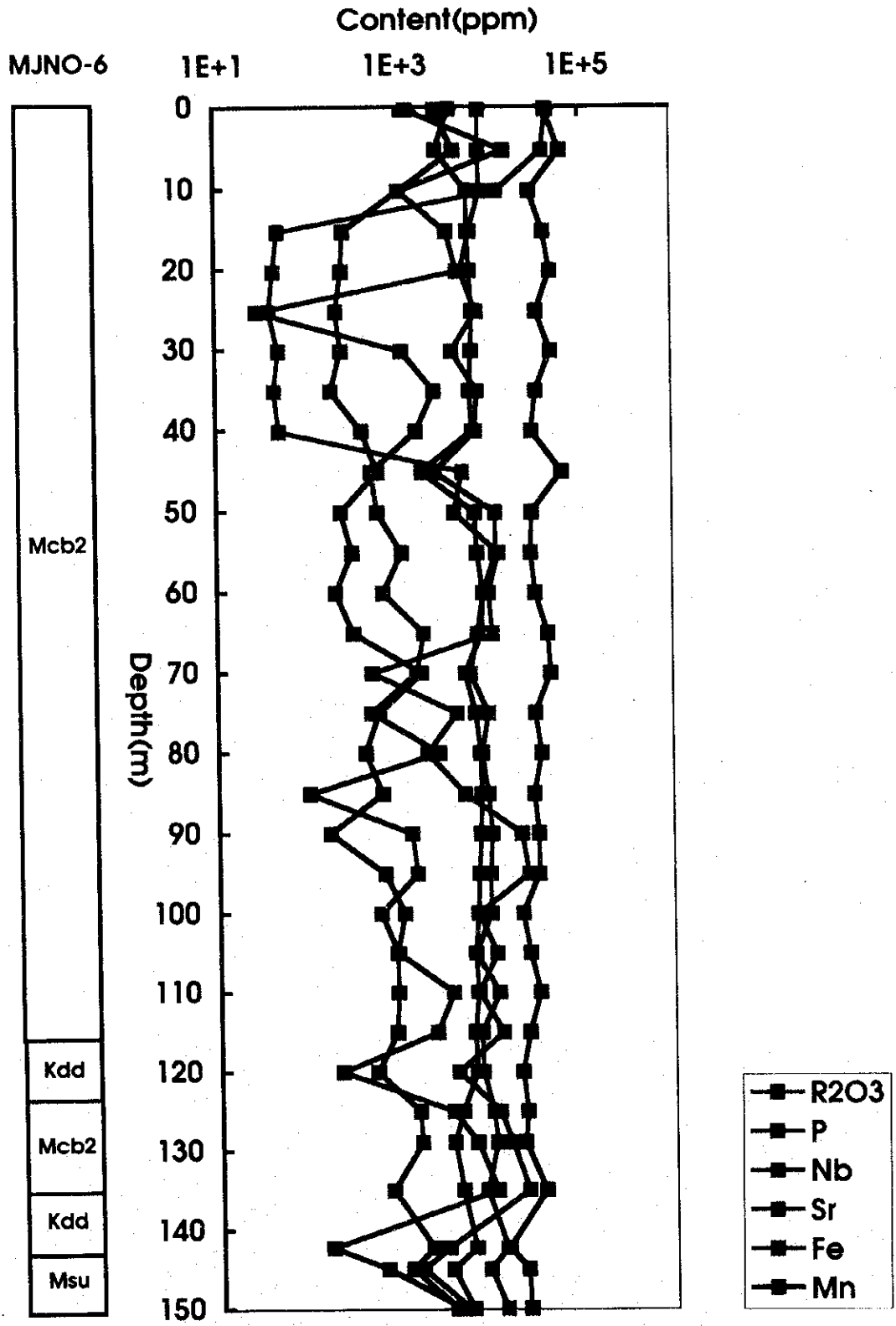






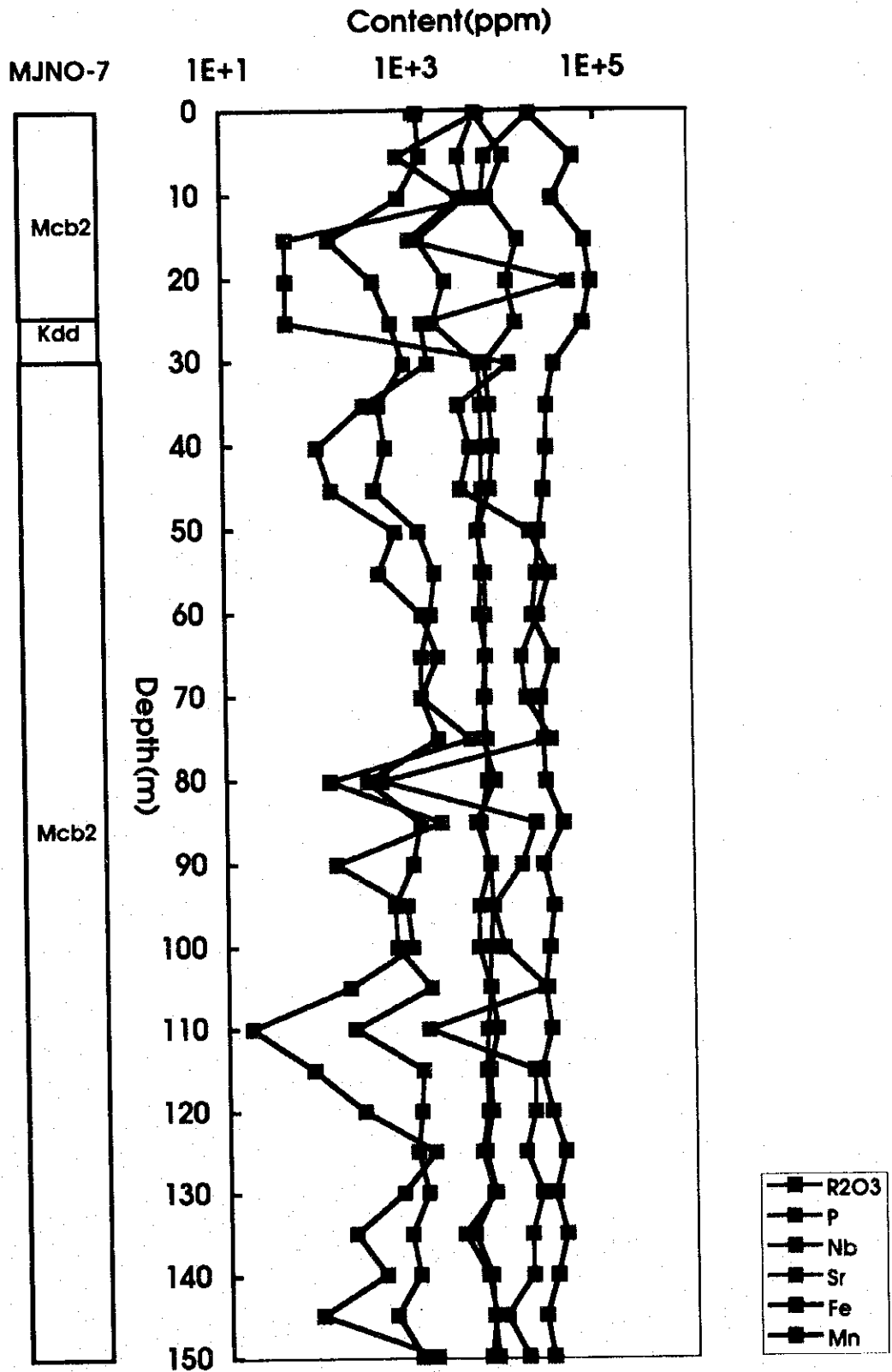
B-7 Geochemical Distribution along Drilling Cores (5)



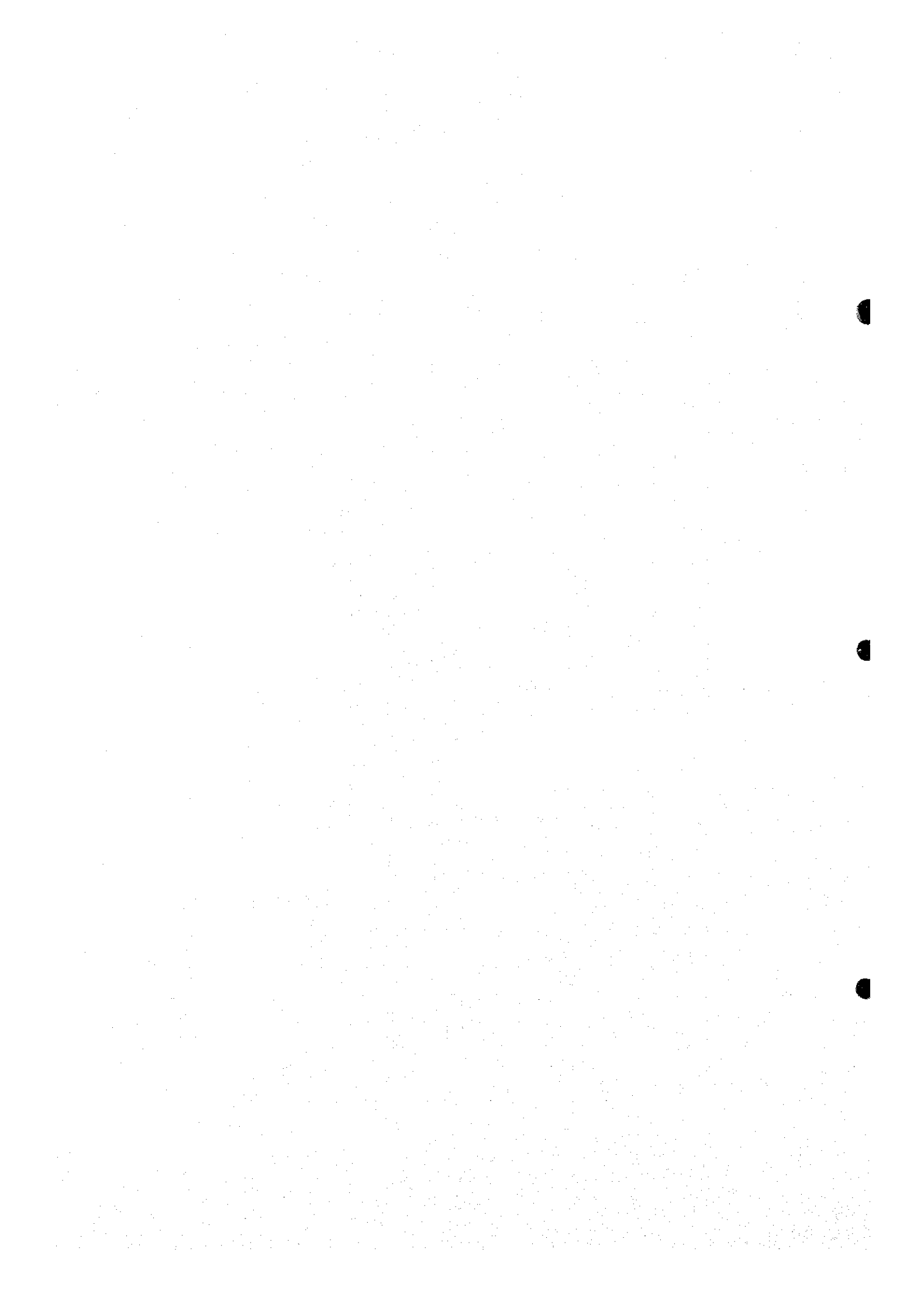


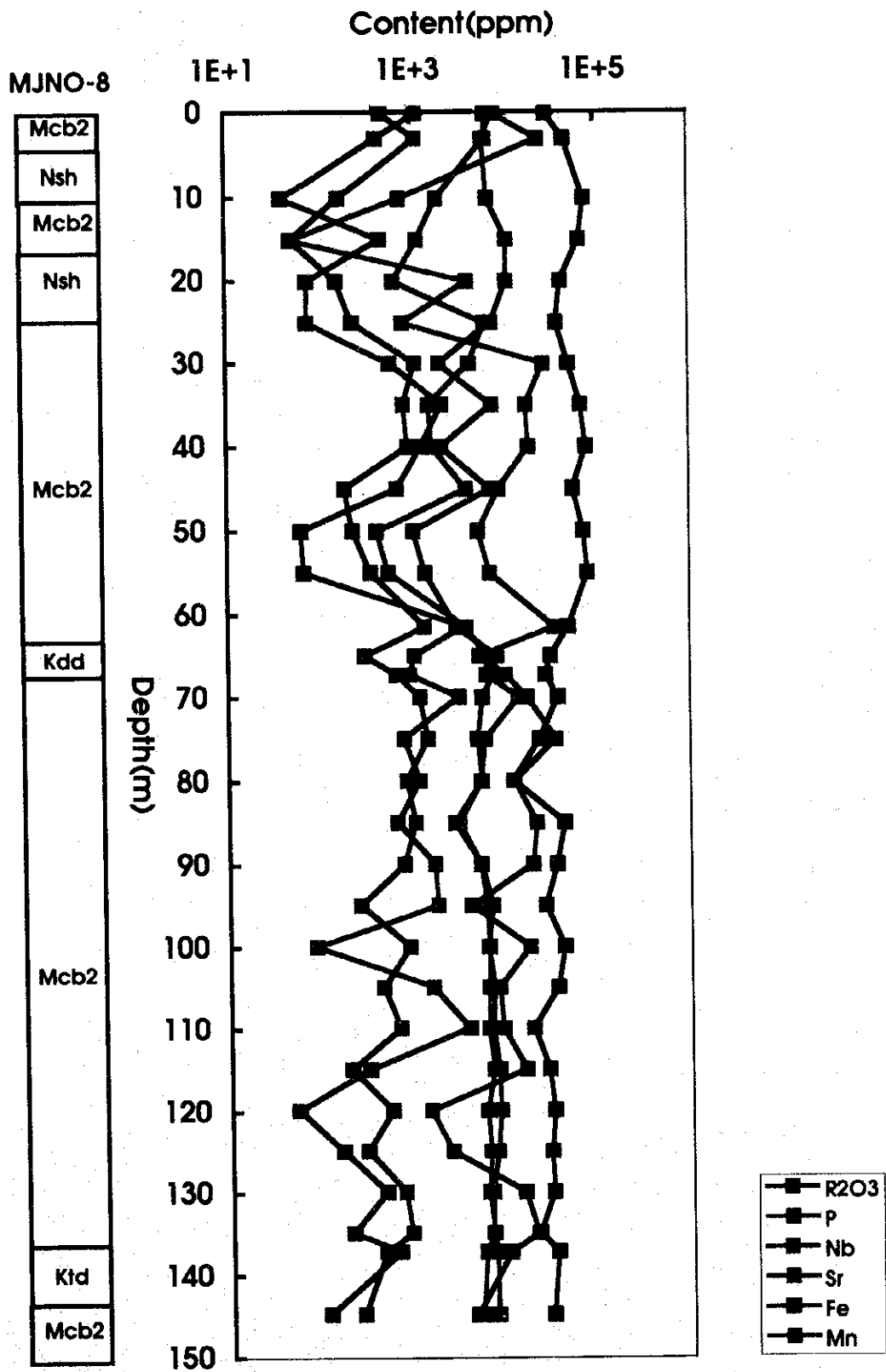
B-7 Geochemical Distribution along Drilling Cores (6)



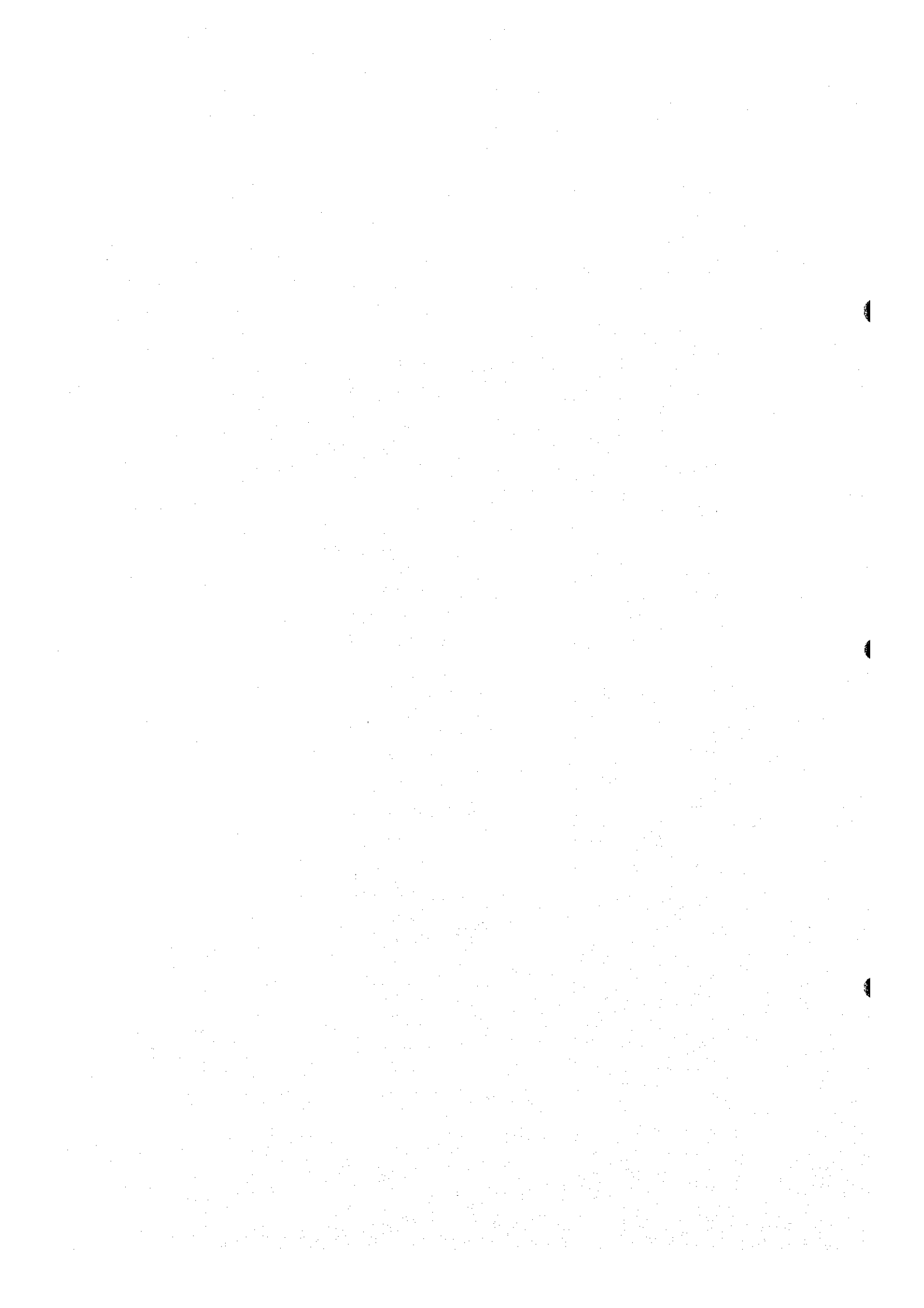


B-7 Geochemical Distribution along Drilling Cores (7)





