

Report on Lolo National Forest Soils 04/24/1990  
Camas Analytical Laboratory, Nellie M. Stark, Ph.D.

REPORT ON LOLO NATIONAL FOREST SOILS 4/24 90

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1. These soils appear to be highly variable for any type of uniform management procedures. If different depths are represented by the a,b,c,d,e,f designations, there would still be some problems with some of the soils. Specific problems that are evident from the data are:
  2. A few soils with low Ca (under 550 ppm) and many soils with very high Ca (over 5,000 ppm). Considerable problems have developed in nurseries in Montana from high Ca.
  3. A few of the soil samples were high in Fe. While these concentrations will probably not interfere with growth, there is a slight imbalance of Fe with Mn in a few of the soils. There do not appear to be serious problems with the Fe concentrations, although the soils with high values might need care to avoid further acidification.
  4. Mg ranges from low to high and is not generally balanced well with Ca. A 4:1 ratio of Ca:Mg is ideal, but trees do grow well in soils that vary significantly from this ratio. High Mg coincides with high Ca in many cases, so the soils with the most severe Ca problems also have Mg problems and may not be usable. Much depends on the depths from which these soil samples were taken (data not provided), and the intended use of the soils.
  5. Mn tends to be on the low side in a few soils. There is no reason to suspect poor seedling growth at these Mn concentrations, but the few soils may need amendmants as the trees grow larger.
  6. Phosphorus tends to be low for most of the soils analyzed. Some (a teaspoon or so) of P fertilizer applied in the hole at the time of planting would be beneficial.
  7. While sodium is not a nutrient in trees, per se, high concentrations of sodium within the feeder root zone can produce poor growth. Most of the soil samples are OK for Na, but a few are high enough that they suggest a possible hardpan or clay pan below, restricting drainage and allowing the accumulation of Na. Soils with a hardpan will function well for growth until the salt concentrations become too high. At some point, high Na soils will restrict tree growth. A tentative cut-off point is above 400 ppm, but we do not have experimental data to support this figure. Some elevated Na concentrations (+or\_ 100 ppm) can benefit growth.
  8. Zn is slightly low on a few soil samples.
  9. K tends to be low on all of the soils, except those marked. A source of K is essential for most of these soils. Some soils are able to mobilize K at a rate that will keep up with K demand of the growing trees. Others cannot. From the data, I suspect that the lowest K soils will need K supplements to support good growth.

10. Al, B, Cd, Cu, Hg, Mo, and Si are generally OK ( should not pose a problem from being either too high or too low, or for Cd and Hg, are not a threat to groundwater). Co and B are occasionally a bit low, but are not likely to cause immediate problems with seedling growth.

11. Total nitrogen tends to be low for most of the samples. 1,200 ppm is a reasonable minimum concentration for good forest growth. If some of the samples are subsoil, then 800 ppm or more is not too bad. If the land is to be used for trees, I would suggest adding some nitrogen fertilizer.

If you have problems or questions, please contact N. Stark at  
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Thank you.

