



United States  
Department of  
Agriculture

Forest  
Service

Lolo  
National Forest

Building 24  
Fort Missoula  
Missoula, MT 59801

REPLY TO: 2520/2470

Date: NOV 25 1991

November 25, 1991

SUBJECT: Savenac Nursery, Soil Nutrient Analysis

TO: District Ranger, Superior RD

On October 2, 1991 the soils within the fenced area at the Savenac Nursery Site were sampled to determine the chemical makeup and determine if there were any elements that were in short supply for plant growth or at toxic levels.

The soils are developed in nearly level step-like alluvial benches with short steep descending slopes called risers along one side. The riser at this location is outside of the fenced area with vertical relief of the riser at approximately 50 feet. Surface layers are sandy loam and loam with substratum materials of sand and gravel. The permeability is moderate and the watertable is very deep.

The pH of all samples range from 6 to 7.3 which is an excellent spread for plant nutrients because all are readily available within these ranges.

The analysis does point out an interesting item: The Phosphorus levels in all samples are extremely low. Most likely the origin of the landform has had a great deal to do with the actual amounts. In order to keep phosphorus from being a limiting factor it will be important to add it to the system as a fertilizer. Rock Phosphate should be a consideration to give a long-term effect.

Looking at the trace elements analyzed, the combination is adequate to provide for all necessary functions and thus are not limiting.

Nitrogen fertilizer applications will almost always show a flush of growth but these effects are not long lasting, so to maintain such types of responses, applications would be needed annually.

If there are additional questions, please contact me.