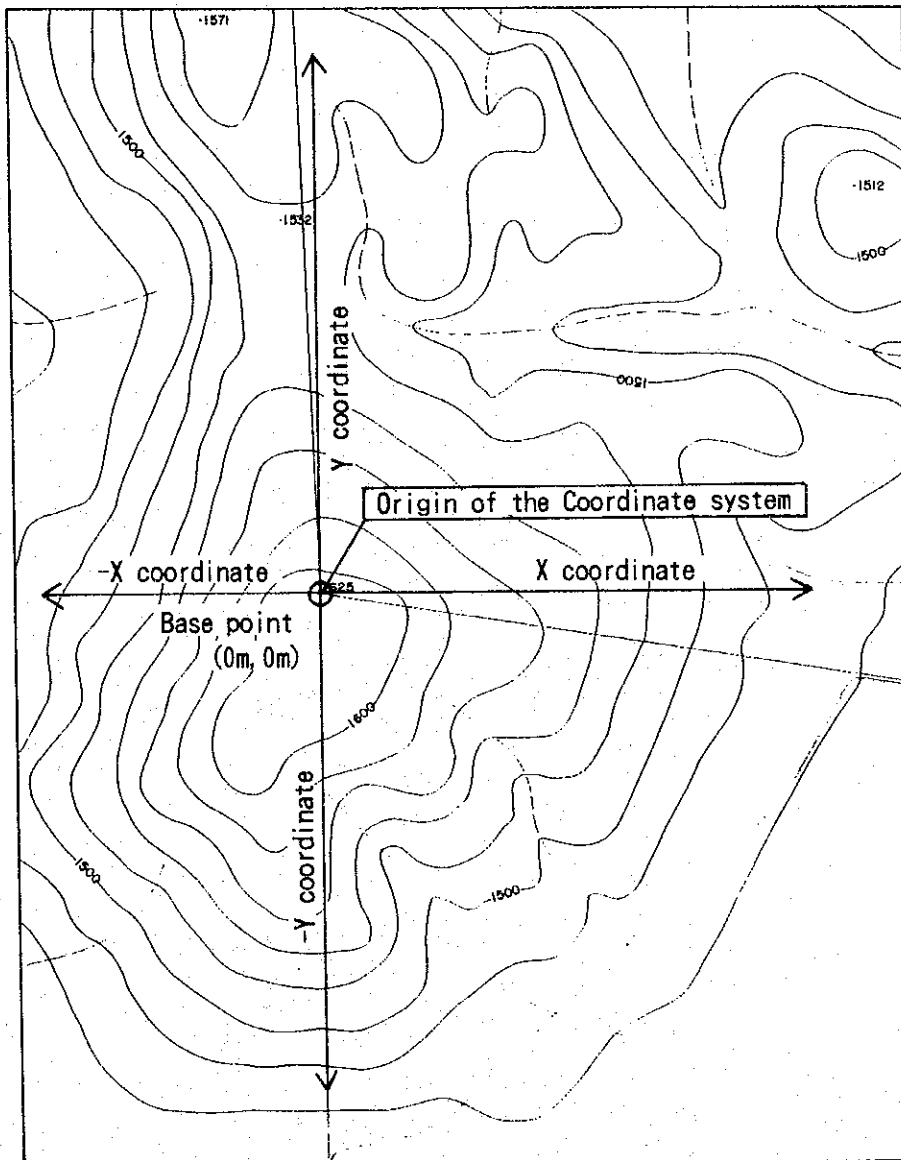
B-7 Geochemical Distribution along Drilling Cores (8)



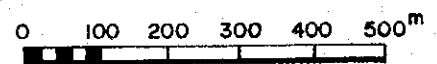


**B-7 Geochemical Distribution along Drilling Cores**

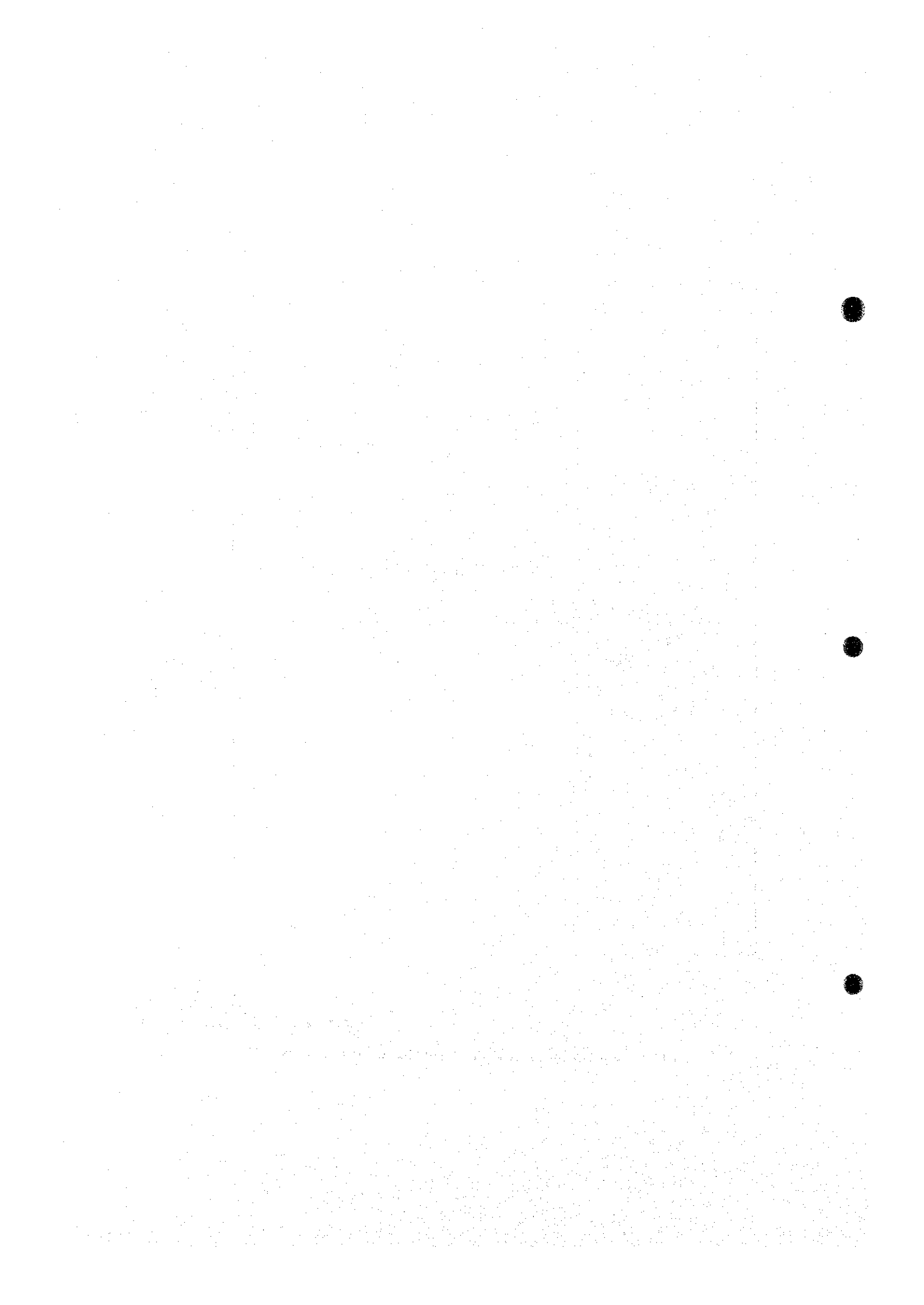
**C-1 Index Map and List of Samples from the Kalkfeld Area**



⊕ Base point for the surveyir



**C-1 Index Map of Base Point for Geochemical Survey**



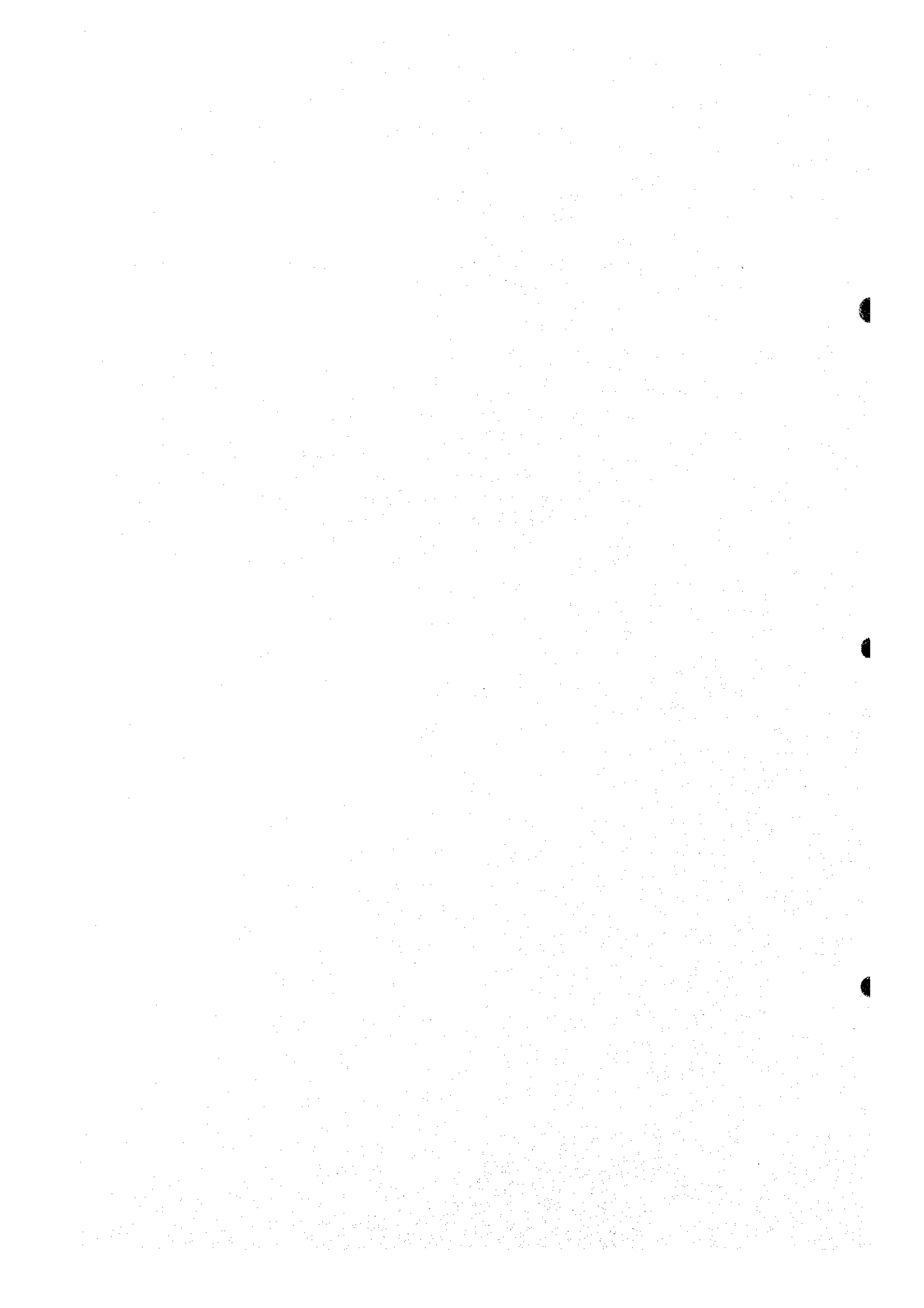
### Abbreviation in the list

#### Minerals

Kf: potassium feldspar  
Bt: biotite  
Cal: calcite / calcitic  
Dol: dolomite / dolomitic  
Ank: ankerite / ankeritic  
Goe: goethite  
Gln: galena  
Gr: graphite

#### Rock code

Dd: dolerite (Post Karoo intrusion)  
Io: Iron ore (Osongombo Diatreme)  
Be: beforite (Osongombo Diatreme)  
Vb: volcanic breccia (Osongombo Diatreme)  
Gp: pegmatitic granite (Damaran Granitoid)  
Gb: biotite granite (Damaran Granitoid)  
Ma: marble (Damara sequence)



C-1 List of Samples from the Kalkfeld Area (1)

No.	Sample No.	X (m)	Y (m)	Rock Name	Rock Code	Analytical methods					
						Year	EE	WR	TS	PO	XR
1	Q 10	-398.3	-759.7	Marble	Ma	93	○				
2	Q 20	-298.5	-757.4	Marble, cut by Ank-Cal veins	Ma	93	○				
3	Q 30	-198.5	-755.2	Marble, with pink(Kf) minerals	Ma	93	○				
4	Q 40	-99.9	-752.9	Granite, leuco-, cut by Ank veins	Gp	93	○				
5	Q 50	20.0	-750.7	Volcanic Breccia	Vb	93	○				
6	Q 60	100.0	-745.7	Marble, cut by Goe network	Ma	93	○				
7	Q 70	200.0	-768.7	Granite, leuco-	Gp	93	○				
8	Q 80	299.0	-750.7	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
9	R 10	-400.2	-609.7	Marble, with pink(Kf) minerals	Ma	93	○				
10	R 20	-300.3	-607.4	Marble, cut by Ank-Cal veins	Ma	93	○		○		○
11	R 30	-200.3	-605.2	Marble, with pink(Kf) minerals	Ma	93	○				
12	R 40	-100.0	-602.9	Granite, leuco-	Gp	93	○				
13	R 50	1.0	-595.1	Granite, leuco-	Gp	93	○		○		○
14	R 60	99.6	-600.6	Granite, leuco-	Gp	93	○				
15	R 70	198.2	-588.6	Marble, cut by Ank-Cal veins	Ma	93	○				
16	R 80	299.1	-600.6	Volcanic breccia, siliceous	Vb	93	○				
17	R 90	399.1	-600.6	Pegmatite, cut by Ank-Cal veins	Gp	93	○				
18	Ra 30	-199.6	-530.2	Marble, with pink(Kf) minerals	Ma	93	○				
19	Ra 35	-152.2	-539.0	Marble, with pink(Kf) minerals	Ma	93	○				
20	Ra 40	-99.0	-529.9	Marble, with pink(Kf) minerals	Ma	93	○				
21	Ra 45	-49.5	-526.8	Volcanic breccia	Vb	93	○				
22	Ra 50	0.0	-525.6	Volcanic breccia	Vb	93	○			○	
23	Ra 55	51.0	-524.5	Volcanic breccia	Vb	93	○				
24	Ra 60	100.3	-523.4	Volcanic breccia	Vb	93	○				
25	Ra 65	150.3	-522.2	Marble	Ma	93	○				
26	S 10	-398.4	-459.7	Granite, Bt	Gb	93	○		○		○
27	S 15	-348.7	-458.6	Marble, with pink(Kf) minerals	Ma	93	○				
28	S 20	-288.1	-457.4	Volcanic breccia	Vb	93	○	○	○		○
29	S 25	-248.9	-456.3	Marble	Ma	93	○				
30	S 30	-199.1	-455.2	Marble, with pink(Kf) minerals	Ma	93	○				
31	S 35	-150.5	-449.0	Beforsite, Dol with Ank rim	Be	93	○	○	○		○
32	S 40	-99.8	-452.9	Volcanic breccia	Vb	93	○				
33	S 45	-49.9	-451.8	Beforsite	Be	93	○				
34	S 50	0.0	-450.6	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○	○	○		○
35	S 55	53.3	-449.0	Volcanic breccia	Vb	93	○				
36	S 60	103.0	-447.9	Volcanic breccia - beforosite	Vb	93	○	○	○		○
37	S 65	152.7	-446.7	Marble, with pink(Kf) minerals	Ma	93	○				
38	S 70	203.3	-445.6	Marble, with pink(Kf) minerals	Ma	93	○				
39	S 80	303.9	-443.3	Marble, with pink(Kf) minerals	Ma	93	○				
40	S 90	406.8	-441.0	Marble, cut by Ank-Cal veins	Ma	93	○				
41	Sa 10	-399.9	-384.3	Marble, cut by Ank veins & granite dyke	Ma	93	○				
42	Sa 15	-341.9	-383.1	Marble	Ma	93	○				
43	Sa 20	-299.9	-382.0	Granite, Bt	Gb	93	○				
44	Sa 25	-249.9	-380.9	Granite, Bt	Gb	93	○				
45	Sa 30	-199.9	-379.7	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○		○		○
46	Sa 35	-150.0	-378.6	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
47	Sa 40	-100.0	-377.5	Beforsite - iron layers	Be	93	○	○	○	○	○
48	Sa 45	-50.0	-376.3	Beforsite, with volcanic xenolith	Be	93	○				
49	Sa 50	0.0	-375.2	Beforsite	Be	93	○		○		○
50	Sa 55	50.4	-374.1	Beforsite - volcanic breccia	Be	93	○				
51	Sa 60	101.6	-372.9	Beforsite, Dol with Ank rim	Be	93	○				
52	Sa 65	151.6	-371.8	Volcanic breccia - beforosite	Vb	93	○				
53	Sa 70	201.6	-370.6	Marble, with pink(Kf) minerals	Ma	93	○				
54	T 40A	-75.0	-317.0	Iron ore	Io	93	○	○	○	○	○
55	T 21A	220.0	-685.7	Volcanic breccia	Vb	93	○	○			
56	T 22A	-115.0	-357.5	Iron ore	Io	93	○				○
57	T 23A	-90.0	-366.5	Iron ore	Io	93	○				○
58	T 10	-399.9	-308.8	Marble	Ma	93	○				
59	T 15	-349.9	-307.6	Marble	Ma	93	○				
60	T 20	-299.9	-306.5	Marble, cut by Ank-Fe ore vein	Ma	93	○				
61	T 25	-249.9	-305.4	Beforsite, Ank-Cal	Be	93	○	○			
62	T 30	-199.9	-304.2	Beforsite, Ank-Cal	Be	93	○				
63	T 35	-150.0	-303.1	Beforsite, Ank	Be	93	○				
64	T 40	-100.0	-302.0	Beforsite, Dol	Be	93	○	○	○	○	○
65	T 45	-50.0	-300.8	Volcanic breccia	Vb	93	○				
66	T 50	0.0	-299.7	Beforsite, with volcanic xenolith	Be	93	○				
67	T 55	42.0	-298.6	Beforsite, with volcanic xenolith	Be	93	○				
68	T 60	100.0	-297.4	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
69	T 65	150.0	-296.3	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
70	T 70	199.9	-295.2	Marble, cut by granite dyke	Ma	93	○				
71	T 80	299.9	-292.9	Marble, cut by granite dyke	Ma	93	○				
72	T 90	399.9	-290.6	Granite, leuco-	Gp	93	○				
73	T 100	499.9	-288.4	Marble, cut by Ank-Cal veins	Ma	93	○		○		○
74	Ta 25	-249.9	-230.7	Marble, cut by Ank-Cal veins	Ma	93	○				
75	Ta 30	-199.9	-229.5	Volcanic breccia / granitic rock	Vb	93	○				
76	Ta 35	-150.0	-228.4	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
77	Ta 40	-100.0	-227.3	Volcanic breccia / beforosite	Vb	93	○				
78	Ta 45	-50.0	-226.1	Beforsite, Ank	Be	93	○	○	○	○	○
79	Ta 50	0.0	-225.0	Beforsite, with volcanic xenolith	Be	93	○	○	○	○	○
80	Ta 55	50.0	-223.9	Beforsite, with volcanic xenolith	Be	93	○				
81	Ta 60	100.0	-222.7	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
82	Ta 65	150.0	-221.6	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
83	Ta 70	199.9	-220.5	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
84	Ta 75	249.9	-219.3	Marble	Ma	93	○				
85	Ta 80	299.9	-218.2	Granite, leuco-	Gp	93	○				