*N. Stark 4/24/90*



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CAL286. RPT

April 26th, 1990

**A N A L Y S I S   R E P O R T**  
 Lolo National Forest Soils - April 1990

**Extractable Nutrient Content**

ID#	Al	B	Ca	Cd	Co	Cu	Fe	Mg	Mn
1A	5.1	0.4	3030	0.05	0.12	10.97	15.2	364	18.75
1B	9.5	0.1	1872	0.02	0.23	10.29	9.5	318	6.29
1C	5.0	-0.0	1165	0.06	0.15	4.36	7.7	214	3.21
1D	4.6	0.0	1136	0.01	0.12	5.56	8.6	215	5.60
1E	2.0	-0.0	412	0.03	0.04	2.25	6.1	75	2.55
1F	3.0	-0.0	523	0.01	0.01	4.22	4.7	83	1.31
2A	6.7	0.2	2656	0.10	0.12	9.33	19.3	368	17.90
2B	3.9	0.1	1392	0.05	0.06	2.72	4.8	123	10.08
3A	8.7	0.0	1645	-0.01	0.16	9.93	10.3	212	10.21
4A	9.2	0.1	2687	0.11	0.14	10.10	56.9	362	12.12
5A	5.6	0.4	2557	0.07	0.10	8.14	12.6	228	16.66
5B	3.4	0.6	3370	0.05	0.05	9.78	17.1	241	13.70
5C	3.4	0.1	2149	0.05	0.04	5.94	41.8	171	6.41
5D	5.0	0.1	1668	0.02	0.04	7.35	52.9	177	2.53
5E	7.6	0.1	1298	0.01	0.05	9.53	26.3	209	1.65
5F	9.4	0.1	2072	0.10	0.05	16.07	30.9	379	2.14
6A	7.3	0.6	2289	0.09	0.14	8.54	21.2	408	17.79
7A	18.8	0.2	1491	0.10	0.10	4.94	47.0	230	18.56
7B	5.5	0.3	1062	0.03	-0.02	3.59	8.8	167	4.24
8A	8.8	0.4	2636	0.07	0.07	11.88	36.6	372	14.81
9A	6.8	0.6	2811	0.07	0.08	12.87	35.7	435	12.57
10A	5.7	0.5	3079	0.07	0.02	10.93	20.8	619	16.52
10B	3.3	0.1	5989	0.01	0.06	8.26	9.1	702	4.07
10C	2.6	0.3	8625	0.04	0.07	10.11	8.9	1294	3.81
10D	7.2	0.3	2394	0.00	0.05	8.41	6.9	1069	3.04
10D Dupl.	7.2	0.3	2376	0.01	0.08	8.44	6.9	1079	2.89
10E	7.5	-0.0	2102	0.07	0.13	8.16	10.6	902	1.85
10F	10.7	0.2	2105	0.02	0.12	10.77	14.7	671	3.37
11A	7.5	0.5	2404	0.05	0.10	5.10	17.4	388	10.19
12A	8.4	0.5	2501	0.04	0.02	8.79	23.8	586	16.65
12B	8.2	0.4	2187	0.02	0.08	10.87	15.0	722	10.46
13A	5.0	0.7	3291	0.05	0.05	7.53	13.3	384	9.19
13B	0.9	0.4	11911	0.03	-0.04	4.84	4.9	717	4.87
14B	3.2	1.8	5002	0.02	0.00	6.99	5.8	925	3.33
15B	3.4	1.0	11110	-0.01	-0.01	4.95	4.5	1915	3.40
15C	2.5	0.4	12009	0.03	0.02	5.22	6.5	1306	2.17
L.O.D. ±	0.6	0.1	0.3	0.06	0.09	0.08	0.2	0.6	0.01

L.O.D. = Limits Of Detection. Concentrations in ppm (µg/g).