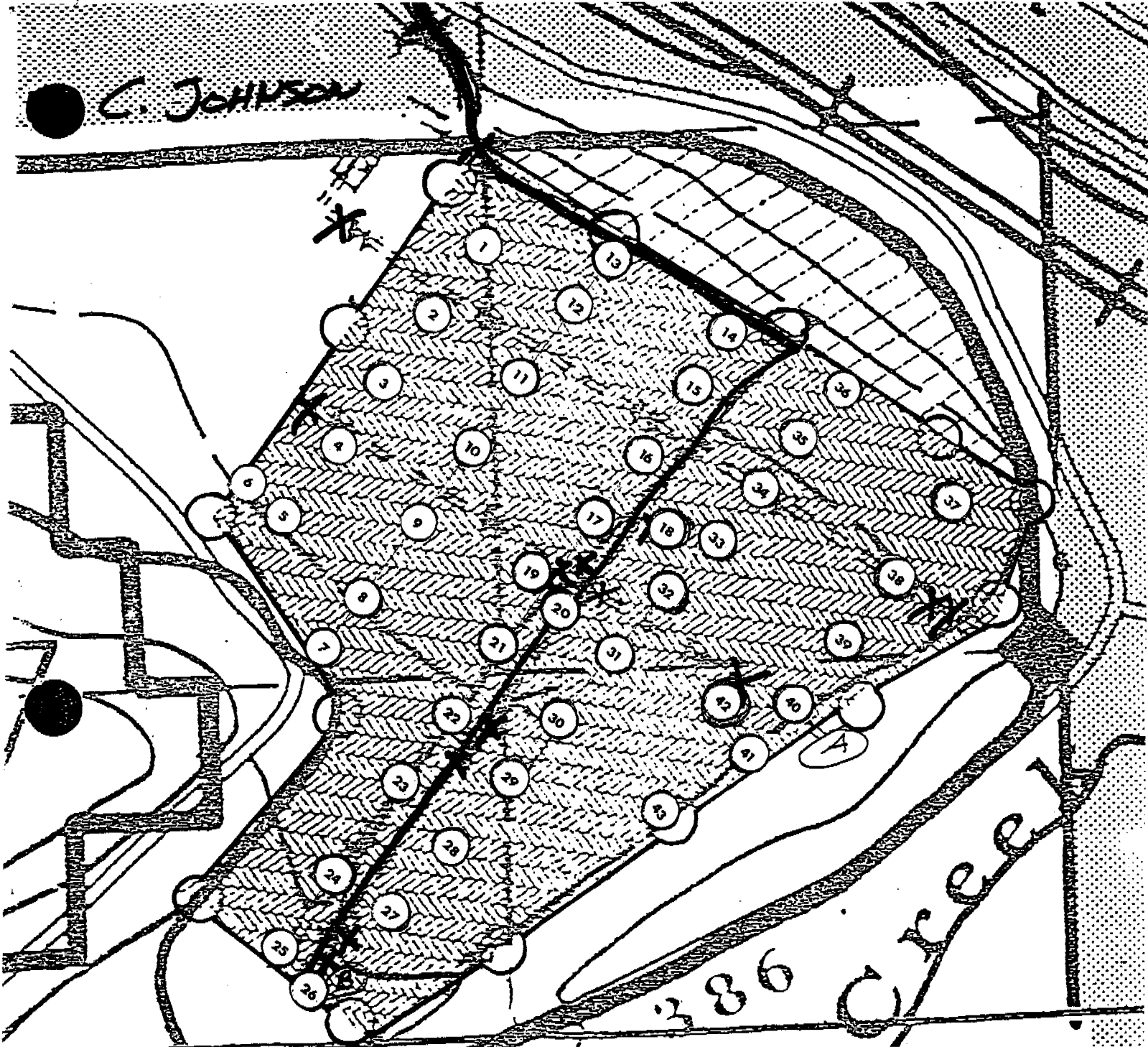
*Skip Barndt*

SKIP BARNDT  
Soil Scientist

cc:  
Barndt  
Erickson, D-7



C. Johnson



Savenak Nursery

Soil Sample Locations

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Site#	pH	Al	B	Ca	Cd	Co	Cu	Fe	Mg	Mn	Hg	Mo	P	Si	Na	Ti	Zn	K	Tot N
1 SURFACE	5.97	126.7	0.3	362	0.06	0.09	2.33	25.3	19	7.37	0.3	-0.0	1.9	93.2	10.4	0.84	1.00	113	1020
2 SURFACE	5.82	103.6	0.3	622	0.00	0.09	2.55	25.8	49	13.00	0.0	-0.1	2.6	74.9	8.3	0.80	0.63	173	1320
3 SURFACE	6.06	102.0	0.1	398	-0.01	0.13	2.57	23.2	31	4.67	0.5	0.0	2.7	76.3	8.1	0.85	0.40	167	1060
4 SURFACE	5.97	103.1	0.2	488	0.02	0.07	2.52	22.5	26	4.58	0.8	-0.1	2.3	79.0	7.7	0.75	0.44	165	1160
5 SURFACE	6.11	104.5	0.1	353	-0.01	0.12	2.10	25.7	26	4.32	0.0	-0.0	2.0	73.3	6.1	1.00	0.34	170	1000
6A SURFACE	6.45	87.5	0.1	424	0.02	0.02	1.89	23.4	34	3.24	-0.0	-0.0	1.4	71.6	9.7	0.77	0.29	162	820
6B 10-15"	6.50	90.5	0.2	509	-0.01	0.02	2.37	24.8	37	4.82	0.1	-0.0	1.3	76.8	12.5	0.93	0.33	75	930
6C 15" +	5.80	29.7	0.1	386	0.02	0.07	1.93	28.0	64	0.78	0.4	-0.1	1.3	20.9	7.5	0.53	0.11	44	370
7 SURFACE	5.93	83.8	0.2	629	0.06	0.09	2.06	35.1	40	10.32	0.1	0.0	1.9	70.5	10.9	0.88	0.68	105	1000
8 SURFACE	6.23	81.3	0.1	945	-0.00	0.09	2.11	22.5	62	4.15	0.1	0.1	2.1	79.9	6.0	0.64	0.92	168	1310
9 SURFACE	6.62	75.4	0.2	822	0.01	0.04	1.94	22.2	50	5.19	0.1	0.0	1.9	67.4	6.6	0.74	0.55	122	1140
10 SURFACE	6.86	81.8	0.1	918	0.04	0.13	1.47	17.8	54	3.74	0.5	0.0	1.2	76.2	6.2	0.54	0.46	175	1200
11 SURFACE	6.84	104.7	0.1	529	-0.01	0.05	1.47	23.7	32	5.63	-0.1	0.0	1.5	79.2	6.5	0.65	0.25	182	1140
12 SURFACE	6.91	109.6	0.3	471	0.02	0.09	1.11	30.6	33	20.99	0.1	-0.0	2.0	64.5	3.9	0.69	0.28	149	1240
13 SURFACE &	6.79	93.4	0.2	406	0.03	0.16	1.32	19.0	27	6.73	0.2	-0.0	1.5	63.1	1.8	0.54	0.47	166	1130
14 SURFACE	6.58	97.4	0.5	504	0.05	0.13	1.67	23.2	32	7.67	-0.1	0.0	1.4	64.3	13.0	0.58	0.40	182	1380
15 SURFACE	6.94	125.0	0.1	429	0.04	0.14	1.05	22.3	24	5.74	-0.0	-0.0	1.4	77.5	7.1	0.72	0.17	143	1050
16 SURFACE	6.88	126.2	0.2	598	0.01	0.08	1.19	23.1	31	5.52	-0.2	0.0	1.2	88.7	5.0	0.75	0.26	141	1300