C-1 List of Samples from the Kalkfeld Area (2)

No.	Sample No.	X (m)	Y (m)	Rock Name	Rock Code	Analytical methods					
						Year	EE	WB	TS	PO	XR
86	Ta 85	349.9	-217.1	Granite, leuco-	Gp	93	○				
87	U 50A	-15.0	-150.0	Beforsite	Be	93			○	○	○
88	U 10	-369.9	-159.0	Marble	Ma	93	○				
89	U 20	-299.9	-156.8	Marble	Ma	93	○				
90	U 30	-199.9	-154.5	Marble	Ma	93	○				
91	U 35	-150.0	-153.4	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
92	U 40	-100.0	-152.2	Beforsite	Be	93	○				
93	U 45	-50.0	-151.1	Beforsite, Gln bearing	Be	93	○	○	○	○	○
94	U 50	0.0	-150.0	Beforsite	Be	93	○				
95	U 55	50.0	-148.8	Beforsite	Be	93	○				
96	U 60	100.0	-147.7	Beforsite - volcanic breccia	Be	93	○	○	○		○
97	U 65	150.0	-146.6	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
98	U 70	199.9	-145.4	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
99	U 75	249.9	-144.3	Beforsite	Be	93	○				
100	U 80	299.9	-143.2	Granite, cut by carbonatite veins	Gp	93	○				
101	U 85	349.9	-142.0	Granite, cut by carbonatite veins	Gp	93	○				
102	U 90	399.9	-140.9	Marble	Ma	93	○				
103	U 100	499.9	-138.6	Marble	Ma	93	○				
104	Ua 30	-199.9	-79.5	Marble cut by network of Goe veins	Ma	93	○				
105	Ua 35	-150.0	-78.4	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○		○		○
106	Ua 40	-100.0	-77.2	Volcanic breccia	Vb	93	○				
107	Ua 45	-50.0	-76.1	Volcanic breccia	Vb	93	○				
108	Ua 50	0.0	-75.0	Volcanic breccia, syenitic	Vb	93	○				
109	Ua 55	50.0	-73.8	Volcanic breccia, syenitic	Vb	93	○				
110	Ua 60	100.0	-72.7	Volcanic breccia, syenitic	Vb	93	○				
111	Ua 65	150.0	-71.6	Beforsite	Be	93	○	○			
112	Ua 70	199.9	-70.4	Volcanic breccia, syenitic	Vb	93	○				
113	Ua 75	249.9	-69.3	Marble, cut by Ank-Cal veins	Ma	93	○				
114	Ua 80	299.9	-68.2	Marble, cut by Ank-Cal veins	Ma	93	○				
115	V 10	-399.9	-9.1	Marble, cut by Ank-Cal veins	Ma	93	○				
116	V 20	-299.9	-6.8	Marble, cut by Ank-Cal veins	Ma	93	○				
117	V 30	-199.9	-4.5	Marble, cut by volcanic breccia	Ma	93	○				
118	V 35	-150.0	-3.4	Marble, cut by Ank-Cal veins	Ma	93	○				
119	V 40	-100.0	-2.3	Volcanic breccia, cut by Ank-Cal veins	Vb	93	○				
120	V 45	-50.0	-1.1	Granite, leuco-	Gp	93	○				
121	V 50	0.0	0.0	Granite, Bt	Gb	93	○				
122	V 55	50.0	1.1	Granite, leuco-	Gp	93	○				
123	V 60	100.0	2.3	Granite / volcanic breccia	Gp	93	○				
124	V 65	150.0	3.4	Marble, cut by Ank-Cal veins	Ma	93	○				
125	V 70	199.9	4.5	Marble, cut by Ank-Cal veins	Ma	93	○				
126	V 75	249.9	5.7	Marble	Ma	93	○				
127	V 80	299.9	6.8	Marble, cut by Ank-Cal veins	Ma	93	○				
128	V 90	399.9	9.1	Marble	Ma	93	○				
129	V 100	499.9	11.3	Marble	Ma	93	○				
130	W 10	-405.3	140.4	Marble	Ma	93	○				
131	W 20	-305.3	142.7	Marble	Ma	93	○				
132	W 30	-205.4	145.0	Marble	Ma	93	○				
133	W 40	-105.4	147.2	Marble	Ma	93	○				
134	W 50	-5.4	149.5	Marble, cut by Ank-Cal veins	Ma	93	○				
135	W 60	94.6	151.8	Marble, cut by Ank-Cal veins	Ma	93	○				
136	W 70	204.5	154.0	Marble	Ma	93	○				
137	W 80	294.5	156.3	Marble	Ma	93	○				
138	W 90	394.5	158.6	Marble	Ma	93	○				
139	W 100	494.5	160.8	Marble	Ma	93	○				
140	Wa 40	-108.1	222.2	Marble	Ma	93	○				
141	Wa 45	-58.1	223.3	Granite, leuco-	Gp	93	○				
142	Wa 50	-8.1	224.4	Marble, Gr	Ma	93	○				
143	Wa 55	42.8	223.8	Marble, Gr	Ma	93	○				
144	Wa 60	94.6	223.2	Marble, Gr	Ma	93	○				
145	X 20	-310.7	292.2	Marble	Ma	93	○				
146	X 30	-210.8	294.4	Marble	Ma	93	○				
147	X 40	-110.8	296.7	Marble	Ma	93	○				
148	X 45	-60.8	297.8	Marble, cut by Ank-Cal veins	Ma	93	○				
149	X 50	-10.8	299.0	Marble, Gr, dolomitic	Ma	93	○				
150	X 55	46.5	298.8	Marble, cut by pegmatite(Kf) dyke	Ma	93	○				
151	X 60	84.4	300.5	Marble, Gr	Ma	93	○				
152	X 70	177.8	292.6	Marble, Gr	Ma	93	○				
153	X 80	277.7	291.4	Marble, Gr	Ma	93	○				
154	X 90	378.6	290.1	Marble, Gr	Ma	93	○				
155	X 100	477.6	288.9	Marble, Gr	Ma	93	○				○
156	Xa 40	-113.5	371.5	Marble	Ma	93	○				
157	Xa 45	-63.5	372.6	Marble	Ma	93	○				
158	Xa 50	-13.5	373.8	Marble, Gr	Ma	93	○				
159	Xa 55	47.4	373.4	Marble, Gr	Ma	93	○				
160	Xa 60	96.4	372.8	Marble	Ma	93	○				
161	Y 30	-216.2	444.1	Marble	Ma	93	○				
162	Y 40	-116.2	448.4	Marble	Ma	93	○				
163	Y 50	-16.2	448.6	Granite, leuco-	Gp	93	○				
164	Y 60	81.8	447.4	Marble, Gr	Ma	93	○				
165	Y 70	180.5	446.2	Marble, partly Gr rich	Ma	93	○				
166	Y 80	279.3	445.0	Marble, Gr	Ma	93	○				
167	Y 90	379.4	443.8	Marble, Gr	Ma	93	○				
168	Y 100	479.5	442.6	Granite, pegmatitic	Gp	93	○				



**C-2 Whole Rock Analyses and Normative Mineral Assemblage  
of the Kalkfeld Area**

Abbreviation of the normative minerals in the list

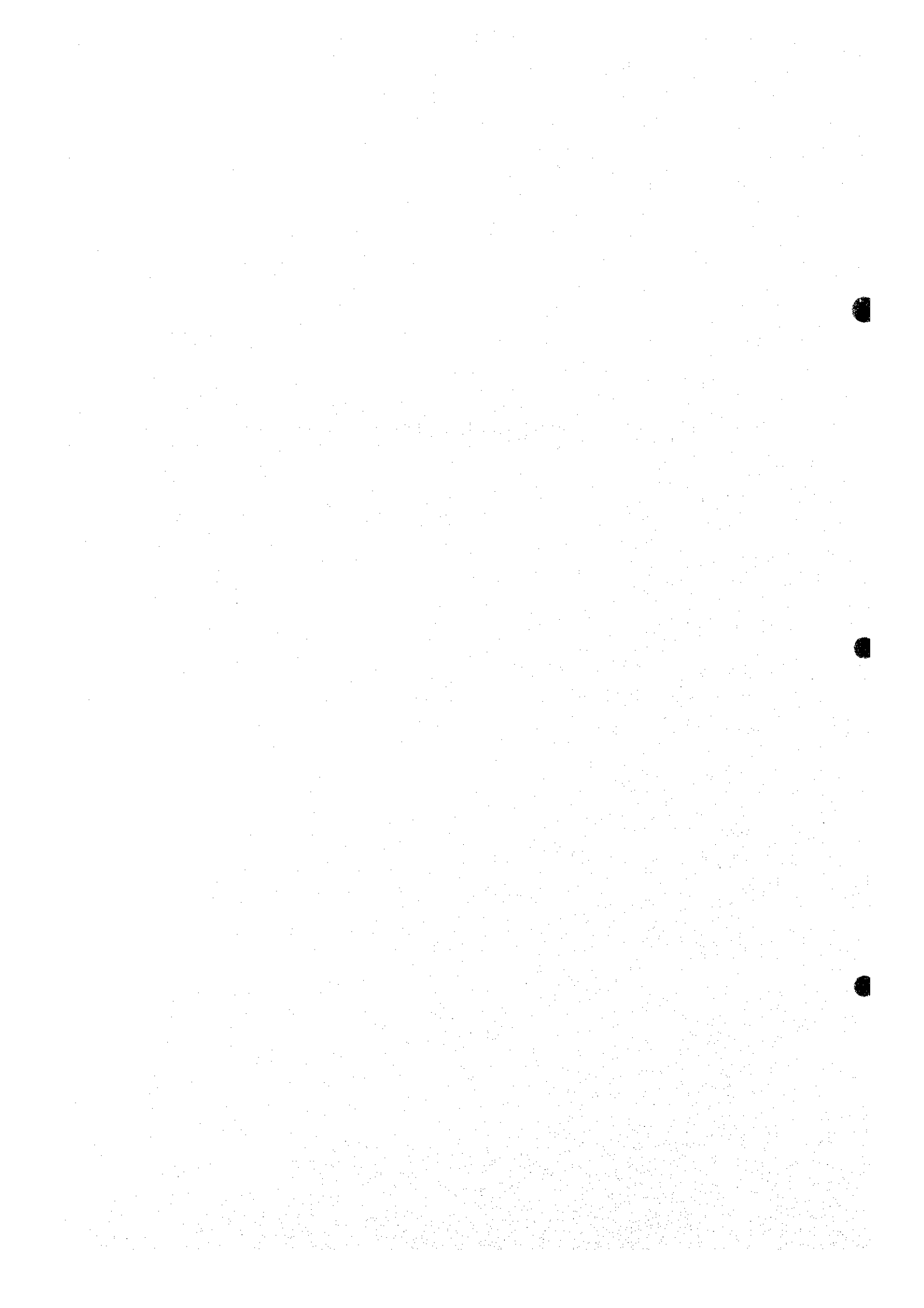
Q:	quartz	SiO <sub>2</sub>
C:	corundum	Al <sub>2</sub> O <sub>3</sub>
or:	orthoclase	K <sub>2</sub> O.Al <sub>2</sub> O <sub>3</sub> .6SiO <sub>2</sub>
ab:	albite	Na <sub>2</sub> O.Al <sub>2</sub> O <sub>3</sub> .6SiO <sub>2</sub>
an:	anorthite	CaO.Al <sub>2</sub> O <sub>3</sub> .2SiO <sub>2</sub>
lc:	leucite	K <sub>2</sub> O.Al <sub>2</sub> O <sub>3</sub> .4SiO <sub>2</sub>
ne:	nepheline	Na <sub>2</sub> O.Al <sub>2</sub> O <sub>3</sub> .2SiO <sub>2</sub>
kp:	kaliophilite	K <sub>2</sub> O.Al <sub>2</sub> O <sub>3</sub> .2SiO <sub>2</sub>
ac:	acmite	Na <sub>2</sub> O.Fe <sub>2</sub> O <sub>3</sub> .4SiO <sub>2</sub>
ns:	sodium metasilicate	Na <sub>2</sub> O.SiO <sub>2</sub>
ks:	potassium metasilicate	K <sub>2</sub> O.SiO <sub>2</sub>
cs:	calcium orthosilicate	CaO.SiO <sub>2</sub>
mt:	magnetite	FeO.Fe <sub>2</sub> O <sub>3</sub>
hm:	hematite	Fe <sub>2</sub> O <sub>3</sub>
tn:	titanite	CaO.TiO <sub>2</sub> .SiO <sub>2</sub>
pf:	perovskite	CaO.TiO <sub>2</sub>
ru:	rutile	TiO <sub>2</sub>
ap:	apatite	3(3CaO.P <sub>2</sub> O <sub>5</sub> ).CaF <sub>2</sub>
wo-di:	wollastonite	CaO.SiO <sub>2</sub>
en-di:	MgSiO <sub>3</sub> in diopside	MgO.SiO <sub>2</sub>
fs-di:	FeSiO <sub>3</sub> in hedenbergite	FeO.SiO <sub>2</sub>
en-hy:	enstatite	MgO.SiO <sub>2</sub>
fs-hy:	ferrosilite	FeO.SiO <sub>2</sub>
fo-ol:	forsterite	2MgO.SiO <sub>2</sub>
fa-ol:	fayalite	2FeO.SiO <sub>2</sub>
ca:	calcite	CaO.CO <sub>2</sub>
ma:	magnesite	MgO.CO <sub>2</sub>
sd:	siderite	FeO.CO <sub>2</sub>
sr:	sirontianite	SrO.CO <sub>2</sub>
NaCO <sub>3</sub> :	sodium carbonate	Na <sub>2</sub> O.CO <sub>2</sub>
K <sub>2</sub> CO <sub>3</sub> :	potassium carbonate	K <sub>2</sub> O.CO <sub>2</sub>

C-2 Whole Rock Analyses and Normative Mineral Assemblage of the Kalkfeld Area

No. Sample No. Rock code	1		2		3		4		5		6		7		8		9		10			
	Sa	Be	Sa	Be	Ta	Be	Ta	Be	Ta	Be	Ta	Be	Ta	Be	Ta	Be	Ta	Be	Ta	Be		
	7.73	10.32	8.46	23.56	2.25	19.26	1.33	20.97	21.57	4.86	0.01	0.73	0.26	0.01	0.73	0.26	0.01	0.73	0.26	0.01	0.73	0.26
SiO2	0.03	0.01	0.09	0.18	0.01	0.14	0.01	0.14	0.01	0.14	0.01	0.14	0.01	0.14	0.01	0.14	0.01	0.14	0.01	0.14	0.01	0.14
TiO2	3.08	1.60	0.25	7.58	0.24	6.21	1.59	6.33	6.89	0.58	3.59	46.18	0.13	9.71	25.88	5.86	15.33	10.00	9.18	49.32	4.39	0.39
Al2O3	9.77	0.26	1.86	2.06	0.13	4.97	0.10	1.58	0.13	0.39	2.45	3.86	11.69	0.92	3.20	0.91	3.33	1.12	1.64	4.69	2.04	2.04
Fe2O3	7.28	4.21	4.19	7.03	8.60	17.81	25.10	13.49	18.67	6.68	23.46	10.40	30.78	14.45	22.58	3.57	0.10	2.57	0.15	0.14	0.14	0.14
FeO	2.27	0.08	0.15	3.91	0.08	3.57	0.10	2.57	0.15	0.14	2.08	0.05	0.05	0.62	0.03	0.08	1.62	5.78	0.04	0.04	0.04	0.04
MnO	0.08	0.15	8.66	0.74	2.65	1.51	2.93	0.21	1.11	0.11	0.08	0.15	8.66	0.74	2.65	1.51	2.93	0.21	1.11	0.11	0.11	0.11
MgO	0.88	6.10	3.30	2.76	4.86	2.34	3.26	3.56	3.32	6.58	0.56	0.74	0.69	0.63	0.70	0.48	0.41	0.65	0.45	0.86	0.86	0.86
CaO	34.00	11.10	25.55	20.75	28.20	20.25	27.40	18.80	16.85	8.55	95.26	95.06	95.85	94.90	99.42	90.67	88.60	87.53	88.16	84.85	84.85	84.85
Sum	Weight percentages																					
Q	8.01	3.49	2.72	2.16	2.16	1.00	2.08	4.77	4.77	4.77	0.35	1.50	1.69	0.23	1.52	1.02	0.41	0.38	0.38	0.38	0.38	0.38
C	7.91	0.31	0.28	3.66	0.23	0.49	0.18	10.47	27.89	0.26	0.35	0.72	0.96	26.84	23.46	0.95	20.48	1.45	1.45	1.45	1.45	1.45
Or	2.46	1.11	4.13	6.37	0.73	6.37	0.73	6.37	0.73	6.37	0.73	6.37	0.73	6.37	0.73	6.37	0.73	6.37	0.73	6.37	0.73	0.73
Ab	1.92	14.29	0.07	8.74	15.64	10.94	5.48	51.50	12.92	12.92	1.90	39.22	9.70	24.87	8.74	15.64	10.94	5.48	51.50	12.92	12.92	12.92
An	0.03	0.01	0.09	0.18	0.01	0.14	0.01	0.80	0.27	0.01	0.03	0.01	0.09	0.18	0.01	0.14	0.01	0.80	0.27	0.01	0.01	0.01
Lc	0.17	0.37	19.08	1.71	5.92	3.60	6.92	0.53	0.27	0.31	0.17	0.37	19.08	1.71	5.92	3.60	6.92	0.53	0.27	0.31	0.31	0.31
Ne	3.78	7.85	4.80	38.02	50.62	33.76	45.63	18.70	18.70	18.70	3.78	7.85	4.80	38.02	50.62	33.76	45.63	18.70	18.70	18.70	18.70	18.70
Kp	49.03	25.33	43.06	31.46	42.82	38.02	50.62	33.76	45.63	18.70	49.03	25.33	43.06	31.46	42.82	38.02	50.62	33.76	45.63	18.70	18.70	18.70
Ac	13.68	6.19	8.94	14.70	17.23	15.10	16.39	13.50	4.54	5.23	13.68	6.19	8.94	14.70	17.23	15.10	16.39	13.50	4.54	5.23	5.23	5.23
Ns	19.19	15.92	5.50	5.91	6.46	5.45	4.18	5.45	4.18	4.18	19.19	15.92	5.50	5.91	6.46	5.45	4.18	5.45	4.18	4.18	4.18	4.18
Ks	2.26	0.27	0.65	0.58	0.62	0.80	0.30	0.31	0.26	0.26	2.26	0.27	0.65	0.58	0.62	0.80	0.30	0.31	0.26	0.26	0.26	0.26
Cs	Na2CO3	0.13	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	Na2CO3	0.13	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Mn	K2CO3	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	K2CO3	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04