A N A L Y S I S    R E P O R T  
Lolo National Forest Soils - April 1990

Extractable Nutrient Content

ID#	Al	B	Ca	Cd	Co	Cu	Fe	Mg	Mn	
15D	3.6	0.4	8751	0.04	0.02	5.24	13.1	606	6.68	
15E	13.3	0.6	1027	0.01	0.07	6.32	12.9	512	4.47	
15F	7.7	0.4	536	0.01	0.09	3.15	11.2	289	3.58	
16A	2.0	1.3	6954	0.07	0.12	6.41	4.2	1325	19.52	
16B	3.5	1.0	11465	0.02	0.05	5.72	5.4	1524	6.64	
17A	2.6	1.1	4781	0.09	0.08	8.43	6.3	432	24.59	
17B	8.5	0.4	3375	0.04	-0.01	5.62	22.8	340	14.57	
18A	6.5	1.0	5077	0.07	0.13	5.09	7.8	367	10.32	
18B	3.9	0.2	3979	0.01	0.00	7.03	7.9	578	4.69	
19A (14A?)	1.7	0.4	5635	0.05	0.07	4.68	6.6	571	10.78	
19A	6.9	0.7	2664	0.07	-0.02	5.18	11.7	400	11.65	
19B	3.4	0.4	12187	0.06	0.06	5.74	5.9	974	2.67	
20A	1.9	0.3	4358	0.02	0.06	3.69	6.2	278	11.51	
20B	0.3	-0.0	11599	-0.01	-0.07	4.21	2.8	569	5.14	
20B Again	1.1	0.2	11748	0.03	0.03	4.25	2.9	572	5.19	
21A	30.7	0.2	1109	0.09	0.14	4.13	52.3	118	22.13	
21A Dupl.	31.4	0.1	1180	0.07	0.10	3.98	52.4	122	22.34	
21B	10.7	0.1	1239	0.03	0.09	3.76	24.9	154	6.99	
22A	6.4	-0.0	1936	0.06	-0.03	3.85	16.1	232	13.29	
22B	6.5	0.3	2185	0.00	-0.02	5.33	8.7	216	7.43	
23A	8.9	0.2	1041	-0.01	0.02	3.28	13.6	123	6.41	
23B	3.1	-0.0	1110	-0.01	-0.03	3.61	6.5	130	6.65	
23C-1	1.8	0.1	10266	0.04	0.03	1.47	4.3	753	4.68	
23C-2	4.4	-0.1	2689	0.02	-0.01	2.79	5.7	136	4.35	
23D	4.8	0.1	7055	0.02	-0.01	1.86	5.5	176	4.16	
23E	0.7	-0.0	9067	0.04	0.02	2.59	7.2	1123	12.15	
24A	0.1	0.6	11502	0.05	0.03	4.95	4.8	1907	6.25	
24A Again	1.3	0.7	11931	0.04	0.06	5.00	4.9	1929	6.43	
24B	2.0	0.4	11953	0.02	0.01	3.50	7.0	1336	3.20	
25A	3.4	0.7	3714	0.02	0.06	6.92	5.9	988	3.29	
25A Again	3.9	0.6	3854	0.06	0.06	6.93	6.1	996	3.40	
25B	2.1	0.3	11978	-0.00	0.08	4.75	2.7	1586	0.78	
26A	4.7	1.1	3357	0.07	0.02	5.37	8.5	508	10.93	
26B	2.8	0.9	3959	0.02	0.01	6.55	5.4	851	5.60	
27A	4.2	1.1	3186	0.06	0.05	4.89	4.7	553	12.14	
27B	2.5	0.8	10766	0.06	0.11	3.68	5.2	1676	3.23	
27C	1.7	0.5	8449	0.07	0.07	3.29	3.9	1404	5.89	
27D	4.4	0.1	6764	0.02	0.06	3.07	7.9	775	5.64	
27E	5.5	-0.0	5508	-0.01	0.03	4.16	17.6	521	11.21	
27E Rep	5.3	-0.0	5514	0.05	0.05	4.16	17.5	514	11.21	
27F	6.6	-0.1	2506	0.04	0.06	4.24	10.6	416	6.64	
28A	9.5	0.3	3062	0.09	0.04	8.96	25.9	529	17.90	
L.O.D. ±	0.6	0.1		0.3	.06	0.09	0.08	0.2	0.6	0.01

L.O.D. = Limits Of Detection. Concentrations in ppm (µg/g).