17 SURFACE	6.91	107.1	0.1	738	0.04	0.09	1.57	19.9	49	4.54	-0.2	-0.0	2.3	82.9	2.5	0.60	0.34	201	1200
18A SURF 0-7"	6.92	109.9	0.2	606	0.05	0.08	1.01	21.2	30	4.51	-0.0	0.1	1.1	84.2	5.6	0.79	0.34	128	1000
18B 7-30" •	7.10	16.8	0.1	580	0.03	0.08	1.06	19.0	55	1.47	-0.1	-0.0	2.3	17.9	4.4	0.48	0.05	19	250
18C 30" + •	7.31	12.6	0.0	428	-0.00	0.02	1.29	14.2	51	2.41	-0.4	0.0	1.9	15.1	1.1	0.29	0.04	22	150
19 SURFACE	6.97	89.6	0.1	535	0.02	0.14	1.06	17.2	31	4.49	-0.1	-0.0	2.2	53.7	0.5	0.57	0.34	115	1070
20A 0-10"	6.93	119.6	0.1	241	0.04	0.06	0.85	23.2	16	7.48	-0.1	0.0	3.7	65.7	4.0	0.70	0.27	106	1050
20B 10-18"	7.06	35.6	0.2	693	0.00	0.12	2.12	31.1	47	2.84	0.0	0.1	0.2	37.6	6.2	0.64	0.27	63	390
20C 18-30" +	7.04	11.9	0.1	358	-0.01	0.08	1.73	15.5	38	2.87	-0.1	0.1	2.3	11.7	0.7	0.42	0.09	16	200
20D 30" + •	7.29	12.1	0.1	336	-0.03	0.02	3.01	14.3	47	0.87	-0.1	-0.0	1.9	13.6	0.6	0.28	0.07	14	110
21 SURFACE	7.20	90.9	0.1	679	0.02	0.10	2.51	18.0	33	3.58	-0.2	-0.0	1.9	72.3	4.8	0.64	0.31	207	1170
22 SURFACE	7.14	78.8	0.1	676	-0.00	0.07	1.84	21.9	42	8.31	-0.2	-0.0	1.5	84.5	4.0	0.64	1.16	153	850
23 SURFACE	7.07	83.2	0.1	901	-0.02	0.09	1.86	22.4	42	7.89	0.1	-0.0	1.8	98.6	6.1	0.58	0.55	145	920
24 SURFACE	6.58	88.5	0.2	853	0.00	0.08	1.75	24.4	48	4.10	0.2	0.0	3.3	92.2	7.4	0.73	0.51	197	1160
25 SURFACE	6.72	103.1	0.1	591	0.03	0.08	1.81	23.8	35	5.27	-0.0	-0.0	2.4	99.3	6.7	0.71	1.56	186	1180
26A SURF 0-5"	6.85	96.1	0.3	662	0.04	0.08	1.35	21.4	44	7.39	0.4	0.0	1.1	95.0	5.6	0.61	0.46	226	1310
26B 5-16"	7.03	99.5	0.0	626	0.02	0.10	1.25	24.4	32	4.15	0.3	-0.0	1.2	114.9	9.8	0.62	0.29	130	990
26C 16-30" @	7.21	16.6	0.0	640	-0.00	0.05	0.91	15.5	66	0.99	0.3	-0.1	0.2	21.0	3.1	0.37	0.05	18	210
26D 30" + •	7.29	14.7	0.1	375	0.01	0.10	1.89	13.4	47	0.99	0.4	0.1	0.4	24.8	1.9	0.40	0.08	14	210
27 SURFACE	6.85	95.7	0.2	812	0.08	0.07	1.62	26.6	63	5.64	0.4	0.0	2.3	85.3	6.8	0.68	1.57	178	1410
28 SURFACE	6.98	97.9	0.2	534	0.07	0.02	2.92	24.7	31	6.22	0.0	0.0	0.8	76.0	10.0	0.50	2.53	152	1460