### **C-3 Geochemical Analyses of the Kalkfeld Area**



C-3 Geochemical Analyses of the Kalkfeld Area (1)

No.	Sample No.	X (μ)	Y (m)	Rock Name	Rock Code	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm	Y ppm	U ppm	Th ppm	Nb ppm	Ta ppm	Zr ppm	Hf ppm	Sr ppm	P ppm	Fe ppm	FRFZ203 ppm
1	Q 10	-398.3	-759.7	Marble	Ma	4	14	7	2.0	0.5	0.4	1.0	0.2	3.1	11	5	10	6	2	19	270	2590	850	1.41	43
2	Q 20	-298.5	-757.4	Marble, cut by Ank-Cal veins	Ma	7	19	11	1.9	0.6	0.4	0.8	0.1	2.0	10	3	25	12	2	13	428	3050	640	1.06	57
3	Q 30	-198.5	-755.2	Marble, with pink(Kf) minerals	Ma	6	17	8	1.6	0.5	0.7	2.1	0.3	2.8	22	3	11	11	2	18	421	1520	720	1.37	56
4	Q 40	-99.9	-752.9	Granite, leuco, cut by Ank veins	Gp	10	22	8	1.8	0.7	0.3	0.4	0.1	0.6	7	3	18	2	2	17	125	128	760	0.48	58
5	Q 50	20.0	-750.7	Volcanic Breccia	Vb	203	381	162	37.0	9.0	3.5	1.2	0.2	4.5	25	79	370	296	12	5	5120	805	4090	3.57	1028
6	Q 60	100.0	-745.7	Marble, cut by Goe network	Ma	23	40	15	1.6	0.6	1.1	1.3	0.2	4.1	15	4	14	6	2	18	840	864	660	1.98	116
7	Q 70	200.0	-768.7	Granite, leuco-	Gp	86	177	81	18.0	6.6	3.0	4.2	0.6	7.2	70	19	282	75	3	112	877	372	3490	6.44	515
8	Q 80	299.0	-750.7	Volcanic breccia, cut by Ank-Cal veins	Vb	335	548	184	29.0	8.2	3.4	2.2	0.3	5.9	37	10	205	169	4	36	6300	1430	5450	6.28	1413
9	R 10	-400.2	-609.7	Marble, with pink(Kf) minerals	Ma	9	12	5	1.8	0.5	0.6	1.6	0.3	0.8	18	1	10	2	2	4	1300	2140	280	0.80	47
10	R 20	-300.3	-607.4	Marble, cut by Ank-Cal veins	Ma	15	28	11	1.8	0.5	0.5	0.9	0.1	1.4	10	1	6	3	2	17	434	2490	710	1.18	81
11	R 30	-200.3	-605.2	Marble, with pink(Kf) minerals	Ma	8	13	5	1.2	0.5	0.5	0.9	0.1	1.4	10	1	6	3	2	17	286	1440	490	0.69	43
12	R 40	-100.0	-602.9	Granite, leuco-	Gp	21	47	17	2.2	0.8	0.5	0.8	0.1	1.5	12	5	25	18	2	29	171	339	720	1.38	118
13	R 50	1.0	-595.1	Granite, leuco-	Gp	61	110	35	4.3	1.5	0.9	0.5	0.1	3.2	7	2	40	19	2	24	237	357	560	0.93	160
14	R 60	99.6	-600.6	Granite, leuco-	Gp	30	63	23	4.0	0.8	0.7	0.6	0.1	2.4	9	2	22	9	2	17	409	2510	370	0.69	93
15	R 70	198.2	-588.6	Marble, cut by Ank-Cal veins	Ma	24	33	10	1.5	0.6	0.3	1.3	0.2	1.4	18	1	8	4	2	17	409	2510	370	0.69	93
16	R 80	299.1	-600.6	Volcanic breccia, siliceous	Vb	381	591	178	27.0	8.4	3.1	2.2	0.2	7.3	23	3	207	16	2	64	5440	5370	3300	6.38	1506
17	R 90	399.1	-600.6	Pegmatite, cut by Ank-Cal veins	Gp	208	365	111	16.0	4.2	1.6	2.1	0.2	3.4	8	1	104	18	2	29	4820	789	1120	4.23	896
18	Ra 30	-199.6	-530.2	Marble, with pink(Kf) minerals	Ma	25	43	14	1.9	0.5	0.6	2.1	0.3	3.7	24	2	19	13	2	32	423	2450	1130	1.39	118
19	Ra 35	-152.2	-539.0	Marble, with pink(Kf) minerals	Ma	6	10	5	1.2	0.5	0.3	0.5	0.1	1.2	6	1	9	2	2	7	190	3120	460	0.50	33
20	Ra 40	-99.0	-529.9	Marble, with pink(Kf) minerals	Vb	176	315	83	7.1	2.6	1.2	2.0	0.4	4.0	36	2	40	27	2	45	1810	1670	1730	2.27	281
21	Ra 45	-49.5	-526.6	Volcanic breccia	Vb	192	340	112	20.0	5.0	2.3	2.5	0.4	6.2	45	3	42	66	2	83	4940	632	1350	6.29	736
22	Ra 50	0.0	-524.5	Volcanic breccia	Vb	98	155	47	8.4	2.8	1.0	1.4	0.2	10.0	14	2	52	25	2	58	4490	1090	5630	5.31	867
23	Ra 55	51.0	-524.5	Volcanic breccia	Vb	194	320	102	16.0	5.7	2.2	2.0	0.3	6.4	35	4	91	21	2	80	3470	1110	3100	5.37	823
24	Ra 60	100.3	-523.4	Volcanic breccia	Ma	6	10	5	1.2	0.5	0.4	1.5	0.2	1.5	16	1	11	2	2	7	424	3520	960	0.62	38
25	S 10	-398.4	-459.7	Granite, Bt	Gp	57	101	30	4.5	0.5	1.0	0.7	0.1	1.3	11	6	27	6	2	80	208	201	410	1.16	250
26	S 15	-348.7	-458.6	Marble, with pink(Kf) minerals	Ma	3	5	5	5.0	0.5	0.3	0.3	0.1	0.6	4	1	4	2	2	9	115	2030	380	0.28	23
27	S 20	-288.1	-457.4	Volcanic breccia	Vb	926	1200	255	37.0	7.9	3.3	1.8	0.2	2.1	31	14	119	66	5	60	10300	4060	3760	4.37	3003
28	S 25	-248.9	-456.3	Marble	Ma	11	21	9	2.0	0.8	0.6	1.8	0.3	1.2	21	1	3	3	2	11	690	1380	210	0.60	68
29	S 30	-199.1	-455.2	Marble, with pink(Kf) minerals	Ma	9	16	7	1.0	0.5	0.4	1.2	0.2	1.8	14	1	13	4	2	19	458	2910	590	0.94	51
30	S 35	-150.5	-449.0	Beforsite, Dol with Ank Fin	Be	922	1630	382	63.0	17.0	5.7	3.0	0.4	3.9	42	7	390	151	10	3	19000	10900	330	10.10	3780
31	S 40	-99.8	-452.9	Volcanic breccia	Vb	199	389	132	12.0	4.0	5.0	2.8	0.3	0.6	10	4	125	2	22	3	14500	2570	2320	30.40	973
32	S 45	-49.9	-451.8	Beforsite	Be	59	98	32	5.0	2.2	1.4	1.6	0.3	5.7	20	1	32	37	3	64	1870	979	6610	6.91	265
33	S 50	0.0	-450.6	Volcanic breccia, cut by Ank-Cal veins	Vb	275	473	136	13.0	4.8	1.8	1.4	0.2	4.7	18	2	135	102	6	98	3920	769	2340	8.33	1140
34	S 55	53.3	-449.0	Volcanic breccia	Vb	487	767	198	32.0	7.6	2.3	0.8	0.1	0.8	20	45	169	278	29	8	5170	1000	4710	3.33	1860
35	S 60	103.0	-447.9	Volcanic breccia - beforite	Vb	16	36	11	2.0	0.6	0.7	1.5	0.2	6.9	14	1	16	12	2	32	2550	286	900	5.42	95
36	S 65	152.7	-446.7	Marble, with pink(Kf) minerals	Ma	12	27	11	2.0	0.7	0.7	1.5	0.2	3.2	25	1	13	5	2	15	965	2000	1110	1.20	101
37	S 70	203.3	-445.6	Marble, with pink(Kf) minerals	Ma	10	21	9	2.0	0.9	0.5	1.6	0.3	2.8	19	1	18	6	2	20	918	2210	1140	1.57	80
38	S 80	303.9	-443.3	Marble, with pink(Kf) minerals	Ma	17	39	20	5.4	2.5	1.4	1.7	0.2	1.4	26	1	35	19	2	26	481	2550	830	1.19	65
39	S 90	406.8	-441.0	Marble, cut by Ank-Cal veins	Ma	357	476	130	28.0	5.9	2.9	1.6	0.2	0.7	26	3	242	21	2	3	1780	3490	1050	1.02	1262
40	Sa 10	-399.6	-384.3	Marble, cut by Ank veins & granite dyke	Ma	10	19	7	1.2	0.5	0.5	0.8	0.3	1.3	20	1	18	5	2	12	678	1600	740	0.80	58
41	Sa 15	-341.9	-383.1	Marble	Ma	59	100	30	3.8	0.6	0.6	0.8	0.1	1.5	11	5	21	11	2	81	265	99	480	1.06	247
42	Sa 20	-299.9	-382.0	Granite, Bt	Gp	61	105	28	2.9	0.9	0.9	0.5	0.1	3.2	8	2	20	31	2	71	1560	334	870	2.41	255
43	Sa 25	-249.9	-380.9	Granite, Bt	Gp	318	479	124	18.0	5.3	2.2	1.6	0.3	12.0	27	1	64	41	5	147	5520	2630	1050	5.70	1191
44	Sa 30	-199.9	-379.7	Volcanic breccia, cut by Ank-Cal veins	Vb	222	379	142	22.0	6.8	3.8	1.6	0.2	4.5	21	2	163	24	11	82	11800	1400	1260	14.80	1006
45	Sa 35	-150.0	-378.6	Volcanic breccia, cut by Ank-Cal veins	Vb	245	514	217	21.0	7.0	3.4	1.6	0.2	0.5	19	2	223	2	28	3	29900	1080	660	32.50	1296
46	Sa 40	-100.0	-377.5	Beforsite - iron layers	Be																				

C-3 Geochemical Analyses of the Kalkfeld Area (2)

No.	Sample No.	X (m)	Y (m)	Rock Name	Rock Code	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Ta ppm	Nb ppm	Th ppm	U ppm	Pb ppm	Ta ppm	Zr ppm	Mn ppm	Sr ppm	P ppm	Fe %	ppm		
48	Sa 45	-50.0	-376.3	Beforsite, with volcanic xenolith	Be	797	1750	570	101.0	28.0	8.0	2.5	0.2	0.5	52	4	975	7	23	5	25300	2870	2580	26.20	4126	
49	Sa 50	0.0	-375.2	Beforsite	Be	626	965	261	45.0	12.0	3.4	1.3	0.2	0.2	4.7	14	1	352	7	3	11	42400	1610	420	8.56	2378
50	Sa 55	50.4	-374.1	Beforsite - volcanic breccia	Be	253	447	124	15.0	5.5	2.2	1.2	0.1	0.1	6.4	10	1	116	7	3	48	6080	2510	340	7.21	1071
51	Sa 60	101.6	-372.9	Beforsite, Dol with Ank rim	Be	923	1290	262	30.0	6.3	1.8	0.8	0.1	0.1	5.2	10	5	132	117	5	3	13200	1740	844	6.45	3084
52	Sa 65	151.6	-371.8	Volcanic breccia - Beforsite	Vb	302	526	169	22.0	5.3	2.3	1.9	0.2	0.2	3.6	36	5	97	245	2	36	7750	840	5180	5.93	1298
53	Sa 70	201.6	-370.6	Marble, with pink(XF) minerals	Ma	54	95	35	5.0	1.6	0.2	0.2	0.2	0.2	2.6	19	2	26	50	2	21	3540	1920	415	2.68	258
54	T 40A	-75.0	-317.0	Iron ore	Io	133	137	91	20.0	3.1	3.6	6.0	0.9	0.5	14	2	123	2	32	3	36300	947	464	34.80	537	
55	T 21A	220.0	-685.7	Volcanic breccia	Be	585	851	478	64.9	12.6	7.5	2.9	0.4	14.9	17	1	188	11	2	176	7520	1000	144	6.66	2562	
56	T 22A	-115.0	-357.5	Iron ore	Io	899	1540	1200	300.0	70.2	29.3	5.7	0.8	4.8	76	2	2200	7	2	19	37000	442	589	31.92	5372	
57	T 23A	-90.0	-366.5	Iron ore	Io	637	750	631	140.0	17.5	16.3	4.2	0.8	1.8	33	3	274	9	2	3	40300	14400	408	37.82	2680	
58	T 10	-399.9	-308.8	Marble	Ma	4	7	5	0.8	0.5	0.3	0.8	0.1	0.5	11	2	5	2	3	405	1110	595	0.31	29		
59	T 15	-349.9	-307.6	Marble	Ma	68	100	31	4.2	1.2	0.7	0.8	0.1	0.8	14	1	28	18	2	6	977	1230	1330	0.76	263	
60	T 20	-299.9	-306.5	Marble, cut by Ank-Fe ore vein	Ma	343	423	66	10.0	0.5	2.8	3.4	0.5	0.9	56	8	92	73	2	4	4890	1780	2730	2.83	1085	
61	T 25	-249.9	-305.4	Beforsite, Ank-Cal	Be	774	1540	627	135.0	40.0	18.0	11.0	0.6	2.6	325	17	560	1840	5	3	14400	2960	37800	8.28	4138	
62	T 30	-199.9	-304.2	Beforsite, Ank-Cal	Be	726	1130	376	42.0	8.5	3.4	2.2	0.8	5.9	40	7	171	123	10	3	22700	1540	1480	11.40	2856	
63	T 35	-150.0	-303.1	Beforsite, Ank	Be	20	21	12	2.7	1.6	1.2	2.5	0.5	1.6	35	1	38	4	2	4	3220	1460	1150	4.90	96	
64	T 40	-100.0	-302.0	Beforsite, Dol	Be	291	455	158	24.0	6.7	1.9	0.8	0.1	2.1	9	1	150	26	2	7	7090	2530	3210	8.39	1179	
65	T 45	-50.0	-300.8	Volcanic breccia	Vb	298	468	154	19.0	5.2	1.7	1.0	0.2	8.4	9	1	135	210	6	55	6000	1810	527	8.56	1187	
66	T 50	0.0	-299.7	Beforsite, with volcanic xenolith	Be	289	428	157	22.0	6.4	2.0	0.6	0.1	6.0	7	1	158	75	2	25	7640	1430	248	8.28	1139	
67	T 55	42.0	-298.5	Beforsite, with volcanic xenolith	Be	175	260	83	10.0	3.0	0.8	0.6	0.1	1.8	4	1	64	203	3	12	7920	879	340	5.26	666	
68	T 60	100.0	-297.4	Volcanic breccia, cut by Ank-Cal veins	Vb	656	855	293	35.0	7.5	2.3	0.9	0.1	2.3	10	4	230	117	4	32	5570	1170	770	5.41	2230	
69	T 65	150.0	-296.3	Volcanic breccia, cut by Ank-Cal veins	Vb	188	273	90	8.5	2.7	1.3	0.8	0.1	5.2	4	1	123	57	6	52	4460	739	842	8.40	320	
70	T 70	199.9	-295.2	Marble, cut by granite dyke	Ma	59	98	44	10.0	4.4	2.7	4.8	0.7	2.1	85	9	140	39	2	10	2390	1430	5110	2.28	320	
71	T 80	299.9	-292.2	Marble, cut by granite dyke	Ma	11	21	11	2.4	0.8	0.5	1.0	0.2	0.9	12	1	12	5	2	4	306	1900	321	0.92	68	
72	T 90	399.9	-290.6	Granite, leuco-	Gp	48	93	33	5.4	1.1	1.0	1.0	0.2	2.7	11	6	40	40	2	47	318	167	520	2.13	238	
73	T 100	499.9	-288.4	Marble, cut by Ank-Cal veins	Ma	293	487	191	42.0	11.0	4.4	1.9	0.2	0.8	41	3	341	47	2	4	3710	4910	1590	1.78	1328	
74	Ta 25	-249.9	-230.7	Marble, cut by Ank-Cal veins	Ma	5	8	5	0.9	0.5	0.3	0.6	0.1	0.5	12	2	9	2	2	3	418	862	878	0.31	31	
75	Ta 30	-199.9	-229.5	Volcanic breccia / granitic rock	Vb	232	413	157	27.0	8.6	3.2	2.9	0.3	3.6	70	10	117	197	6	167	3260	3450	5680	5.99	1090	
76	Ta 35	-150.0	-228.4	Volcanic breccia, cut by Ank-Cal veins	Vb	100	155	71	12.0	1.7	3.1	1.5	0.3	7.2	12	2	12	12	2	81	5980	1490	270	9.06	458	
77	Ta 40	-100.0	-227.3	Volcanic breccia / Beforsite	Vb	371	594	210	27.0	7.3	3.0	1.3	0.2	5.4	13	5	37	106	5	32	5780	2960	1080	8.04	1532	
78	Ta 45	-50.0	-226.1	Beforsite, Ank	Be	728	1140	406	56.0	16.0	5.1	2.5	0.3	2.1	49	4	222	2	25	3	24800	2770	11600	19.20	2966	
79	Ta 50	0.0	-225.0	Beforsite, with volcanic xenolith	Be	423	654	219	37.0	11.0	2.9	1.7	0.3	4.1	40	2	176	39	3	5	7020	3350	6600	7.96	1701	
80	Ta 55	50.0	-223.9	Beforsite, with volcanic xenolith	Be	251	357	124	18.0	7.0	2.1	1.5	0.3	5.0	23	1	146	37	6	16	8810	2710	4870	8.46	967	
81	Ta 60	100.0	-222.7	Volcanic breccia, cut by Ank-Cal veins	Vb	186	269	105	14.0	4.9	2.0	1.3	0.3	7.3	13	3	134	261	10	33	8870	1150	3830	8.89	745	
82	Ta 65	150.0	-221.6	Volcanic breccia, cut by Ank-Cal veins	Vb	377	493	166	27.0	7.0	2.3	1.1	0.2	3.8	13	2	146	95	5	69	6310	1400	1570	6.59	1348	
83	Ta 70	199.9	-220.5	Volcanic breccia, cut by Ank-Cal veins	Vb	366	523	184	24.0	5.9	1.9	1.0	0.1	4.3	9	1	52	78	4	48	5340	882	351	7.24	1384	
84	Ta 75	249.9	-219.3	Marble	Ma	7	11	6	1.5	0.7	0.3	0.7	0.1	1.1	11	1	4	4	2	8	490	1700	504	0.67	40	
85	Ta 80	299.9	-218.2	Granite, leuco-	Gp	11	184	63	8.6	2.4	1.0	1.0	0.1	3.5	14	4	24	62	2	57	1120	435	1400	3.18	472	
86	Ta 85	349.9	-217.1	Granite, leuco-	Gp	19	41	16	2.4	0.6	0.3	0.5	0.1	2.5	7	2	8	33	2	30	292	224	716	1.08	104	
87	U 10	-369.9	-159.0	Marble	Ma	1	2	1	1.0	0.5	0.2	0.4	0.1	0.5	4	1	1	1	2	3	113	1830	271	0.09	16	
88	U 20	-299.9	-156.8	Marble	Ma	632	870	246	37.0	10.0	4.7	5.0	0.6	0.5	133	8	237	90	2	3	4640	4210	16300	2.15	2279	
89	U 30	-199.9	-154.5	Marble	Ma	27	47	18	2.8	0.9	0.5	0.7	0.1	0.5	9	1	14	2	2	3	790	1110	515	0.50	127	
90	U 35	-150.0	-153.4	Volcanic breccia, cut by Ank-Cal veins	Vb	58	92	37	5.7	1.6	1.0	1.4	0.2	0.5	20	1	23	8	2	3	1990	1450	1390	1.00	268	
91	U 40	-100.0	-152.2	Beforsite	Be	463	669	224	23.0	7.1	2.3	0.9	0.2	5.2	8	2	98	156	6	49	7150	1640	930	8.39	1742	
92	U 45	-50.0	-151.1	Beforsite	Be	3502	5042	1834	330.0	90.0	24.0	3.4	0.5	5.2	149	3	785	7	13	3	25800	3470	12860	10.80	19609	
93	U 50	0.0	-150.0	Beforsite	Be	1406	2043	741	135.0	39.0	11.0	2.3	0.3	8.1	49	1	323	21	12	4	15600	1770	645	10.40	5522	
94	U 55	50.0	-148.8	Beforsite	Be	1762	2919	1202	279.0	80.0	21.5	2.4	0.4	2.7	67	6	2290	32	15	3	17100	1840	4430	11.70	7995	