A N A L Y S I S    R E P O R T  
Lolo National Forest Soils - April 1990

Extractable Nutrient Content

ID#	Al	B	Ca	Cd	Co	Cu	Fe	Mg	Mn
28B	8.6	0.3	3271	0.05	0.13	10.13	13.0	703	5.75
29A	6.3	0.7	2879	0.06	0.05	6.79	11.6	700	9.74
29B	1.1	0.3	11519	0.04	0.08	6.30	3.4	1795	5.71
30A	7.7	0.3	2646	0.07	0.13	12.46	15.9	836	9.52
30B	1.6	0.2	13065	0.04	0.12	7.72	7.2	1154	5.71
31A	6.6	0.1	1899	0.04	0.07	5.01	11.9	216	10.02
31B	2.0	0.1	12644	-0.00	0.04	2.68	5.8	318	5.01
32A	10.6	0.4	2839	0.07	0.12	7.44	36.6	559	10.68
32B	8.3	-0.0	3074	-0.05	-0.02	7.42	16.7	668	5.34
33A	7.0	0.4	2982	-0.01	0.09	7.32	12.2	1032	9.28
33B	1.7	0.1	12761	0.03	0.10	4.67	3.8	1116	11.21
34A	1.4	0.4	13110	0.04	0.08	4.94	5.5	844	17.97
34B	4.2	0.3	12608	0.07	0.08	5.24	7.3	764	5.58
35A	6.9	0.5	4075	0.07	0.15	6.31	12.7	540	12.21
35B	1.3	0.5	13351	-0.04	0.08	5.88	6.5	1373	11.74
36A	4.1	0.1	8912	0.03	0.03	2.00	3.3	361	6.10
36B	5.2	0.1	2306	0.01	0.04	1.92	5.2	174	5.10
37A	3.0	0.7	12964	0.07	0.07	2.93	4.1	528	5.43
37B	4.1	0.7	13182	0.04	0.05	4.18	7.7	650	2.76
38A	10.0	0.3	1781	0.03	0.06	4.53	16.6	215	10.92
38B	9.6	0.5	8707	0.06	0.09	4.84	7.7	405	5.74
39A	7.0	0.4	1898	0.03	0.03	3.50	8.4	249	8.08
39B	5.9	0.3	12046	0.01	0.08	2.98	7.6	345	3.30
40A	18.4	0.1	1622	0.07	0.09	3.61	34.2	259	33.59
40B	2.5	1.2	12809	0.05	0.10	4.07	4.0	852	3.82
40B Dupl.	1.5	1.1	13052	0.05	0.08	4.24	3.9	862	4.04
41A	5.9	0.7	2546	0.03	0.00	3.27	5.6	295	8.39
41B	1.8	0.6	12540	0.06	0.09	4.73	3.9	1449	7.70
42A	20.6	0.0	1087	0.09	0.13	4.55	43.3	174	17.26
42B	7.4	0.1	958	0.02	0.05	3.79	10.3	196	3.57
43A	14.4	0.1	1177	0.06	0.08	3.27	36.8	154	12.72
43B	10.2	0.2	1362	0.02	0.06	6.58	13.2	318	3.96
44A	6.5	0.4	1842	0.07	0.02	4.00	8.2	259	10.76
44B	0.0	0.8	13251	0.02	0.12	4.08	4.1	1256	7.91
44B Dupl.	1.3	0.6	11546	0.02	0.08	3.84	4.4	1125	7.26
45A	8.8	0.2	2094	0.04	0.05	4.06	33.0	269	22.23
45B	2.9	0.3	12149	0.02	0.04	3.58	4.0	377	3.43
46A	27.5	0.1	1457	0.05	0.11	5.27	68.0	215	32.36
46B	7.7	0.2	1752	0.06	0.09	5.89	15.1	362	10.38
47A	31.1	0.1	1372	0.07	0.08	3.10	97.9	137	40.16
47B	10.3	0.1	1151	0.03	0.02	2.51	31.7	193	4.81
48A	8.6	0.1	2813	0.03	0.10	7.67	39.6	472	16.28
L.O.D. ±	0.6	0.1	0.3	.06	0.09	0.08	0.2	0.6	0.01

L.O.D. = Limits Of Detection. Concentrations in ppm (µg/g).

