

19.3 Soils		Si	Al	Ca	Fe	K	Mg	Mn	Na	P	Ti	ppm As	ppm Ba	ppm Cd	ppm Ce	ppm Co	ppm Cr
CRM	193 A SO-2	24.99	8.07	1.96	5.56	2.45	0.54	0.072	1.9	0.3	0.86	...	966	...	...	9	16
CRM	193 A SO-3	15.86	3.05	14.63	1.51	1.61	4.98	0.052	0.74	0.048	0.2	...	296	...	...	8	26
	193 A TILL-1	28.4	7.3	1.94	4.77	1.84	1.29	0.14	2.01	0.10	0.59	18	702	...	71	18	65
	193 A TILL-2	28.4	8.5	0.91	3.77	2.55	1.10	0.08	1.62	0.07	0.53	26	540	...	98	15	74
	193 A TILL-3	32.2	6.5	1.88	2.74	2.01	1.03	0.05	1.96	0.05	0.29	87	489	...	42	15	123
	193 A TILL-4	30.3	7.6	0.89	3.94	2.70	0.76	0.05	1.83	0.09	0.49	111	395	...	78	8	53
	193 S JSO-1	17.91	9.56	1.82	7.97	0.28	1.27	0.153	0.50	0.21	0.90	8.1	267	...	...	32	71
	193 S JSO-2	19.71	11.30	0.78	7.31	1.29	1.00	0.136	0.76	0.07	0.84	1076	352	...	...	1071	1118
	193 S JSAC 0401	(35.0)	(6.5)	...	(3.0)	(1.7)	...	0.0266	...	...	(0.38)	10.62	(410)	4.25	(62)	(6.2)	50.4
	193 S JSAC 0411	...	(7.6)	...	(3.3)	(0.64)	...	0.0943	...	...	(0.32)	11.3	(250)	0.274	(43)	(6.5)	23.5
	193 CG 08302	30.57	7.11	2.59	3.34	2.12	1.53	0.068	1.52	0.086	0.40	3.8	509	0.081	83.6	13.1	60.8
	193 CG 08303	25.9	6.86	4.79	2.79	1.57	1.30	0.0051	1.10	0.16	0.36	10.6	724	1.20	...	13.0	112
CRM	193 B 2586	29.15	6.652	2.218	5.161	0.9760	1.707	0.1000	0.4680	0.1001	0.6050	8.7	413	2.71	58.0	...	301
CRM	193 B 2587	33.13	5.860	0.927	2.813	1.583	0.669	0.0651	1.127	0.0970	0.3920	13.7	568	1.92	...	...	92
CRM	193 B 2709	29.66	7.50	1.89	3.50	2.03	1.51	0.0538	1.16	0.062	0.342	17.7	968	0.38	(42.0)	13.4	130
CRM	193 B 2710	28.97	6.44	1.25	3.38	2.11	0.853	1.01	1.14	0.106	0.283	626	707	21.8	(57)	(10)	(39)
CRM	193 B 2711	30.44	6.53	2.88	2.89	2.45	1.05	0.0638	1.14	0.086	0.306	105	726	41.70	(69)	(10)	(47)
CRM	193 LI 12.1.07	(25.0)	(9.0)	(0.69)	3.73	3.08	(0.59)	0.09	(0.3)	(0.13)	(0.55)	...	582.0	0.214	...	15.4	79.8
CRM	193 LI 12.1.08	(31.0)	(5.77)	(0.49)	2.7	1.85	(0.63)	0.091	(0.8)	(0.1)	(0.5)	...	365.0	0.198	...	11.9	87.4
CRM	193 LI 12.1.09	(20.0)	(7.48)	(6.34)	3.73	2.63	(1.19)	0.073	(0.45)	(0.14)	(0.38)	...	315.0	0.285	...	15.6	75.3
CRM	193 SA 42	34.61	5.31	0.64	3.27	0.37	1.16	0.08	(0.11)	(0.02)	0.22	...	(250.0)	...	...	35.0	430.0