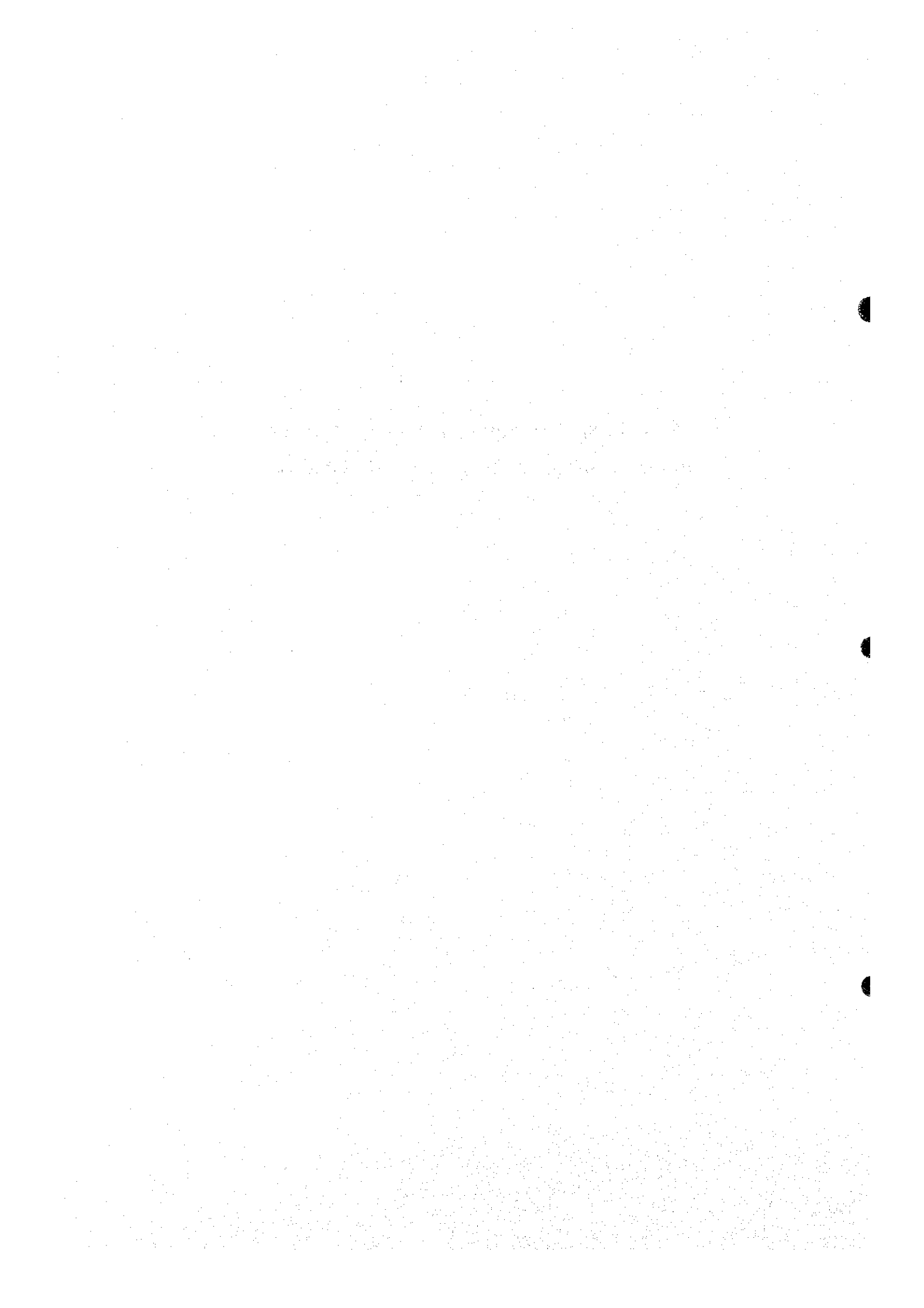
C-3 Geochemical Analyses of the Kalkfeld Area (3)

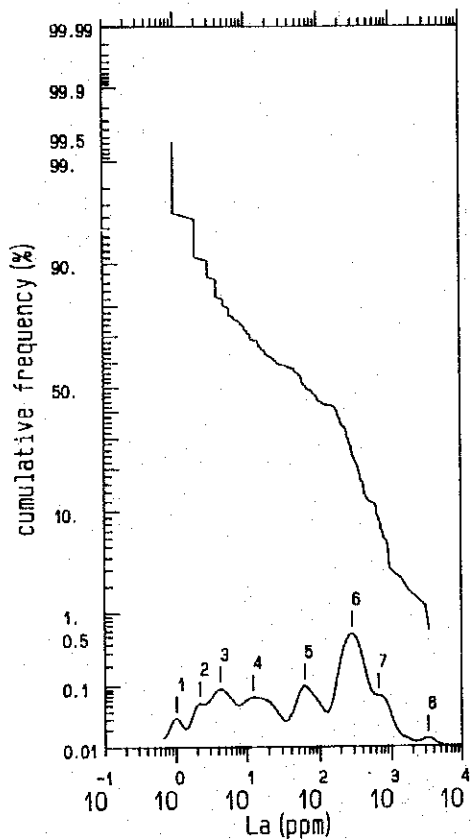
No.	Sample No.	X (m)	Y (m)	Rock Name	Rock Code	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm	Y ppm	U ppm	Th ppm	Nb ppm	Ta ppm	Zr ppm	Mn ppm	Sr ppm	P ppm	Fe %	ppm
95	U 60	100.0	-147.7	Bevorsite - volcanic breccia	Be	270	411	177	31.0	8.9	3.7	1.3	0.3	4.5	12	4	345	226	13	29	8670	1160	913	11.30	1161
96	U 55	150.0	-146.6	Volcanic breccia, cut by Ank-Cal veins	Vb	593	953	327	49.0	12.0	3.3	1.2	0.2	1.7	20	11	430	99	8	22	10800	1850	1490	8.52	2346
97	U 70	199.9	-145.4	Volcanic breccia, cut by Ank-Cal veins	Vb	204	307	117	18.0	6.1	2.1	2.2	0.3	2.9	43	8	191	97	3	28	7760	3030	9790	5.88	842
98	U 75	249.9	-144.3	Bevorsite	Be	241	342	127	25.0	10.0	4.3	4.5	0.5	9.1	90	9	334	150	11	34	10400	1510	8170	10.60	994
99	U 80	299.9	-143.2	granite, cut by carbonate veins	Gp	83	129	44	5.2	1.5	0.6	0.7	0.1	2.6	7	2	48	63	2	51	770	287	600	3.31	336
100	U 85	349.9	-142.0	Granite, cut by carbonate veins	Gp	71	118	43	5.5	1.6	0.8	0.8	0.1	2.8	10	3	60	47	2	59	612	169	962	3.34	306
101	U 90	399.9	-140.9	Marble	Ma	15	19	10	2.6	0.5	1.0	4.9	0.4	2.6	39	3	47	15	2	16	918	1050	3350	1.79	83
102	U 100	499.9	-138.6	Marble	Ma	6	8	5	1.4	0.5	0.5	3.5	0.1	0.6	8	1	5	4	2	9	442	1530	426	0.50	42
103	Ua 30	-199.9	-79.5	Marble, cut by network of ice veins	Ma	27	41	16	3.3	1.3	1.2	5.0	0.3	0.9	21	4	30	21	2	6	1570	2790	1350	1.59	140
104	Ua 35	-150.0	-78.4	Volcanic breccia, cut by Ank-Cal veins	Vb	420	636	215	36.0	9.2	6.7	6.5	0.6	3.8	39	2	161	111	2	20	6560	2390	5260	6.05	1725
105	Ua 40	-100.0	-77.2	Volcanic breccia	Vb	360	553	203	30.0	7.4	5.8	6.5	0.8	1.3	19	5	263	127	2	13	2600	2460	2460	10.10	1515
106	Ua 45	-50.0	-76.1	Volcanic breccia	Vb	269	406	134	18.0	5.3	3.0	7.0	0.6	7.1	13	2	120	161	2	52	4800	1590	1260	7.22	1087
107	Ua 50	0.0	-75.0	Volcanic breccia, syenitic	Vb	387	596	193	27.0	7.0	3.1	6.0	0.5	5.6	10	2	149	255	2	46	6000	1080	180	7.45	1351
108	Ua 55	50.0	-73.8	Volcanic breccia, syenitic	Vb	291	408	125	16.0	4.7	2.7	6.5	0.5	1.0	8	7	161	498	2	6	16500	1260	1120	8.14	1094
109	Ua 60	100.0	-72.7	Volcanic breccia, syenitic	Vb	428	591	191	33.0	8.9	4.1	6.5	0.8	6.3	9	2	316	314	2	78	10400	8490	850	9.04	1616
110	Ua 65	150.0	-71.6	Bevorsite	Be	321	486	140	18.0	4.0	4.2	5.0	0.5	1.6	7	1	108	66	2	3	12700	1280	470	6.52	1274
111	Ua 70	199.9	-70.4	Volcanic breccia, syenitic	Vb	438	583	153	18.0	5.1	4.8	6.5	0.7	6.3	14	3	101	160	2	72	8270	1400	710	7.41	1557
112	Ua 75	249.9	-69.3	Marble, cut by Ank-Cal veins	Ma	213	322	107	21.0	6.3	3.7	7.3	0.6	2.2	66	11	91	190	2	15	4200	2170	3260	2.56	897
113	Ua 80	299.9	-68.2	Marble, cut by Ank-Cal veins	Ma	47	66	28	4.2	1.9	1.0	5.3	0.5	3.8	27	1	30	100	2	72	1900	1100	660	2.64	211
114	V 10	-399.9	-9.1	Marble, cut by Ank-Cal veins	Ma	93	156	52	8.9	2.5	2.6	4.7	0.3	1.4	21	2	26	41	2	7	1240	1540	810	1.36	433
115	V 20	-299.9	-6.8	Marble, cut by Ank-Cal veins	Ma	2	4	5	0.5	0.5	0.6	1.4	0.1	0.5	3	1	2	2	2	3	155	2380	310	0.12	27
116	V 30	-199.9	-4.5	Marble, cut by volcanic breccia	Ma	47	77	30	5.9	2.4	2.3	3.0	0.4	1.9	34	2	33	63	2	15	2070	2870	1570	1.63	240
117	V 35	-150.0	-3.4	Marble, cut by Ank-Cal veins	Ma	312	474	151	20.0	5.3	5.5	6.0	0.6	2.4	12	6	86	223	7	24	7170	1030	1820	6.37	1271
118	V 40	-100.0	-2.3	Volcanic breccia, cut by Ank-Cal veins	Vb	416	697	249	41.0	9.5	5.0	6.0	0.7	0.9	11	4	205	25	2	6	9070	1700	2920	7.15	1828
119	V 45	-50.0	-1.1	Granite, leuco-	Gp	92	151	49	5.2	2.3	1.7	4.7	0.4	4.4	6	1	62	114	2	88	783	250	610	5.04	406
120	V 50	0.0	0.0	Granite, Rt	Gp	115	187	59	7.9	2.3	1.3	4.7	0.4	2.7	7	1	45	102	2	95	1730	325	750	3.74	490
121	V 55	50.0	1.1	Granite, leuco-	Gp	68	101	37	2.8	1.6	2.3	4.7	0.4	3.0	6	1	50	151	2	124	453	177	560	5.12	302
122	V 60	100.0	2.3	Granite / volcanic breccia	Gp	259	374	111	14.0	4.5	2.8	4.7	0.7	3.3	8	2	98	226	2	61	2000	1840	2070	7.69	988
123	V 65	150.0	3.4	Marble, cut by Ank-Cal veins	Ma	266	411	117	16.0	4.7	2.4	3.0	0.7	3.2	35	3	67	94	2	51	5780	1680	1500	4.78	1042
124	V 70	199.9	4.5	Marble, cut by Ank-Cal veins	Ma	978	1736	523	87.0	18.0	10.0	10.0	0.8	0.5	28	3	352	55	2	3	16100	1630	640	8.55	4274
125	V 75	249.9	5.7	Marble	Ma	3	6	5	0.6	0.5	0.6	1.4	0.1	0.5	4	1	2	2	2	3	142	919	280	0.14	30
126	V 80	299.9	6.8	Marble, cut by Ank-Cal veins	Ma	12	20	7	1.4	0.5	0.6	1.5	0.1	0.5	9	1	6	4	2	3	523	1070	350	0.42	62
127	V 90	399.9	9.1	Marble	Ma	2	4	5	0.8	0.5	0.5	1.3	0.1	0.5	4	1	1	1	2	3	167	914	180	0.12	26
128	W 10	-405.3	140.4	Marble	Ma	3	5	5	0.7	0.5	0.1	0.8	0.1	0.5	3	1	1	2	2	3	202	624	240	0.11	22
129	W 20	-305.3	142.7	Marble	Ma	1	3	3	0.6	0.5	0.4	0.9	0.1	0.5	4	1	1	2	2	3	63	1870	430	0.10	21
130	W 30	-205.4	145.0	Marble	Ma	2	4	4	5	1.0	0.5	0.4	0.8	0.1	0.5	7	1	2	2	3	176	1600	340	0.14	23
131	W 40	-105.4	147.2	Marble	Ma	12	17	5	1.1	0.5	0.7	0.8	0.1	0.5	6	1	1	2	2	3	152	1410	620	0.25	27
132	W 50	-8.4	149.5	Marble, cut by Ank-Cal veins	Ma	186	271	82	20.0	6.3	4.2	5.3	0.5	1.0	55	2	90	62	2	3	216	1740	330	0.17	53
133	W 60	94.6	151.8	Marble, cut by Ank-Cal veins	Ma	16	22	8	2.1	1.1	1.1	3.4	0.4	0.8	33	2	13	100	2	3	2320	3310	3270	1.45	768
134	W 70	204.5	154.0	Marble	Ma	2	3	3	0.5	0.8	0.5	0.3	0.8	0.1	0.5	4	1	1	2	3	141	1590	220	0.07	21
135	W 80	294.5	156.3	Marble	Ma	4	7	5	1.3	0.5	0.4	0.5	0.1	0.5	8	2	2	5	2	3	319	1610	390	0.24	30
136	W 90	394.5	158.6	Marble	Ma	1	2	2	0.5	0.5	0.3	0.9	0.1	0.5	2	1	1	2	2	3	52	1670	390	0.03	17
137	W 100	494.5	160.8	Marble	Ma	1	1	1	0.5	0.5	0.1	0.7	0.1	0.5	1	1	1	1	2	3	45	1230	210	0.03	15
138	Wa 40	-108.1	222.2	Granite, leuco-	Gp	37	62	23	7.1	2.2	1.8	4.0	0.4	1.6	33	4	34	39	2	48	336	266	1750	1.10	199
139	Wa 45	-58.1	223.3	Granite, leuco-	Gp	161	220	56	7.4	2.3	2.3	5.0	0.4	2.2	22	1	40	34	2	20	4650	1540	980	2.32	591