A N A L Y S I S    R E P O R T  
Lolo National Forest Soils - April 1990

Extractable Nutrient Content

ID#	Al	B	Ca	Cd	Co	Cu	Fe	Mg	Mn	
48B	8.1	0.1	2509	0.03	0.12	15.53	20.9	516	11.40	
49A	2.9	0.1	8751	0.03	0.04	6.91	5.5	684	8.46	
49B	2.5	0.1	10633	0.07	0.02	5.22	4.4	1078	8.76	
50A	13.0	0.2	2760	0.07	0.10	6.34	47.5	468	22.80	
50B	3.7	0.4	4987	0.01	0.08	4.27	6.6	626	3.39	
51A	12.6	0.1	2447	0.05	0.06	8.73	49.2	426	9.67	
51B	7.7	-0.1	2245	-0.01	0.11	6.51	16.4	561	3.48	
52A	21.9	0.1	1606	0.06	0.15	4.93	63.4	288	26.14	
52B	13.1	0.1	1898	0.01	0.12	7.52	36.0	412	6.46	
53A	11.9	0.1	1514	0.05	0.03	5.41	39.2	294	11.53	
53B	3.6	0.4	12253	0.03	0.08	10.39	8.1	858	6.68	
54A	16.9	0.1	1969	0.05	0.06	6.55	55.0	306	17.29	
54B	9.9	0.1	1828	0.04	0.09	7.10	27.3	467	8.96	
55A	16.2	0.1	1742	0.09	0.08	5.92	56.6	321	16.30	
55B	9.1	0.3	1638	0.04	0.01	7.04	16.6	567	11.58	
56A	22.3	0.2	2597	0.07	0.22	13.19	160.9	379	28.61	
56B	27.8	0.1	2159	0.06	0.20	9.83	245.4	369	16.42	
57A	36.1	0.1	2130	0.13	0.38	8.01	269.8	364	21.56	
57B	19.6	0.0	1151	0.02	0.11	5.23	149.9	274	1.39	
57C	18.8	-0.0	1105	0.01	0.17	6.27	121.7	312	1.08	
57D	18.7	0.0	946	0.03	0.21	5.51	149.6	309	2.02	
58A	19.8	0.1	2757	0.07	0.05	7.20	127.1	395	12.16	
58B	14.8	0.0	1077	0.03	0.03	4.40	108.3	205	8.81	
59A	24.7	0.0	2272	0.11	0.21	9.06	196.5	369	19.20	
59B	18.4	0.0	1441	0.03	0.14	16.25	190.4	391	1.75	
60A	9.7	0.1	1522	0.05	-0.04	5.42	25.4	216	8.84	
60B	5.2	0.1	1036	0.04	0.02	4.11	14.2	158	7.56	
67B	7.8	0.5	2062	0.10	0.03	5.94	18.8	450	9.56	
L.O.D. ±	0.6	0.1		0.3	0.06	0.09	0.08	0.2	0.6	0.01

L.O.D. = Limits Of Detection. Concentrations in ppm (µg/g).



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PH. 406-726-3744

CAL286. RPT

April 26th, 1990

ANALYSIS REPORT  
Lolo National Forest Soils - April 1990

Extractable Nutrient Content & Total Nitrogen

ID#	Hg	Mo	P	Si	Na	Ti	Zn	K	TN
1A	0.3	0.0	6.8	55.1	17.4	0.16	3.00	105	627
1B	-0.2	0.0	0.6	35.1	19.5	0.24	5.60	25	207
1C	-0.1	-0.0	1.7	21.2	26.6	0.07	2.06	18	123
1D	0.2	-0.0	1.0	24.1	22.9	0.10	2.28	22	85
1E	0.8	-0.1	0.8	7.9	14.6	0.01	0.59	0	7
1F	-0.1	-0.1	2.9	14.8	12.7	0.06	1.09	11	21
2A	0.1	0.1	4.9	44.1	20.2	0.17	2.38	92	1023
2B	-0.2	-0.1	3.5	21.7	10.4	0.12	0.63	25	144
3A	0.4	-0.0	0.6	34.5	22.7	0.11	2.97	42	221
4A	0.2	0.0	7.9	39.5	20.3	0.16	3.74	82	1516
5A	0.2	-0.1	8.6	64.7	13.9	0.16	1.78	89	855
5B	0.8	-0.0	6.4	65.5	18.6	0.09	1.80	69	942
5C	0.3	0.0	9.9	57.6	30.8	0.12	1.54	61	874
5D	-0.0	0.0	17.6	44.1	22.1	0.15	1.88	58	505
5E	-0.1	0.0	7.8	27.9	22.5	0.13	2.23	49	332
5F	-0.2	0.0	1.6	43.0	25.8	0.15	4.20	84	500
6A	0.4	0.1	16.9	73.9	22.3	0.18	3.38	120	1280
7A	0.0	0.0	8.8	31.5	18.2	0.40	1.54	76	872
7B	-0.1	0.0	13.6	30.7	15.2	0.15	2.38	37	433
8A	0.1	0.0	5.8	51.6	16.9	0.20	3.27	128	1200
9A	0.2	0.1	2.9	69.6	31.1	0.18	6.03	124	1110
10A	1.2	-0.0	4.3	83.9	38.8	0.12	2.81	127	1390
10B	0.3	-0.1	2.5	66.2	56.7	0.10	2.03	81	617
10C	0.7	0.0	5.0	71.0	69.9	0.10	2.52	94	491
10D	0.6	-0.1	3.2	77.4	62.1	0.15	2.14	55	228
10D Dupl.	-0.2	-0.0	1.8	89.1	64.6	0.15	2.19	62	225
10E	-0.1	0.0	-0.1	93.7	203.0	0.19	2.67	84	349
10F	0.6	-0.0	3.1	106.1	256.9	0.31	2.18	74	148
11A	0.3	0.1	8.8	62.3	31.0	0.22	2.77	107	1231
12A	-0.1	0.1	2.1	65.0	35.7	0.22	1.92	99	857
12B	-0.1	0.0	0.9	67.1	52.0	0.18	2.48	95	672
13A	0.4	-0.1	8.5	89.6	27.7	0.11	1.88	85	1063
13B	0.5	-0.1	4.2	56.7	36.5	0.13	1.35	45	528
14B	0.5	-0.1	13.6	167.0	72.6	0.10	1.70	106	851
15B	0.4	-0.1	19.1	72.2	71.8	0.22	1.61	47	344
15C	0.2	0.0	6.3	77.2	283.7	0.23	1.69	30	273
L.O.D. ±	0.6	0.2	1	0.2	0.5	0.04	0.07	5	7