Continuation from above	All Elements ppm											Others	Type	Size	
	Cu	Hg	Ni	Pb	Rb	Sr	V	Zn	Zr	Y					
193 A SO-2	7	0.082	8	21	78	340	64	124	...	...			Podzolic B Horizon	200g	
193 A SO-3	17	0.017	16	14	39	217	38	52	...	...			Calcereous C Horizon	200g	
193 A TILL-1	47	...	24	22	44	291	99	98	502	...			Soil	100g	
193 A TILL-2	150	...	32	31	143	144	77	130	390	...			Till	100g	
193 A TILL-3	22	...	39	26	55	300	62	56	230	...			Soil	100g	
193 A TILL-4	237	...	17	50	161	109	67	70	385	...			Till	100g	
193 S JSO-1	169	...	39	13	14.5	196	300	105	96	24.9				100g	
193 S JSO-2	1276	...	1070	1087	62.5	87	1345	1174	1161	1090				100g	
193 S JSAC 0401	15.3	...	18.9	26	(88)	...	65.0	66.8	...	...			Se, Be	Brown Soil	50g
193 S JSAC 0411	26.7	...	11	18.9	(49)	(60)	68.6	64.6	...	...			Se, Be	Volcanic Ash Soil	50g
193 CG 08302	24.6	0.018	31.1	14.2	135	163	77.5	58.0	...	...			many	Tibetan	15g
193 CG 08303	120	2.15	40	73	60	405	...	260	...	...			La, Th, U	Polluted farmland	40g
193 B 2586	...	0.367	...	432	...	84.1	...	352	...	...			Nd, Yb	Urban	55g
193 B 2587	...	0.290	...	3242	...	126	...	335.8	...	...				Urban (contaminated)	55g
193 B 2709	34.6	1.40	88	18.9	(96)	231	112	106	(160)	(18)			many	San Joaquin	50g
193 B 2710	2950	32.6	14.3	5532	(120)	(330)	76.6	6952	...	(23)			many	Montana - elevated traces	50g
193 B 2711	114	6.25	20.6	1162	(110)	245.3	81.6	350.4	(230)	(25)			many	Montana - elevated traces	50g
193 LI 12.1.07	30.0	0.171	30.8	19.6	(200)	(82.0)	98.3	88.8	(350)	...			many	Eutric Cambisol	50g
193 LI 12.1.08	21.2	0.078	40.0	18.9	(100)	107.0	(87.5)	63.7	(500)	...			many	Orthic Luvisol	50g
193 LI 12.1.09	30.9	0.087	37.4	41.3	(100)	274.0	89.7	119.0	(200)	...			many	Rendzina	50g
193 A SA 42	17.0	...	125.0	(10.0)	22.0	37.0	94.0	44.0	192.0	11.0			many		100g

	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	Fe <sub>2</sub> O <sub>3</sub>	K <sub>2</sub> O	MgO	MnO	Na <sub>2</sub> O	P <sub>2</sub> O <sub>5</sub>	TiO <sub>2</sub>	L.O.I.
193 BG COD 310	46.08	11.36	14.83	3.92	2.26	3.15	0.1	1.24	0.2	0.43	...
193 BG COD 311	66.7	13.72	2.9	4.09	2.72	1.68	0.097	2.19	0.15	0.5	4.98
193 BG COD 312	56.52	13.78	7.39	4.56	2.34	2.3	0.099	1.92	0.2	0.52	9.64

Continuation from above	All Elements ppm											Type	Size		
	Be	Cu	Cr	Cd	As	Co	Li	Pb	Mo	Ni	V	Zn			
193 BG COD 310A	2.39	49.82	103.5	4.59	9.24	11.34	21.95	120.27	5.74	63.11	85.75	269.75		Meadow Soil	50g
193 BG COD 311A	2.4	72.0	68.0	...	7.02	10.7	21.25	51.0	1.48	39.0	87.2	74.0		Meadow Soil	50g
193 BG COD 312A	2.52	88.15	52.5	0.67	6.54	12.5	24.1	88.0	...	52.0	85.35	126.3		Meadow Soil	50g