C-3 Geochemical Analyses of the Kalkfeld Area (4)

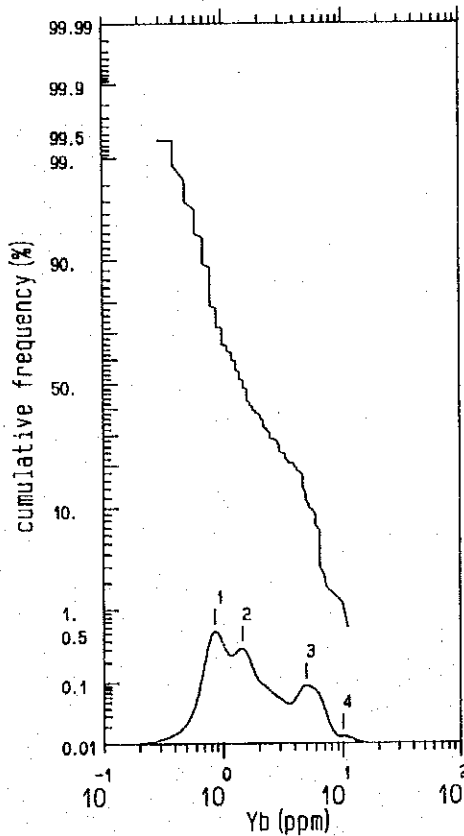
No.	Sample No.	X (m)	Y (m)	Rock Name	Rock Code	La ppm	Ce ppm	Nd ppm	Sm ppm	Eu ppm	Tb ppm	Yb ppm	Lu ppm	Sc ppm	Y ppm	U ppm	Th ppm	Nb ppm	Ta ppm	Zr ppm	Mn ppm	Sr ppm	P ppm	Fe %	TREE203 ppm
142	Ma 55	42.8	223.8	Marble, Gr	Ma	5	7	5	1.1	0.5	0.2	1.0	0.1	0.5	3	1	1	2	2	3	191	1620	290	0.09	29
143	Ma 60	94.5	223.2	Marble, Gr	Ma	3	5	5	1.3	0.7	0.5	0.9	0.1	0.5	11	2	11	3	2	3	259	1330	510	0.30	29
144	X 20	-310.7	292.2	Marble	Ma	4	8	5	1.2	0.5	0.4	0.9	0.1	0.5	9	1	9	4	2	3	219	3250	350	0.18	32
145	X 30	-210.8	294.4	Marble	Ma	5	8	5	0.8	0.5	0.3	0.8	0.1	0.5	4	1	1	2	2	3	133	1270	280	0.11	31
146	X 40	-110.8	296.7	Marble	Ma	13	19	7	1.8	0.7	0.5	1.5	0.2	0.5	11	1	5	8	2	3	636	1200	400	0.55	63
147	X 45	-60.8	297.8	Marble, cut by Ank-Cal veins	Ma	432	546	137	24.0	6.9	5.0	4.7	0.4	1.0	42	2	123	75	2	7	2850	2700	1690	2.27	1478
148	X 50	-10.8	299.0	Marble, Gr, dolomitic	Ma	79	96	24	3.1	1.4	0.8	4.0	0.4	1.9	24	1	17	45	2	9	3350	914	700	2.27	272
149	X 55	46.5	298.8	Marble, cut by pegmatite(kf) dyke	Ma	250	286	61	11.0	4.3	2.0	3.6	0.6	2.1	44	4	51	114	2	5	5040	2020	1190	2.92	786
150	X 60	84.4	300.5	Marble, Gr	Ma	2	4	5	0.8	0.5	0.5	1.2	0.1	0.5	2	1	1	2	2	3	105	986	290	0.10	26
151	X 70	177.8	292.6	Marble, Gr	Ma	6	7	5	1.1	0.5	0.4	1.2	0.1	0.5	6	1	5	4	2	3	329	957	310	0.26	34
152	X 80	277.7	291.4	Marble, Gr	Ma	2	4	5	1.1	0.5	0.5	0.9	0.1	0.5	4	1	1	2	2	3	91	1250	400	0.10	25
153	X 90	378.6	290.1	Marble, Gr	Ma	1	3	5	1.0	0.5	0.5	0.9	0.1	0.5	4	1	1	2	2	3	145	1300	260	0.12	23
154	X 100	477.6	288.9	Marble, Gr	Ma	3	5	5	1.5	0.5	0.3	0.5	0.1	0.5	3	1	1	2	2	3	269	580	200	0.11	25
155	Xa 40	-113.5	371.5	Marble	Ma	97	134	134	15.3	1.9	3.0	2.4	0.1	0.5	17	1	16	10	2	3	430	1120	500	0.28	516
156	Xa 45	-63.5	372.6	Marble	Ma	5	10	5	1.5	0.5	0.6	1.0	0.1	0.7	9	1	2	5	2	3	260	1160	250	0.25	38
157	Xa 50	-13.5	373.8	Marble, Gr	Ma	4	8	5	1.4	0.5	0.1	1.7	0.1	0.5	1	1	1	2	2	3	164	1050	250	0.11	29
158	Xa 55	47.4	373.4	Marble, Gr	Ma	1	4	5	1.0	0.5	0.3	1.0	0.1	0.5	4	1	1	2	2	3	135	1460	470	0.08	22
159	Xa 60	96.4	372.8	Marble, Gr	Ma	3080	4150	604	94.0	25.0	9.3	3.0	0.4	3.1	149	6	263	157	2	28	13500	5540	3200	3.72	9781
160	Y 30	-216.2	444.1	Marble	Ma	4	7	5	1.2	0.5	0.5	1.1	0.1	0.5	4	1	4	2	3	93	1420	270	0.08	32	
161	Y 40	-116.2	446.4	Marble	Ma	4	8	5	1.0	0.5	0.1	0.9	0.1	0.5	7	1	1	2	2	3	109	1300	240	0.09	27
162	Y 50	-16.2	448.6	Granite, leuco-	Gr	40	75	25	5.7	0.5	1.6	6.5	0.6	3.6	38	6	14	31	2	100	168	95	210	0.44	217
163	Y 60	81.8	447.4	Marble, Gr	Ma	4	7	5	1.2	0.5	0.1	0.7	0.1	0.8	5	1	1	2	2	4	151	1220	290	0.10	26
164	Y 70	180.5	446.2	Marble, partly Gr rich	Ma	3	5	5	1.5	0.5	0.4	0.9	0.1	0.5	8	1	1	2	2	3	118	1270	290	0.06	27
165	Y 80	279.3	445.0	Marble, Gr	Ma	2	4	5	1.4	0.5	0.4	1.1	0.1	0.5	6	1	1	5	2	3	95	862	370	0.08	25
166	Y 90	379.4	443.8	Marble, Gr	Ma	2	5	5	1.3	0.5	0.4	1.1	0.1	0.5	4	1	1	2	2	3	75	779	300	0.08	26
167	Y 100	479.5	442.5	Granite, pegmatitic	Gr	19	43	20	3.5	0.5	1.0	3.1	0.5	3.1	62	8	10	28	2	23	87	57	220	0.49	129

**C-4 Frequency and Cumulative Frequency  
of Geochemical Analyses of the Kalkfeld Area**

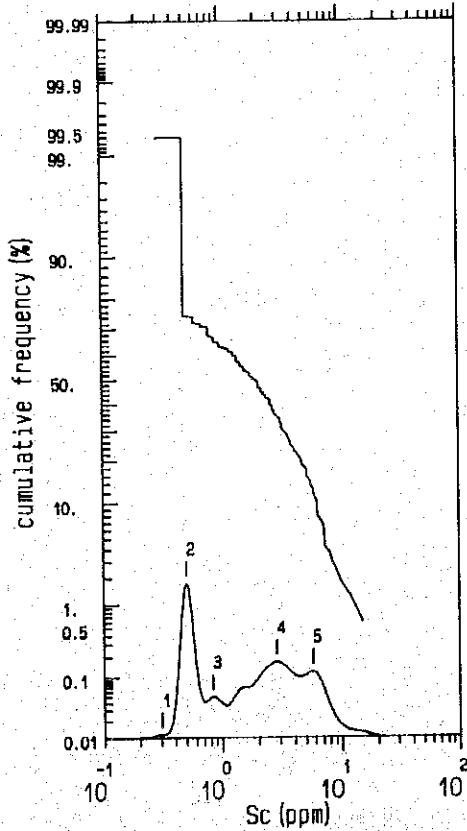




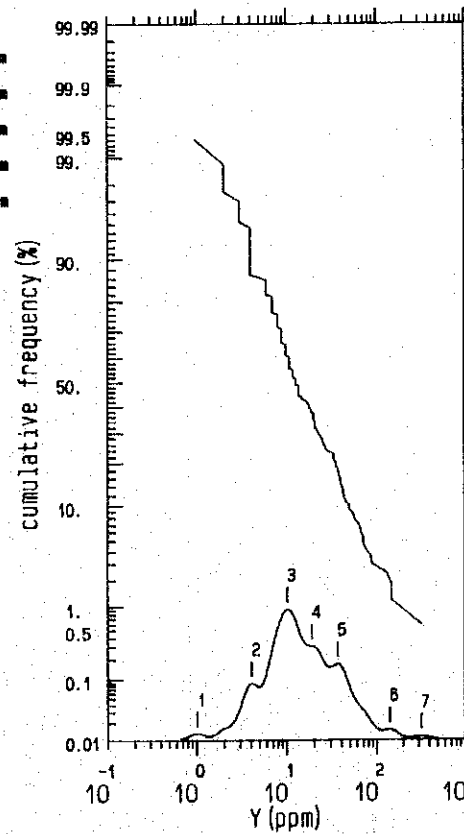
- 1 1.02 ppm
- 2 2.20 ppm
- 3 4.28 ppm
- 4 12.24 ppm
- 5 61.29 ppm
- 6 286.06 ppm
- 7 662.86 ppm
- 8 3318.40 ppm



- 1 0.67 ppm
- 2 1.45 ppm
- 3 5.01 ppm
- 4 9.98 ppm

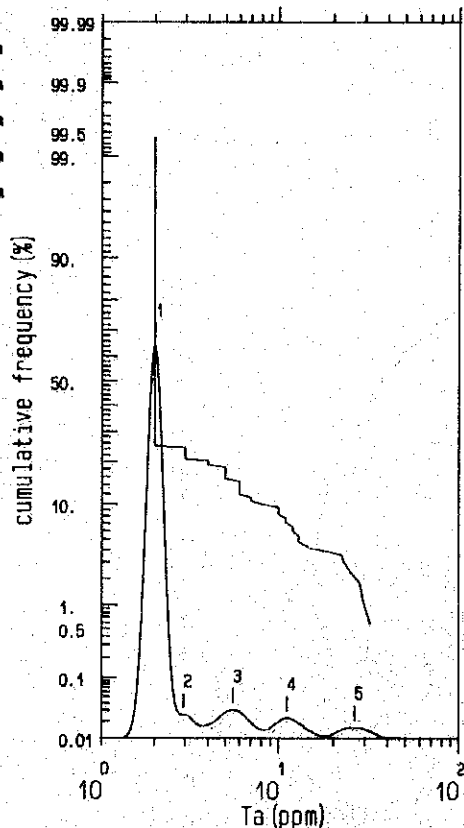
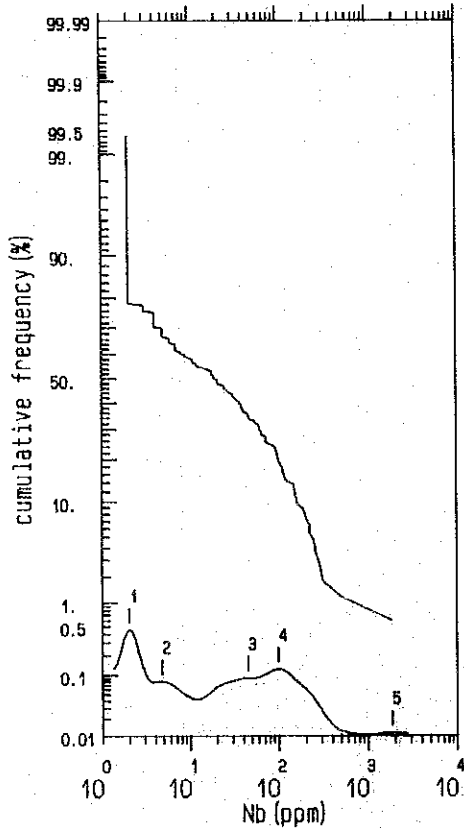
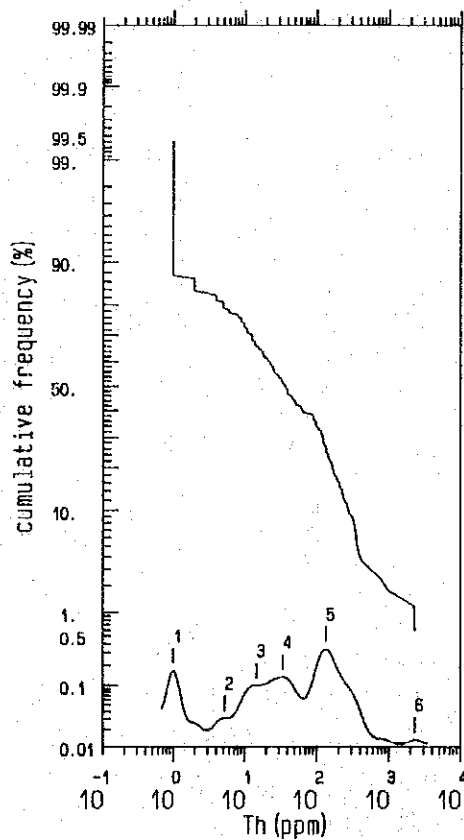
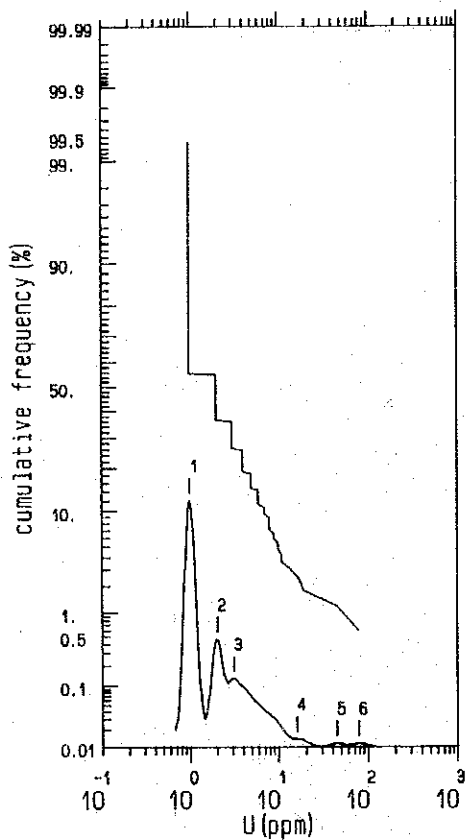


- 1 0.31 ppm
- 2 0.50 ppm
- 3 0.64 ppm
- 4 2.84 ppm
- 5 5.71 ppm

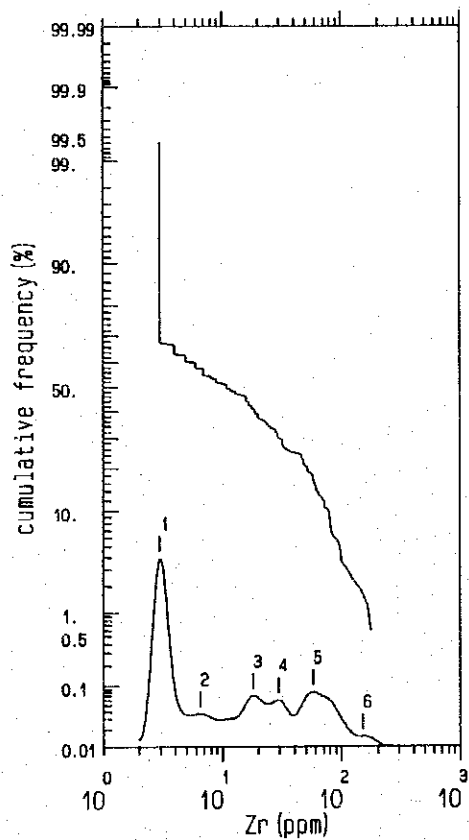


- 1 1.01 ppm
- 2 4.06 ppm
- 3 10.25 ppm
- 4 19.01 ppm
- 5 36.18 ppm
- 6 141.56 ppm
- 7 322.59 ppm

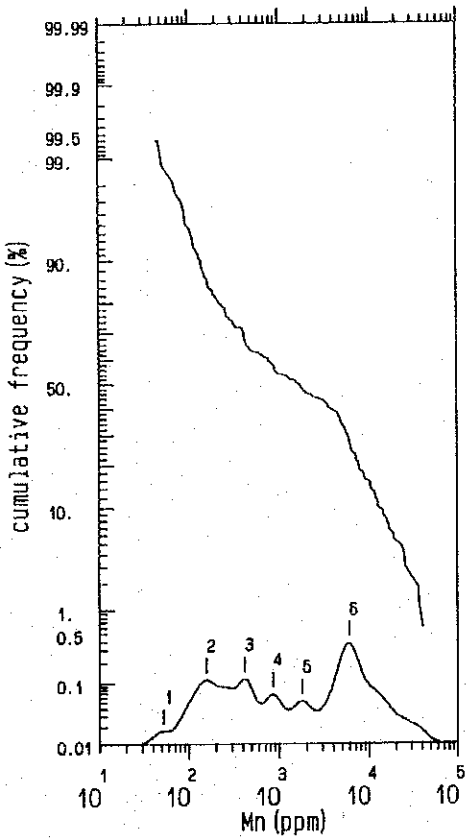
C-4 Frequency and Cumulative Frequency of Geochemical Analyses of the Kalkfeld Area (1)