L.O.D. = Limits of Detection. Concentrations in ppm (µg/g).

A N A L Y S I S    R E P O R T  
Lolo National Forest Soils - April 1990

Extractable Nutrient Content & Total Nitrogen

ID#	Hg	Mo	P	Si	Na	Ti	Zn	K	TN
15D	-0.0	0.0	1.5	81.5	884.8	0.15	1.36	23	238
15E	-0.0	-0.1	2.2	88.3	684.1	0.53	1.26	33	227
15F	-0.4	0.0	2.1	66.5	347.9	0.28	0.58	27	155
16A	-0.6	0.0	42.7	107.5	79.2	0.12	2.45	294	1345
16B	-0.1	-0.1	21.0	73.9	331.8	0.26	1.81	77	354
17A	0.4	-0.0	52.5	86.3	12.0	0.10	3.60	263	1726
17B	0.3	-0.0	12.0	73.4	17.5	0.28	3.93	177	1809
18A	0.2	-0.0	19.7	109.9	32.0	0.26	1.57	96	1665
18B	-0.1	0.1	3.2	48.0	46.9	0.09	1.13	55	1205
19A (14A?)	0.4	-0.0	23.7	82.9	24.8	0.05	1.71	77	1546
19A	0.1	-0.0	19.3	81.2	32.3	0.25	1.61	105	1344
19B	-0.1	-0.0	4.6	61.6	88.6	0.22	1.27	44	615
20A	0.7	0.0	9.5	48.1	11.2	0.04	0.86	44	865
20B	-0.2	-0.0	2.5	38.8	21.3	0.13	1.31	11	455
20B Again	-0.4	-0.0	4.0	39.9	21.7	0.18	1.39	21	-
21A	0.0	0.1	12.7	17.9	7.6	0.46	2.16	108	563
21A Dupl.	-0.1	0.0	14.3	14.8	5.9	0.46	2.27	106	567
21B	-0.2	0.1	3.9	33.3	11.8	0.30	0.84	76	461
22A	-0.3	0.1	1.8	46.5	7.1	0.24	1.57	169	755
22B	-0.2	0.0	3.6	38.1	18.3	0.25	0.83	114	528
23A	-0.1	-0.0	6.4	41.1	5.6	0.37	0.62	100	567
23B	0.3	-0.0	4.1	19.3	6.3	0.15	0.49	63	455
23C-1	-0.0	-0.0	1.8	42.3	45.4	0.18	0.29	18	234
23C-2	0.5	-0.1	8.4	29.1	15.4	0.16	0.40	51	239
23D	-0.1	-0.0	5.6	30.2	16.5	0.22	0.23	35	111
23E	0.5	0.1	3.0	39.9	36.9	0.07	0.67	-2	104
24A	1.0	-0.1	1.8	27.4	74.9	0.09	1.25	2	374
24A Again	0.7	0.0	2.9	28.6	75.5	0.13	1.37	13	-
24B	-0.2	-0.0	-1.0	38.8	113.0	0.16	0.69	20	276
25A	0.4	-0.0	3.0	64.2	43.5	0.07	1.27	66	1058
25A Again	0.5	-0.0	4.9	66.3	43.2	0.10	1.31	78	-
25B	0.2	0.0	2.9	87.4	64.1	0.19	1.36	56	365
26A	0.3	-0.0	19.8	86.1	22.9	0.20	2.22	221	1491
26B	0.1	0.1	43.2	101.4	75.8	0.08	1.25	166	874
27A	0.4	0.1	17.5	80.9	35.1	0.17	1.12	170	1215
27B	0.2	0.1	12.2	100.1	89.6	0.17	0.78	128	405
27C	0.3	-0.0	8.4	68.8	296.7	0.09	0.72	64	624
27D	0.1	-0.1	1.2	45.8	400.4	0.13	0.60	14	186
27E	1.1	0.0	2.4	53.1	433.6	0.13	0.80	-0	130
27E Rep	0.6	0.0	2.1	52.3	432.1	0.11	0.82	-3	-
27F	0.7	0.0	7.4	49.0	276.1	0.24	0.86	10	102
28A	0.1	0.0	17.1	73.5	12.4	0.30	3.60	279	1119
L.O.D. ±	0.6	0.2	1	0.2	0.5	0.04	0.07	5	7