# 19. Soil/Clay

19.3 Soils (continued)		SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	FeO	MgO	CaO	Na <sub>2</sub> O	K <sub>2</sub> O	H <sub>2</sub> O	CO <sub>2</sub>	Organic			Size		
												C	L.O.I.				
193 CG 07401		62.6	14.18	5.19	(1.27)	1.81	1.72	1.66	2.59	(4.99)	(1.13)	(1.8)	(8.59)		70g		
193 CG 07402		73.35	10.31	3.52	(0.56)	1.04	2.36	1.62	2.54	(2.86)	(0.97)	(0.49)	(4.41)		70g		
193 CG 07403		74.72	12.24	2.0	(0.48)	0.58	1.27	2.71	3.04	(1.91)	(0.13)	0.5	(2.65)		70g		
193 CG 07404		50.95	23.45	10.3	(0.41)	0.49	0.26	0.11	1.03	(10.13)	(0.12)	(0.62)	(10.88)	Plus another 61 elements all certified at ppm levels	70g		
193 CG 07405		52.57	21.58	12.62	(0.22)	0.61	(0.095)	0.122	1.5	(8.81)	(0.096)	(0.32)	(9.14)		70g		
193 CG 07406		56.93	21.23	8.09	(0.57)	0.34	0.22	0.19	1.7	(8.9)	(0.084)	(0.806)	(10.0)		70g		
193 CG 07407		32.69	29.26	18.76	(1.05)	0.26	0.16	0.074	0.2	(13.73)	(0.11)	(0.64)	(14.3)		70g		
193 CG 07408		58.61	11.92	4.48	(1.2)	2.38	8.27	1.72	2.42	(3.28)	(5.97)	0.31	(9.15)		70g		
193 CG 07409		73.28	12.91	2.08	...	0.49	1.35	3.31	3.37	...	...	...	...	Plus another ~50 elements all certified at ppm levels	50g		
193 CG 07410		65.64	14.55	4.6	...	1.25	1.42	1.9	2.59	...	...	...	...		50g		
193 CG 07411		47.96	12.04	7.97	...	3.71	4.33	1.1	2.03	...	...	...	...		50g		
All Elements ppm																	
		Al	Sb	As	Ba	Be	Cd	Ca	Cr	Co	Cu	Fe	Pb	Mg	Mn		
193 GL 021		2725	4955	25	586	...	1	5426	11	...	4792	6481	...	...	174 continued		
193 GL 027		9149	...	12.4	166	2.73	12.0	5970	26.9	4.7	9.87	11173	51.9	2755	259		
193 GL 6135		22700	...	70	305	1.4	...	23400	455	20	107	47500	411	9400	390 continued		
Continuation from above																	
All Elements ppm																	
		Hg	Mo	Ni	K	Se	Ag	Na	Sr	Tl	Sn	V	Zn	Type	Size		
193 GL 021		4.7	...	12.8	1006	...	7	380	...	...	...	...	546	Metals in Natural Soil	100g		
193 GL 027		3.80	(1.05)	10.5	2115	14.0	5.88	241	43.0	(4.81)	...	21.4	61.3	Metals in Natural Soil	50g		
193 GL 6135		2.9	...	291	16300	0.9	...	1700	...	...	...	139	345	Brick Works Soil	50g		
19.4 Clays		SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	FeO	TiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	S	CO <sub>2</sub>	L.O.I.	Others	Type	Size
CRM 194 E 28		45.4	37.6	0.84	...	2.01	0.15	0.1	0.04	0.01	0.02	...	...	13.7		Para	50g
CRM 194 E 32		51.8	28.5	3.46	...	1.49	0.13	0.7	0.39	0.16	0.8	...	...	12.6		Saracuruna	50g
CRM 194 E 42		51.9	32.2	1.09	...	0.96	0.07	0.05	0.19	0.02	0.47	...	...	12.9		Sao-Simao	50g
CRM 194 B 679		52.1	20.8	12.94	...	0.96	(0.17)	0.23	1.25	0.18	2.93	...	...	...	Trace Elements	Brick Clay	75g
194 CG 03101a		49.98	26.27	10.55	(0.08)	0.70	0.14	0.13	0.46	0.06	0.79	0.049	(0.041)	10.62	Cl 0.0041		50g
194 CG 03102a		53.67	31.32	0.33	(0.052)	0.03	0.053	1.80	0.083	2.55	1.15	0.023	(0.051)	8.81	Cl 0.0029		50g
194 CG 03103		66.64	13.28	4.64	(0.8)	0.66	0.106	3.23	1.84	1.81	2.50	0.027	1.66	5.1	Cl 0.011		60g
194 CG 03121		54.55	31.41	0.50	...	0.69	0.099	0.052	0.12	0.015	0.34	0.53	(0.026)	11.94		Kaolin	50g
194 CG 03122		44.53	38.62	0.72	...	0.39	0.21	0.16	0.068	0.069	0.049	0.12	(0.06)	15.00		Kaolin	50g
194 D KK		47.05	36.75	0.975	...	0.166	0.092	0.26	0.196	0.03	1.07	...	...	13.12	Trace Elements	Kaolin	100g
CRM 194 A 348		51.13	31.59	1.04	...	1.08	0.071	0.173	0.305	0.344	2.23	...	...	11.75	Cr <sub>2</sub> O <sub>3</sub> 0.016	Ball Clay	100g
194 GC 2CAS1		52.5	32.0	1.03	...	1.16	...	0.2	0.28	0.34	2.25	...	...	9.8	Li <sub>2</sub> O 0.03	Ball Clay	100g
194 GC AN41		54.8	41.5	0.71	...	0.05	...	0.16	0.41	<0.05	1.81	...	...	...		China Clay	100g
194 BG COD 12B		...	35.1	0.52	...	0.18	...	...	...	...	...	...	...	...		Kaolin C1	70g
194 BG COD 13B		...	31.9	0.95	...	0.23	...	...	...	...	...	...	...	11.3		Kaolin B2	70g
194 BG COD 14B		...	32.5	1.17	...	...	...	...	...	...	...	...	...	11.9		Kaolin K2	70g
194 BG COD 52		51.28	29.69	2.45	0.89	1.16	0.044	0.71	0.63	0.19	1.83	0.19	0.27	11.66	Many at ppm levels	Fire Clay	50g