

WIREFENCE POINT - TREND STUDY NO. 10-4-10

Vegetation Type: Mountain Brush

Range Type: Crucial Deer Summer (Fawning habitat), Crucial Elk Summer (Calving habitat)

NRCS Ecological Site Description: Upland Loam (Wyoming Big Sagebrush), R034XY306UT

Land Ownership: SITLA

Elevation: 7640 ft. (2329 m)

Aspect: Southwest

Slope: 0-5%

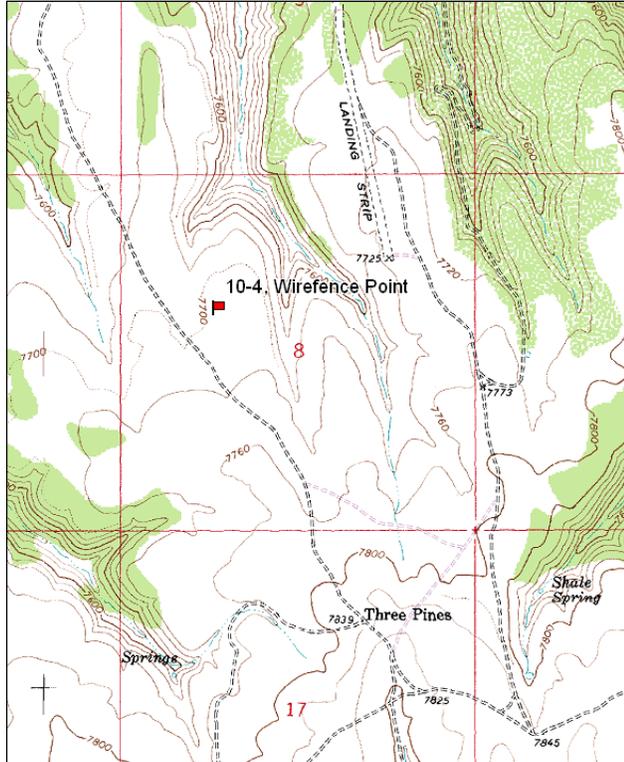
Transect bearing: 345° magnetic

Belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft). 0' stake has no browse tag.

Directions:

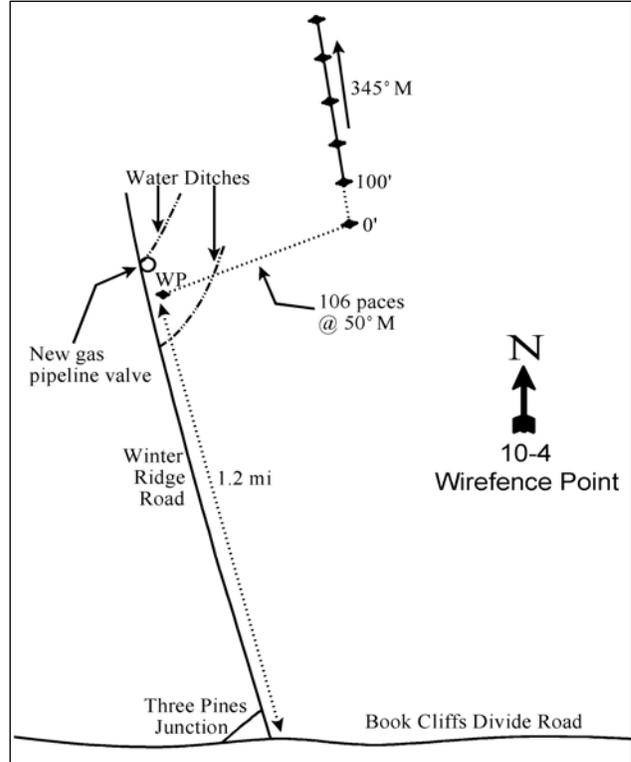
From the Book Cliffs Divide road near Three Pines, turn right on the Winter Ridge Road. Travel 1.2 miles toward Winter Ridge to a witness point. There may be an old drainage ditch or faint fork on the right hand side of the road. From the witness post, walk out 106 paces bearing 50°M to the 0-foot baseline stake.