L.O.D. = Limits of Detection. Concentrations in ppm (µg/g).



A N A L Y S I S    R E P O R T  
Lolo National Forest Soils - April 1990

Extractable Nutrient Content & Total Nitrogen

ID#	Hg	Mo	P	Si	Na	Ti	Zn	K	TN
28B	-0.5	0.0	6.1	60.9	20.7	0.31	2.75	160	489
29A	0.1	0.0	19.5	104.6	60.2	0.25	1.64	139	778
<del>29B</del>	0.3	0.1	23.1	94.1	176.3	0.13	1.64	52	412
30A	0.1	0.0	2.5	64.1	56.9	0.23	3.34	113	652
30B	0.1	0.1	1.3	36.3	96.7	0.15	1.75	34	546
31A	0.2	0.1	17.0	28.5	9.2	0.22	1.34	60	645
31B	0.3	-0.0	24.0	6.8	19.5	0.14	0.90	4	381
32A	-0.2	0.0	3.8	51.0	30.9	0.33	1.97	151	1250
32B	0.1	-0.0	0.9	28.9	40.4	0.14	1.65	76	755
33A	-0.2	0.0	2.2	85.4	38.8	0.24	1.54	139	853
33B	0.1	0.0	0.7	48.3	47.2	0.17	1.61	37	340
34A	0.2	-0.1	7.2	34.0	36.1	0.16	1.36	59	771
34B	-0.4	0.1	2.0	32.6	50.7	0.23	1.51	36	473
35A	0.1	0.1	4.8	87.1	26.9	0.20	1.63	113	1107
35B	0.1	-0.1	-0.9	23.0	38.1	0.16	1.60	26	482
36A	-0.1	0.1	3.5	13.6	24.0	0.14	1.10	33	388
36B	-0.0	0.0	9.0	13.3	21.6	0.15	0.68	32	178
37A	0.2	-0.0	6.5	49.7	29.1	0.25	1.31	142	1011
37B	0.3	-0.0	2.0	47.7	38.5	0.30	1.76	90	543
38A	-0.2	-0.0	3.2	47.8	12.3	0.40	1.31	114	883
38B	0.3	0.0	5.8	64.3	35.3	0.27	1.61	62	654
39A	0.2	0.0	3.4	40.6	13.9	0.27	0.69	77	750
39B	0.2	0.0	4.7	33.6	23.7	0.26	1.04	26	630
40A	-0.3	-0.1	6.7	34.5	14.3	0.48	1.80	244	1091
40B	0.1	0.1	21.2	62.7	52.5	0.20	1.57	110	784
40B Dupl.	0.0	-0.0	19.0	61.8	58.8	0.16	1.52	107	-
41A	0.0	0.1	7.2	65.2	26.8	0.24	0.70	161	948
41B	0.3	0.1	27.9	67.3	51.9	0.18	1.55	85	489
42A	0.0	0.1	9.8	24.5	5.1	0.46	1.63	74	661
42B	0.2	0.1	4.7	30.1	6.6	0.24	0.57	47	409
43A	-0.2	0.1	5.5	33.1	6.0	0.44	1.21	103	757
43B	0.2	0.1	2.0	39.7	16.7	0.35	1.49	64	616
44A	0.1	0.1	2.9	59.5	13.6	0.23	0.98	76	790
44B	0.2	-0.0	1.0	43.9	48.9	0.17	1.03	31	644
44B Dupl.	-0.1	0.0	3.0	31.1	35.2	0.19	1.26	56	643
45A	0.8	-0.1	7.6	46.6	20.3	0.26	1.40	77	994
45B	0.2	0.1	3.4	34.6	21.5	0.19	1.24	29	496
46A	0.4	0.2	10.7	32.0	8.2	0.53	2.55	151	1126
46B	0.2	-0.0	3.1	51.4	26.7	0.20	0.93	63	637
47A	0.3	0.2	40.9	55.8	-1.0	0.84	3.83	312	1760
47B	0.3	0.1	13.5	29.4	1.4	0.25	1.03	123	633
48A	-0.1	-0.1	4.8	62.2	39.5	0.28	2.05	114	1298
L.O.D. ±	0.6	0.2	1	0.2	0.5	0.04	0.07	5	7