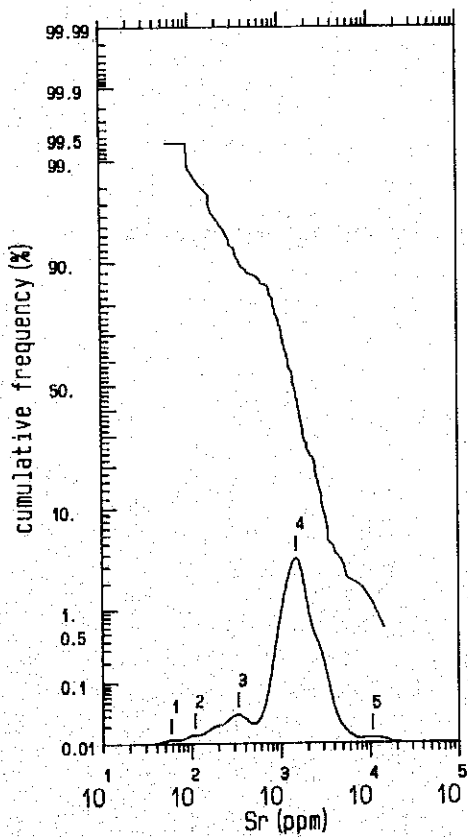
C-4 Frequency and Cumulative Frequency of Geochemical Analyses of the Kalkfeld Area (2)



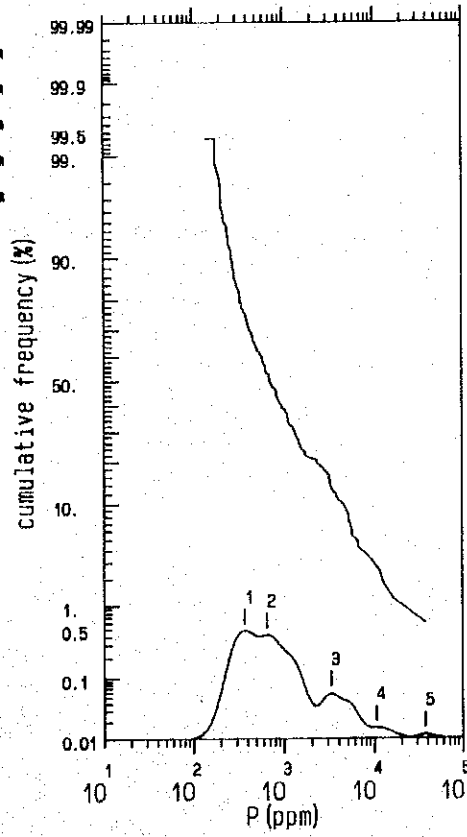
- 1 3.00 ppm
- 2 6.54 ppm
- 3 18.28 ppm
- 4 29.43 ppm
- 5 57.31 ppm
- 6 151.36 ppm



- 1 52.95 ppm
- 2 156.83 ppm
- 3 423.08 ppm
- 4 862.70 ppm
- 5 1812.14 ppm
- 6 5941.90 ppm

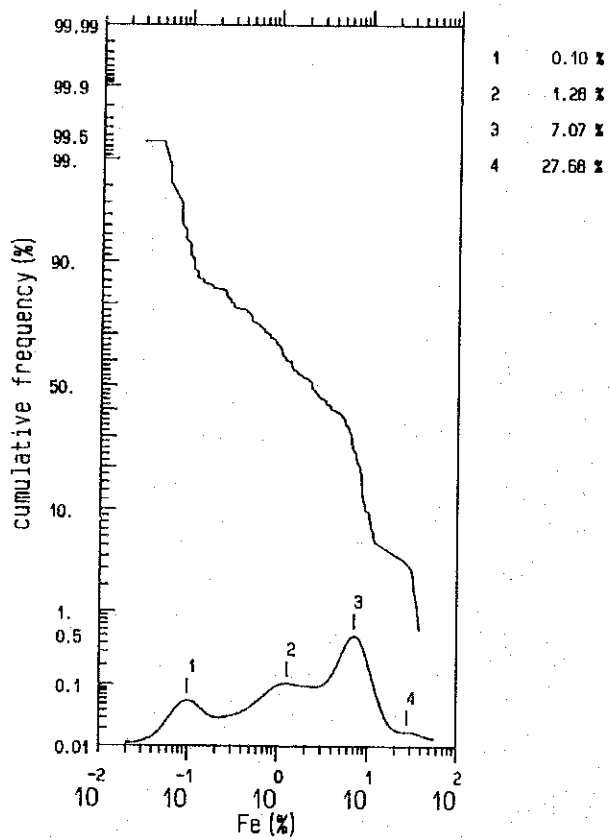


- 1 58.11 ppm
- 2 110.58 ppm
- 3 336.71 ppm
- 4 1486.10 ppm
- 5 10495.80 ppm



- 1 369.73 ppm
- 2 655.46 ppm
- 3 3305.88 ppm
- 4 10651.86 ppm
- 5 37914.80 ppm

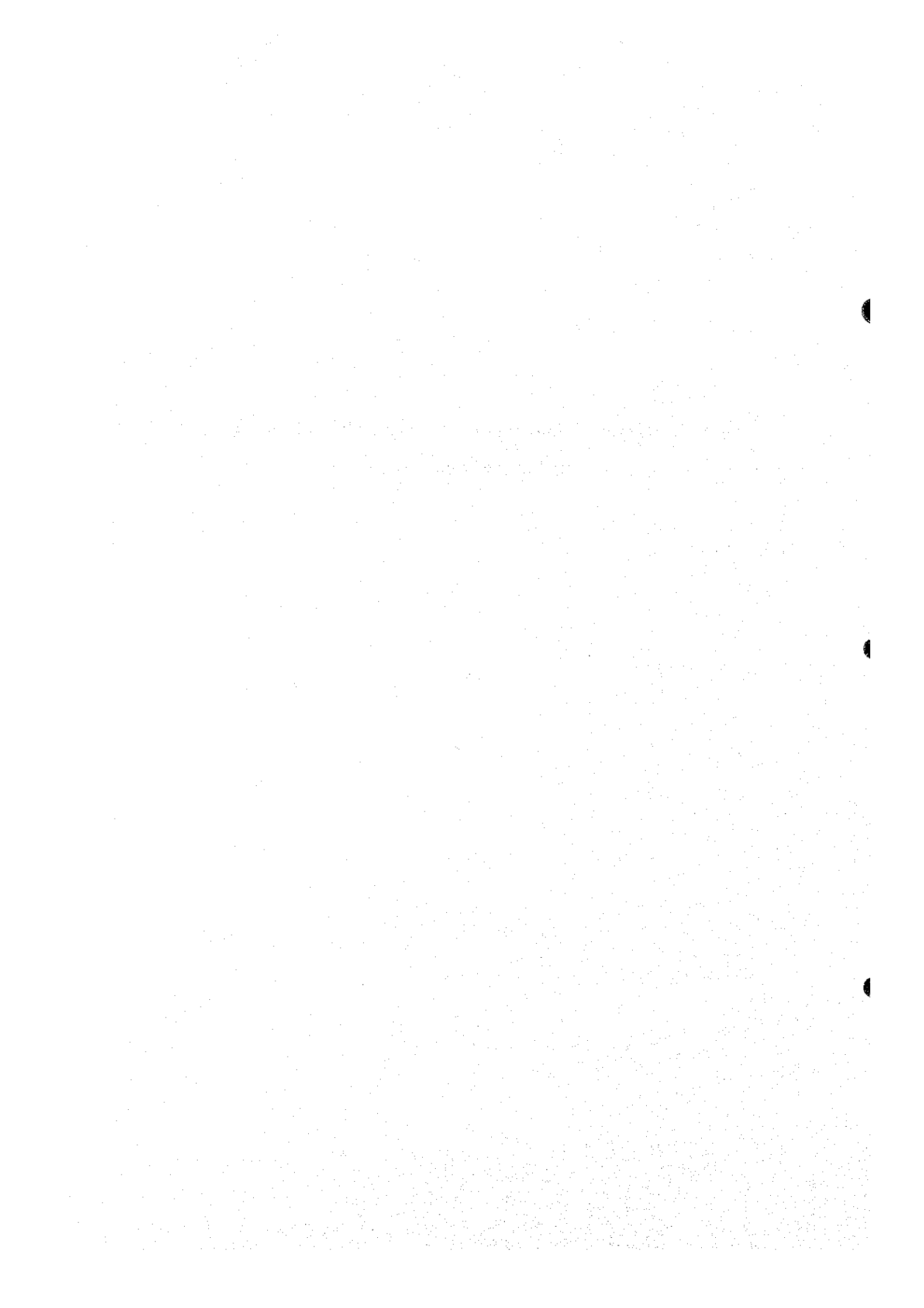
C-4 Frequency and Cumulative Frequency of Geochemical Analyses of the Kalkfeld Area (3)

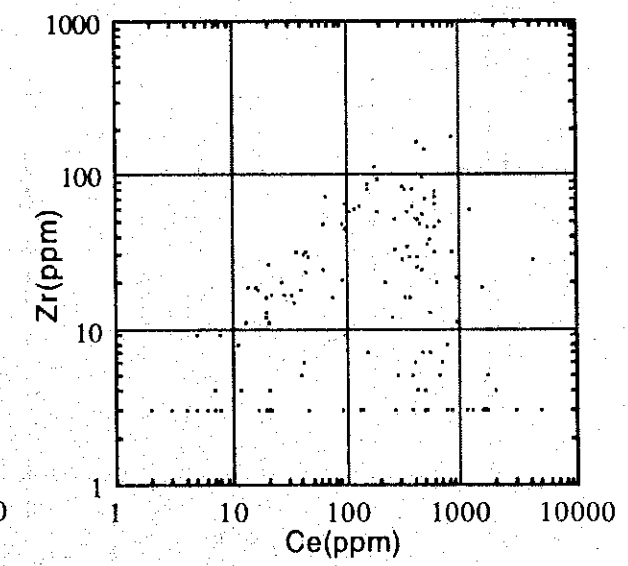
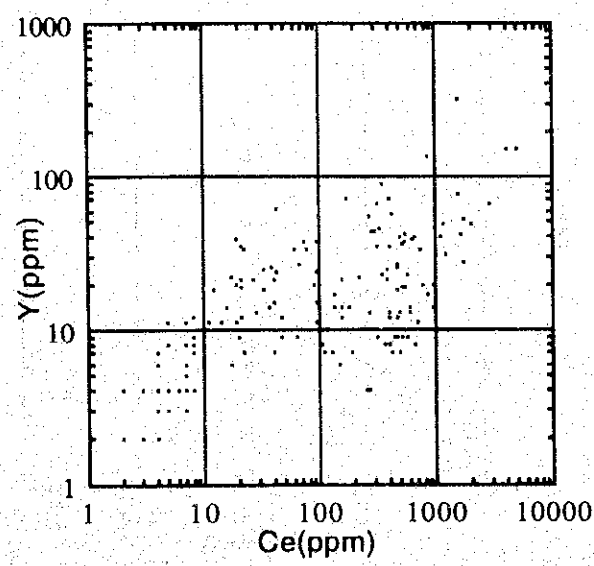
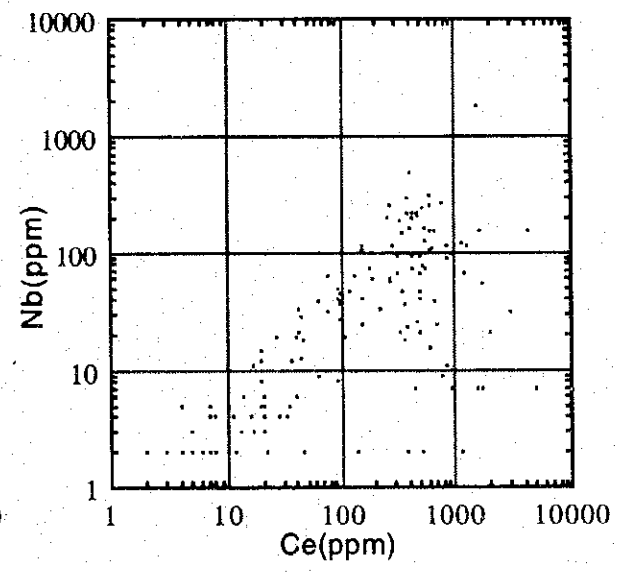
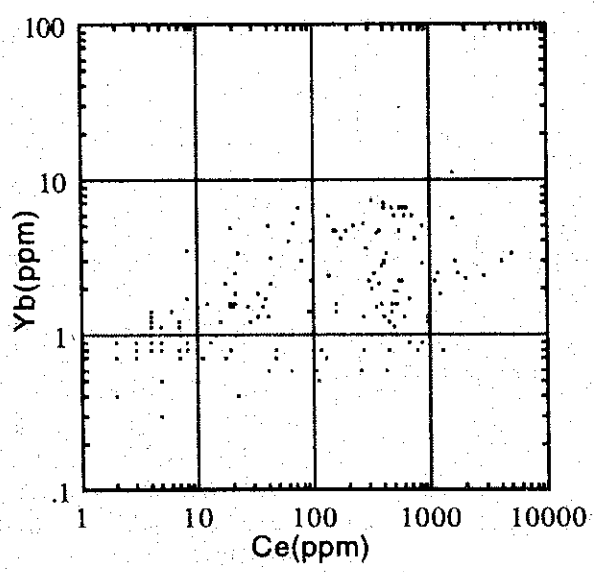
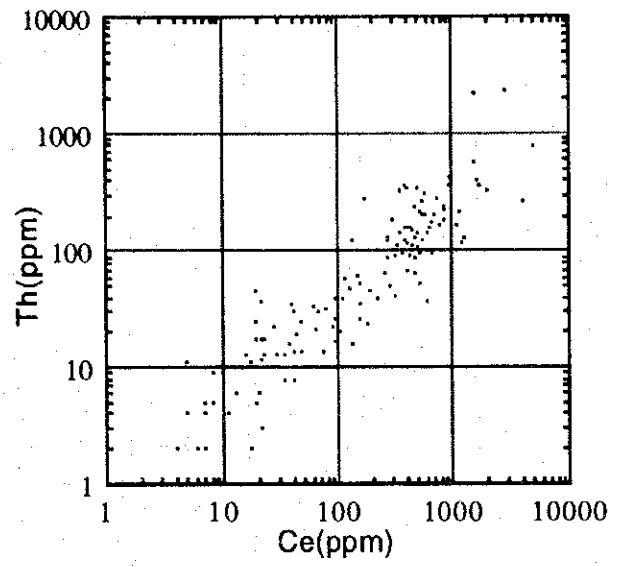
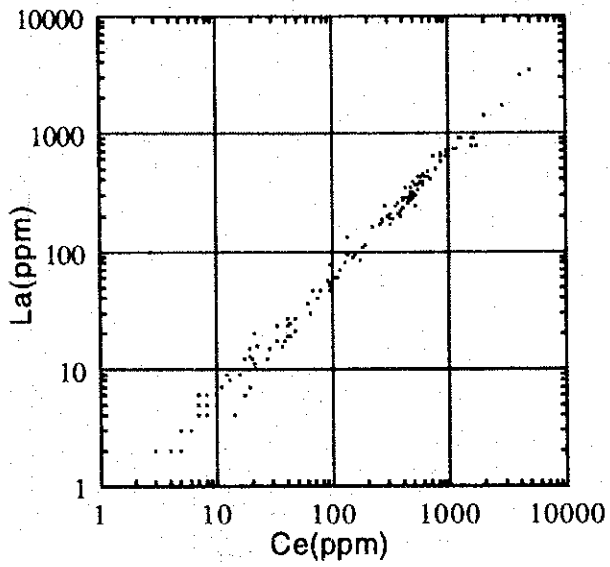