29 SURFACE	6.98	84.4	0.2	916	0.04	0.08	3.34	23.6	65	7.27	0.3	0.0	1.8	81.2	5.2	0.56	2.54	216	1470
30 SURFACE	6.94	89.5	0.1	724	-0.01	0.03	2.13	24.8	40	4.07	-0.3	0.0	1.5	92.8	9.6	0.61	0.50	183	1250
31 SURFACE	6.74	84.4	0.4	705	0.04	0.11	2.03	23.7	44	5.81	0.3	-0.1	1.2	85.3	17.4	0.68	0.58	175	1280
32 SURFACE	7.11	90.8	0.3	669	0.04	0.17	2.28	17.2	46	3.63	0.4	0.0	1.2	76.2	13.7	0.53	0.36	157	1070
33 SURFACE	6.90	102.5	0.1	338	0.02	0.05	1.87	22.0	33	4.18	-0.0	-0.0	1.6	79.9	7.3	0.56	0.39	152	1270
34 SURFACE	6.93	85.5	0.2	535	0.04	0.11	2.24	22.5	44	8.40	-0.2	-0.0	2.0	79.6	11.5	0.63	0.32	190	1320
35 SURFACE	6.89	85.0	0.4	747	0.04	0.06	2.06	25.4	55	6.01	0.1	-0.0	1.9	91.0	26.0	0.66	0.54	218	1550
36 SURFACE	7.23	86.8	0.1	517	-0.01	0.07	1.68	23.7	33	5.64	0.3	-0.0	1.9	77.2	6.2	0.72	0.32	146	1150
37 SURFACE	7.02	96.9	0.1	563	0.03	0.05	1.60	19.2	38	4.81	-0.0	-0.0	1.8	70.9	6.4	0.90	0.31	191	1500
38 SURFACE	6.96	107.6	0.2	417	0.05	0.08	2.30	18.3	25	6.82	0.1	0.1	1.5	83.7	8.3	0.82	0.29	143	1370
39 SURFACE	7.30	92.0	0.1	624	0.03	0.03	1.78	19.4	49	4.18	-0.3	0.0	0.9	81.0	6.8	0.89	0.28	219	1280
40 SURFACE	7.28	87.5	0.1	925	0.03	0.07	1.71	20.0	68	3.94	-0.3	0.0	1.6	91.0	6.9	0.68	0.41	237	1450
41 SURFACE	7.17	86.1	0.0	803	0.02	0.05	1.72	17.2	41	4.14	-0.5	0.0	1.7	77.2	8.9	0.81	0.24	176	1320
42A SURF 0-9"	7.33	71.3	0.2	928	0.03	0.08	1.55	14.1	68	3.17	-0.3	-0.0	1.3	76.3	6.9	0.74	0.26	204	1020
42B 9-21"	7.35	47.0	0.2	541	0.03	0.07	1.40	12.3	40	2.33	-0.1	-0.0	0.5	50.4	10.8	0.58	0.10	80	530
42C 21-30"	7.60	20.9	-0.0	406	-0.04	-0.01	1.47	12.7	38	1.47	-0.1	-0.0	0.8	29.2	4.6	0.50	0.06	24	220
42D 30*+ "	7.81	12.4	0.0	319	0.02	0.04	1.29	10.3	45	1.19	-0.1	0.0	1.1	14.0	5.8	0.24	0.46	19	170
43 SURFACE	7.25	74.3	0.0	796	-0.02	0.03	0.81	13.8	35	4.86	-0.2	-0.1	0.4	66.2	8.9	0.61	0.23	120	1320
10 SURFACE DUPLICATE	81.2	0.1	938	0.00	0.10	1.20	17.4	50	3.77	-0.0	0.0	0.9	72.8	0.3	0.66	0.42	166	1210	
20A 0-10" DUPLICATE	91.6	0.1	229	0.02	0.08	1.12	19.9	15	6.72	0.4	-0.0	3.4	66.9	4.7	0.71	0.25	107	1040	
L.O.D. ±		0.6	0.1	1	.06	0.09	0.10	0.2	1	0.01	0.6	0.2	1	0.2	1	0.04	0.07	5	50

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

Other Information on Sample Tags

- & - 0' from rd.
- \* - 95% rock.
- @ - 90% rock.

29 SURFACE 6.98 84.4 0.2 916 0.04 0.08 3.34 23.6 65 7.27 0.3 0.0 1.8 81.2 5.2 0.56 2.54 216 1470