L.O.D. = Limits of Detection. Concentrations in ppm (µg/g).

A N A L Y S I S    R E P O R T  
Lolo National Forest Soils - April 1990

Extractable Nutrient Content & Total Nitrogen

ID#	Hg	Mo	P	Si	Na	Ti	Zn	K	TN
48B	1.0	-0.1	2.1	55.5	41.1	0.25	4.72	103	559
49A	0.2	-0.0	15.4	77.7	28.4	0.15	2.08	63	613
49B	0.5	0.0	11.7	86.3	41.1	0.14	1.34	58	687
50A	0.4	0.1	19.2	66.0	29.3	0.43	2.48	151	1663
50B	0.4	0.1	8.6	63.2	31.1	0.14	0.87	116	743
51A	-0.1	0.1	-0.2	37.5	20.0	0.40	3.25	111	1287
51B	0.4	-0.1	0.8	48.9	40.7	0.14	1.78	95	473
52A	0.4	0.0	9.4	32.1	21.7	0.44	2.34	112	1077
52B	0.8	0.1	3.4	37.5	37.3	0.22	2.00	94	636
53A	0.3	0.0	6.3	51.8	25.1	0.37	1.90	83	585
53B	0.7	0.1	2.5	35.2	43.0	0.19	3.51	54	658
54A	0.3	0.0	11.5	38.5	19.8	0.40	3.21	113	1067
54B	0.9	0.0	2.5	45.8	39.8	0.16	1.91	71	494
55A	0.3	0.1	10.3	40.9	11.5	0.40	2.41	137	1102
55B	0.6	0.0	4.4	61.9	25.4	0.37	1.46	102	633
56A	0.3	-0.0	8.7	56.3	41.8	0.77	7.15	97	2848
56B	0.7	-0.0	4.0	57.7	71.9	1.28	5.17	52	2269
57A	0.0	0.1	7.0	42.8	32.8	0.94	5.07	81	3217
57B	0.3	0.2	0.9	27.7	29.2	0.78	1.60	39	1064
57C	-0.3	0.0	0.4	25.9	36.5	0.67	1.69	36	757
57D	0.2	0.1	2.1	33.5	47.9	0.87	1.69	39	1037
58A	0.1	0.1	7.9	60.5	34.7	0.72	4.71	79	2590
58B	0.8	0.0	2.6	41.6	26.9	0.59	1.50	20	675
59A	0.0	-0.0	7.5	58.5	35.0	0.77	4.23	57	2283
59B	0.6	0.1	2.2	56.2	36.2	0.85	5.87	42	1032
60A	0.2	-0.0	5.0	38.1	8.6	0.30	1.75	55	834
60B	0.2	0.1	6.3	53.4	16.8	0.17	0.79	32	413
67B	0.2	-0.0	7.7	65.3	26.7	0.24	1.13	86	825
L. O. D. ±	0.6	0.2	1	0.2	0.5	0.04	0.07	5	7

L. O. D. = Limits of Detection. Concentrations in ppm (µg/g).

Joe Holland