**C-4 Frequency and Cumulative Frequency of Geochemical Analyses of the Kalkfeld Area (4)**

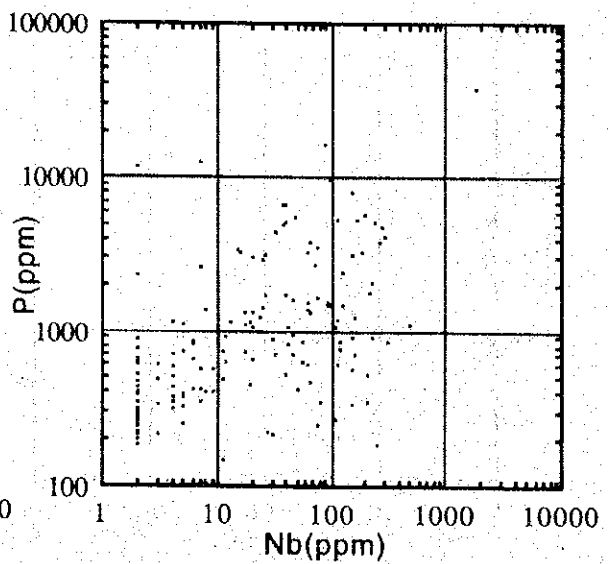
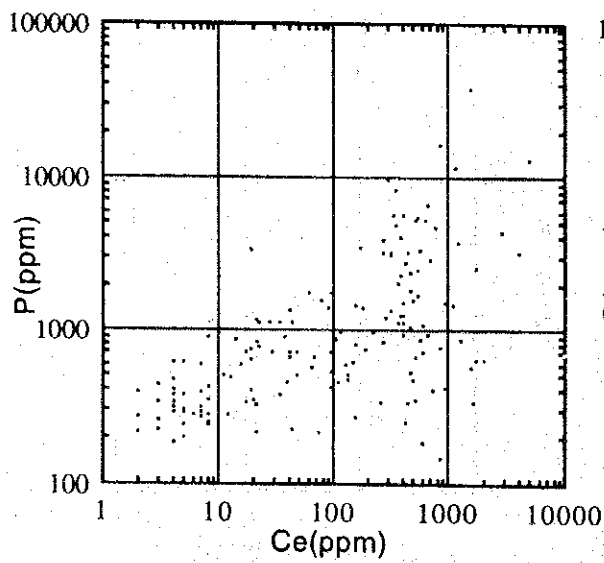
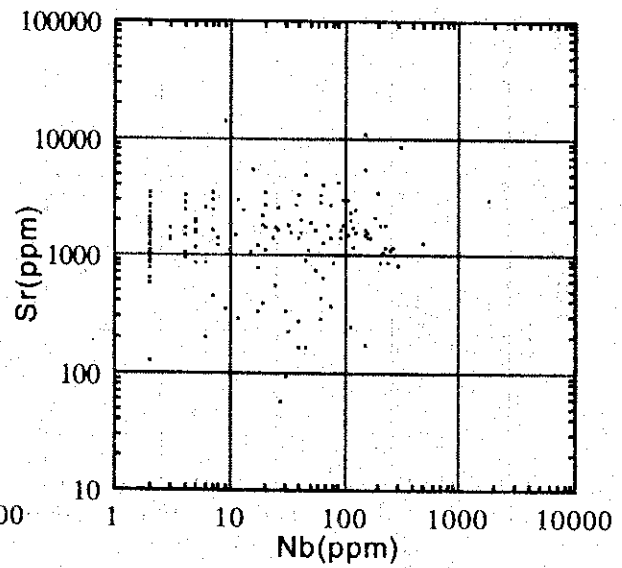
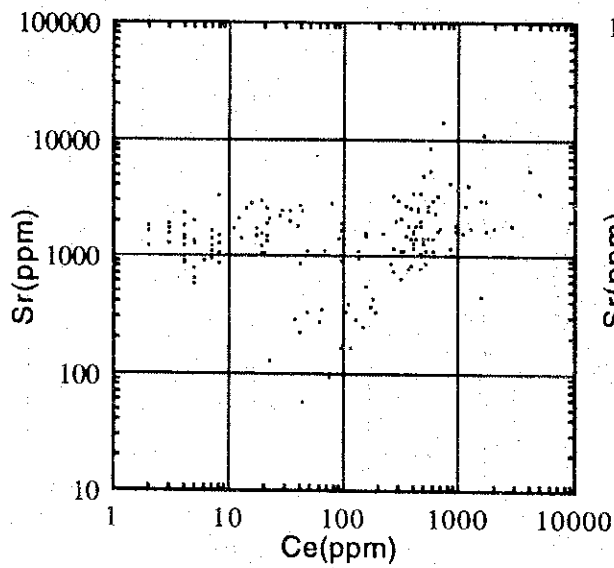
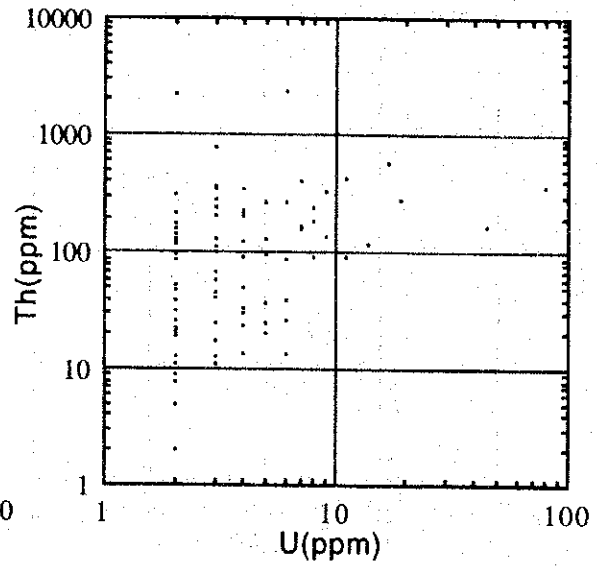
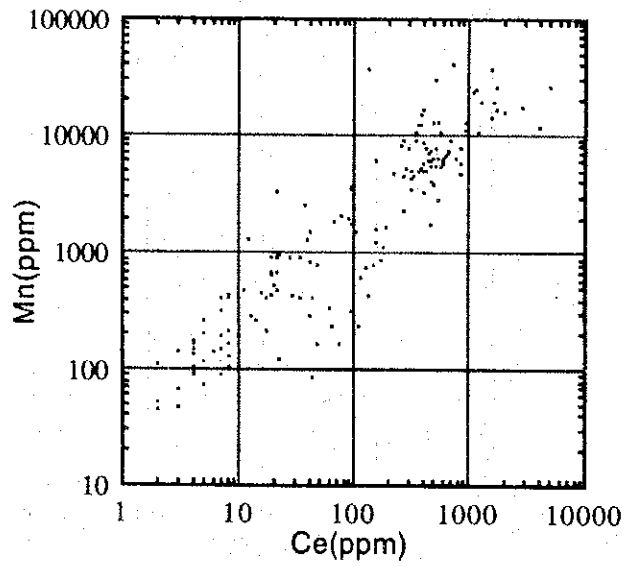


**C-5 Scattering Diagrams of the Geochemical Analyses  
of the Kalkfeld Area**





C-5 Scattering Diagrams of the Geochemical Analyses of the Kalkfeld Area (1)

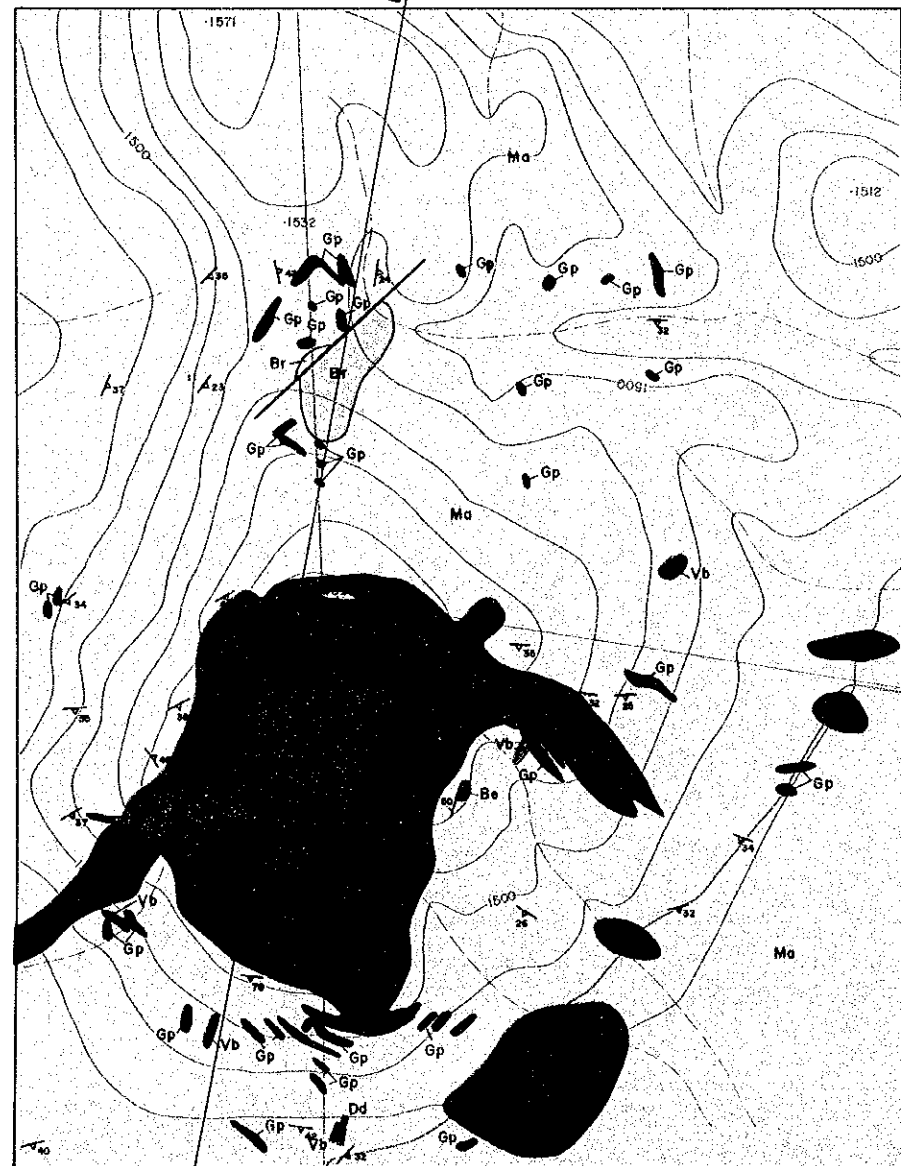


C-5 Scattering Diagrams of the Geochemical Analyses of the Kalkfeld Area (2)



# GEOLOGY

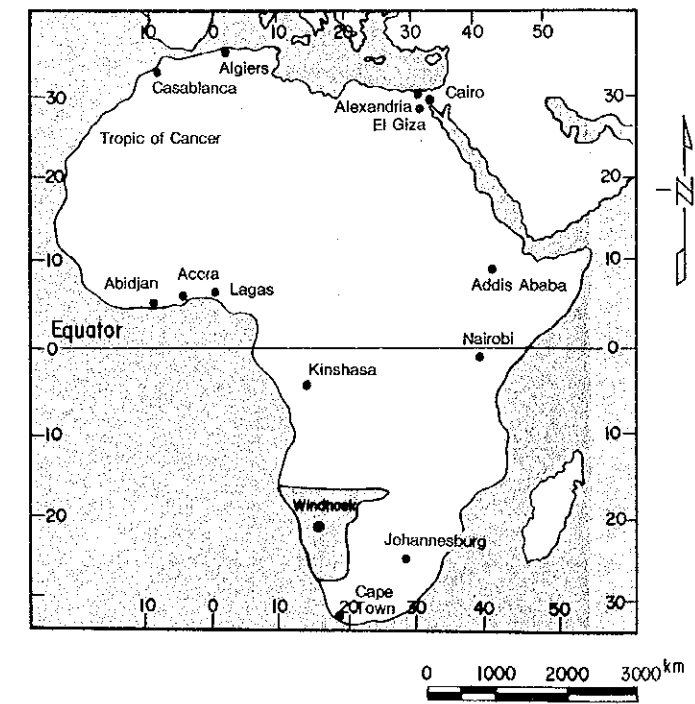
**GEOLOGICAL MAP OF THE KALKFELD AREA**



**LEGEND**

- Post-Karoo intrusions**
  - Dolerite
- Oswamboe Suite**
  - Iron ore
  - Beforsite
  - Volcanic breccia
- Damaran Granitoid**
  - Brecciated granite and Damara marble
  - Pegmatitic granite
  - Biotite granite
- Damaran Sequence**
  - marble
- Dip and strike of banding structure in carbonatite
- Dip and strike of foliation in marble
- Fault
- Track
- Dry river
- Geological section

**LOCATION MAP OF NAMIBIA**

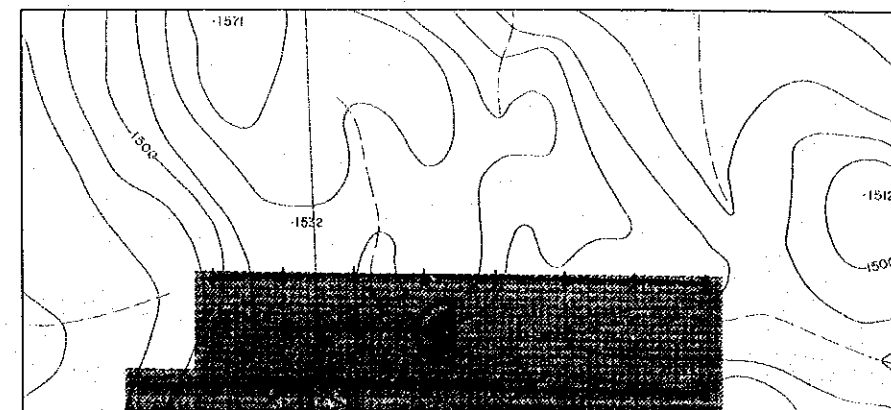


**GEOLOGICAL SECTION OF THE KALKFELD AREA**

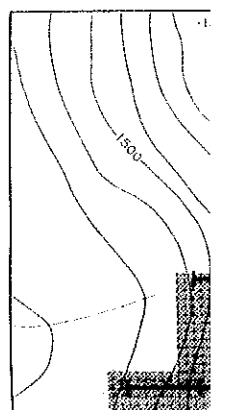
A  
1600m

B  
1600m

**PHOSPHOROUS (P) DISTRIBUTION OF THE KALKFELD AREA**

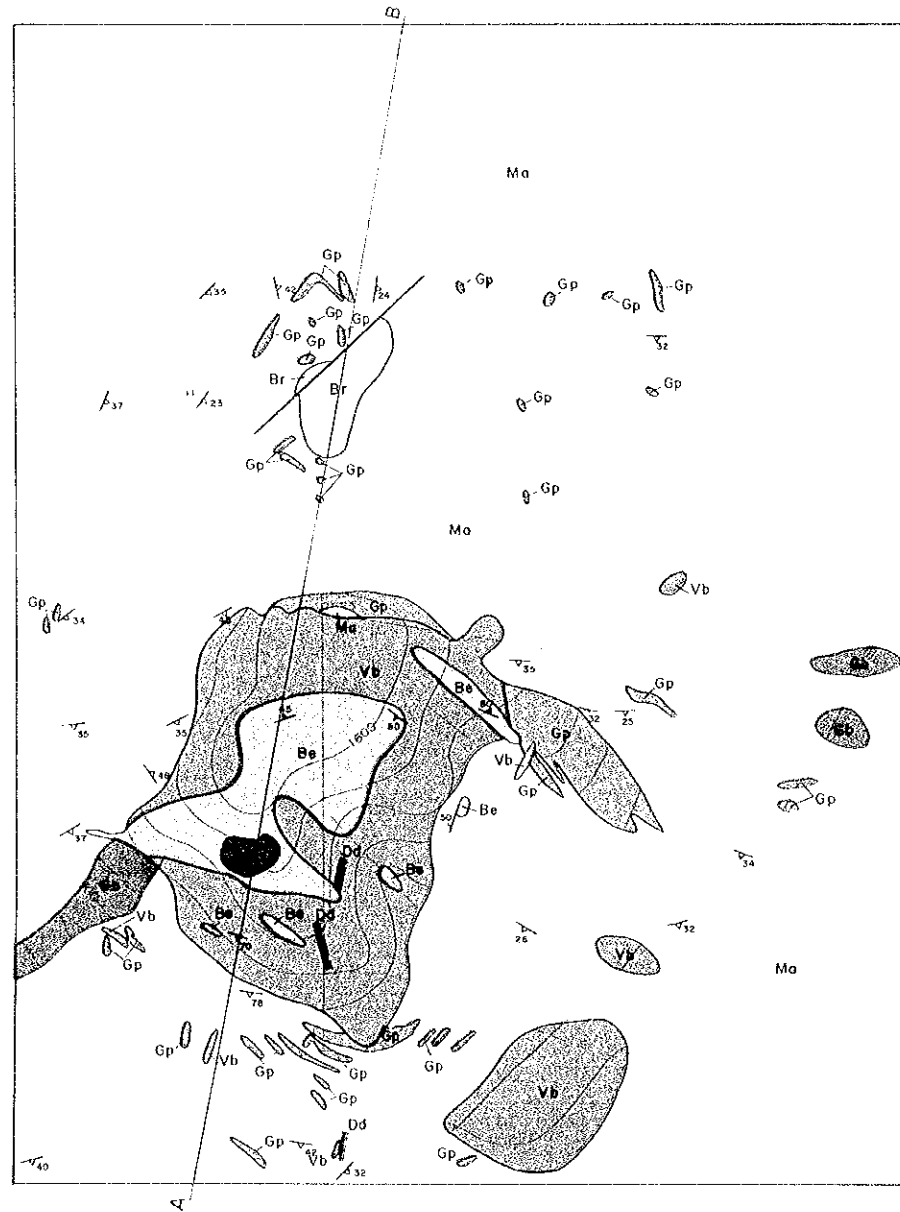


**RARE EAR THE KALK**



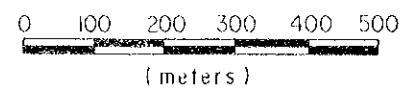
# GEOLOGY

**GEOLOGICAL MAP OF THE KALKFELD AREA**



**LEGEND**

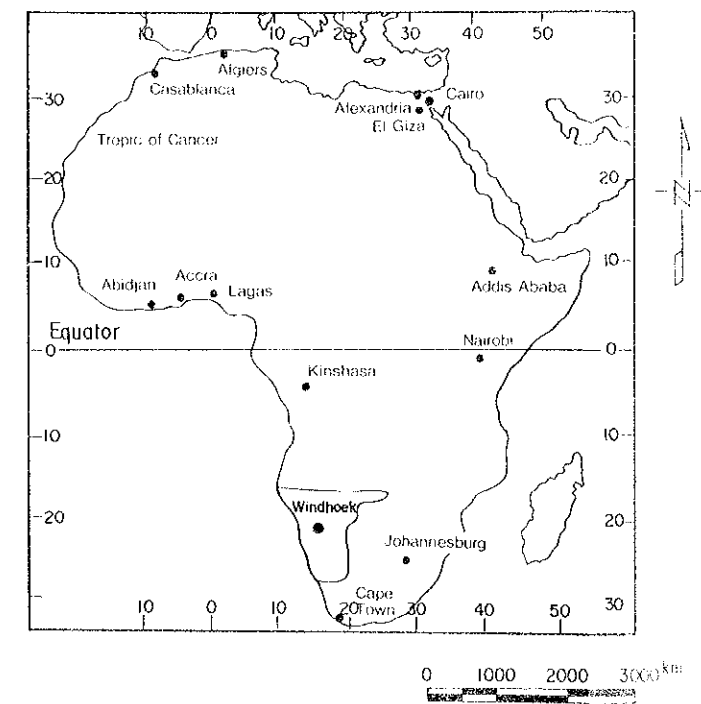
- Post-Karoo Intrusions**
  - Dolerite
- Oswambo Diatreme**
  - Iron ore
  - Beforsite
  - Volcanic breccia
- Brecciated granite and Damara marble
- Damaran Granitoid**
  - Pegmatitic granite
  - Biotite granite
- Damara Sequence**
  - marble
- Dip and strike of banding structure in carbonatite
- Dip and strike of foliation in marble
- Fault
- Truck
- Dry river
- Geological section



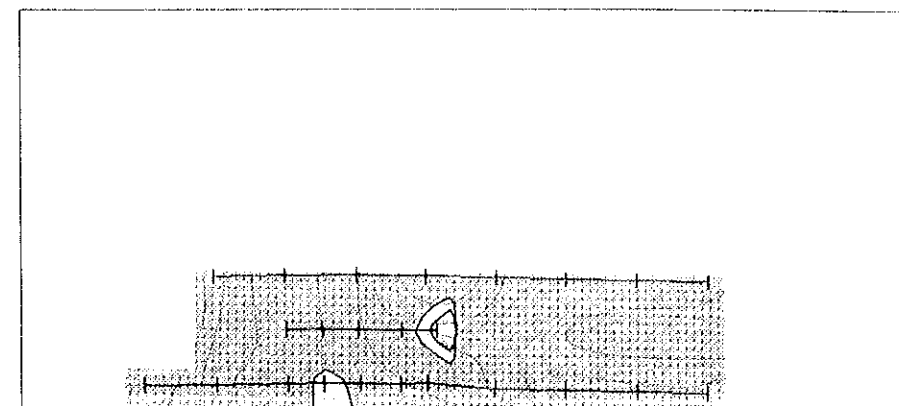
**GEOLOGICAL SECTION OF THE KALKFELD AREA**



**LOCATION MAP OF NAMIBIA**



**PHOSPHOROUS (P) DISTRIBUTUION OF THE KALKFELD AREA**



**RARE EAR THE KALK**