Map Name: Cedar Camp Canyon



Township: 16S Range: 23E Section: 8

Diagrammatic Sketch:



GPS: NAD 83, UTM 12S 636989 E 4365905 N

WIREFENCE POINT - TREND STUDY NO. 10-4

Site Information

Site Description: The study is located on summer range near the head of Wirefence Canyon and the Three Pines intersection. The vegetation composition of the site is a mixture of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), perennial grasses and perennial forbs. A 2,4-D herbicide treatment was done in the 1980's to thin sagebrush, however, sagebrush is again the dominant overstory species. The study site marker stakes could not be located in 1995, so new posts were placed as closely as possible to the old baseline using photographs from previous readings. A lop and scatter treatment was done in the fall of 2008 to remove young, encroaching pinyon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) trees as part of the Three Pines L and S ([WRI Project #1078](#)). Large, mature trees were not removed. Grazing in the area is administered by the Utah State Institutional Trust Lands Administration (SITLA) and as part of the Bookcliffs Pasture allotment. This area is grazed by cattle on a rotation deferred system between spring and summer and elk appear to use this area during mild winters. Pellet group data has indicated light to moderate use by deer and elk, and light use by cattle since 2000 (Table - Pellet Group Data). Wild horses are also found in the area and were observed in 2005.

Browse: In 1988, there was little evidence of the herbicide thinning treatment of browse with only a few sagebrush skeletons or sprouting serviceberry being observed. Mountain big sagebrush is again the dominant species and most abundant browse species on the site in both cover (Table - Browse Trends) and density. The sagebrush population is comprised of mostly mature plants with fluctuating, but good, recruitment of young plants over the course of the study. Decadence of sagebrush has increased since 1995, but was still moderately low in 2010. Utilization of sagebrush has been mostly light to moderate with heavy use noted in 1988 and 2010 (Table - Browse Characteristics).

Other browse species present in the area include: squaw apple (*Peraphyllum ramosissimum*), snowberry (*Symphoricarpos oreophilus*), Utah serviceberry (*Amelanchier utahensis*), bitterbrush (*Purshia tridentata*), dwarf rabbitbrush (*Chrysothamnus depressus*) and gray horsebrush (*Tetradymia canescens*). These species occur in low densities and some were not sampled in the shrub density strips, but were measured for height/crown. Squaw apple and dwarf rabbitbrush are the next most abundant preferred browse after sagebrush. Squaw apple utilization has been mostly moderate with several years of heavy use. Dwarf rabbitbrush appears to have a fairly stable density with the majority of the population consisting of mature plants (Table - Browse Characteristics).

Herbaceous Understory: Perennial grasses are diverse and fairly abundant on the site. The dominant grass species are thickspike wheatgrass (*Agropyron dasystachyum*), mutton bluegrass (*Poa fendleriana*), Sandberg bluegrass (*P. secunda*), Kentucky bluegrass (*P. pratensis*), prairie junegrass (*Koeleria cristata*) and needle-and-thread (*Stipa comata*). Composition of grasses has fluctuated with changes in these species frequencies and cover, with species being more abundant in some sample years and less abundant in others. Forbs are also diverse and have accounted for more than half of the herbaceous cover with each reading. Unfortunately, the most common forbs are low growing with little forage value such as rose pussytoes (*Antennaria rosea*), mat penstemon (*Penstemon caespitosus*), desert phlox (*Phlox austromontana*) and lanceleaved sedum (*Sedum lanceolatum*) (Table - Herbaceous Trends).

Soil: Soils are a clay loam with a neutral soil reaction (pH 6.7) (Table - Soil Analysis Data). The soil surface is cracked from drying, indicating the abundance of clay in the soil. Bare ground cover is moderately high with protective cover being provided primarily by vegetation and litter (Table - Basic Cover). There was some evidence of overland flow and slight pedestaling around shrubs in several of the sample years. The soil erosion condition was classified as stable in 2005 and 2010.

Trend Assessments

Browse:

- **1982 to 1988 - up (+2):** The density of the primary browse species, mountain big sagebrush, increased by 66% from 4,665 plants/acre to 7,731 plants/acre due to a marked increase in the recruitment of young plants. Young plants comprised over half of the population.
- **1988 to 1995 - stable (0):** Differences in density may be related to the larger sample area used in 1995; therefore, trend was determined using other parameters. Decadence of sagebrush remained low, vigor was good and recruitment of young plants remained high.
- **1995 to 2000 - stable (0):** There was a 9% increase in the density of sagebrush from 5,180 plants/acre to 5,640 plants/acre, and cover remained similar. There was a slight decrease in the recruitment of young plants, but recruitment remained excellent at 29%.
- **2000 to 2005 - stable (0):** The density of sagebrush decreased by 11% to 5,000 plants/acre, but cover increased from 13% to 17%. It appears that the population is maturing and infilling with a decrease in the recruitment of young plants. Recruitment remained good at 12%.
- **2005 to 2010 - stable (0):** There was little change in the density or cover of sagebrush. Decadence of sagebrush has increased since 1995, but is still moderately low at 26%. Recruitment of young plants increased slightly to 19%.

Grass:

- **1982 to 1988 - no trend (NT):** Only quadrat frequency data for grasses are available from 1982, so no trend was given.
- **1988 to 1995 - slightly down (-1):** There was a 13% decrease in the sum of nested frequency primarily due to a large and significant decrease in the nested frequency of needle-and-thread.
- **1995 to 2000 - stable (0):** There was little change in the sum of nested frequency or cover of perennial grasses, though composition has changed. There was a large decrease in cover and a significant decrease in the nested frequency of thickspike wheatgrass, and a large increase in cover and a significant increase in the nested frequency of mutton bluegrass.
- **2000 to 2005 - slightly down (-1):** The sum of nested frequency of perennial grasses decreased by 18%, though cover increased markedly from 9% to 13%. Much of the increase in cover was due to a significant increase in the nested frequency of Kentucky bluegrass with a large subsequent increase in cover.
- **2005 to 2010 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, though cover decreased to 8%. Prairie junegrass decreased significantly in nested frequency.

Forb:

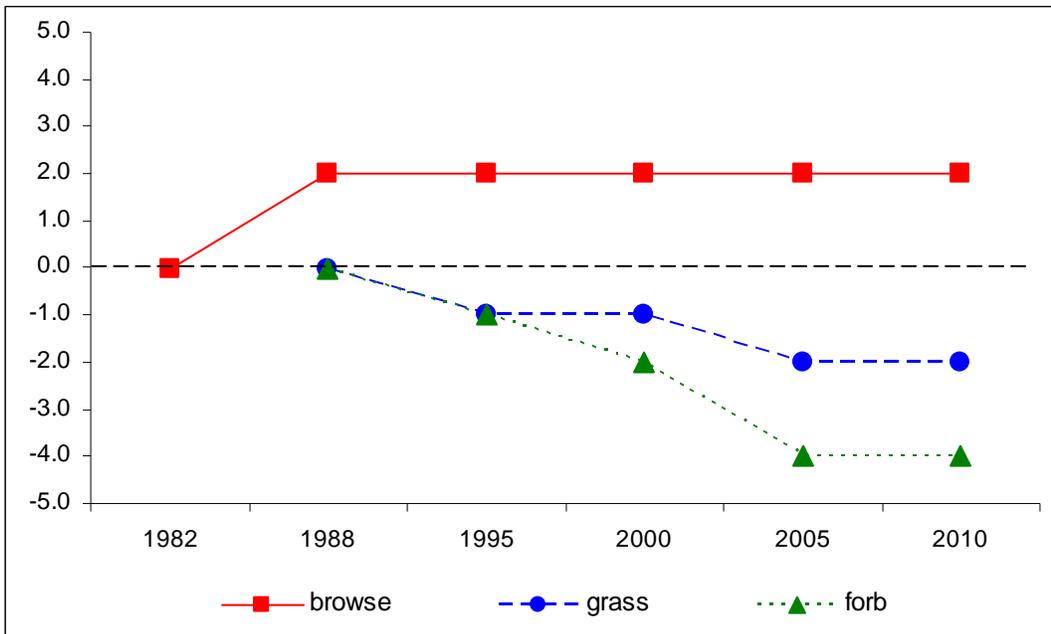
- **1982 to 1988 - no trend (NT):** Only quadrat frequency data for forbs are available from 1982, so no trend was given.
- **1988 to 1995 - slightly down (-1):** The sum of nested frequency of perennial forbs decreased by 13% with a significant decrease in the nested frequency of many of the predominant perennial forbs.
- **1995 to 2000 - slightly down (-1):** The perennial forb sum of nested frequency decreased by 16% and cover decreased slightly from 18% to 16%.
- **2000 to 2005 - down (-2):** There was a 20% decrease in the sum of nested frequency of perennial forbs and cover decreased to 13%.
- **2005 to 2010 - stable (0):** The sum of nested frequency of perennial forbs changed little, though cover decreased slightly.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --
 Management unit 10, study no: 4

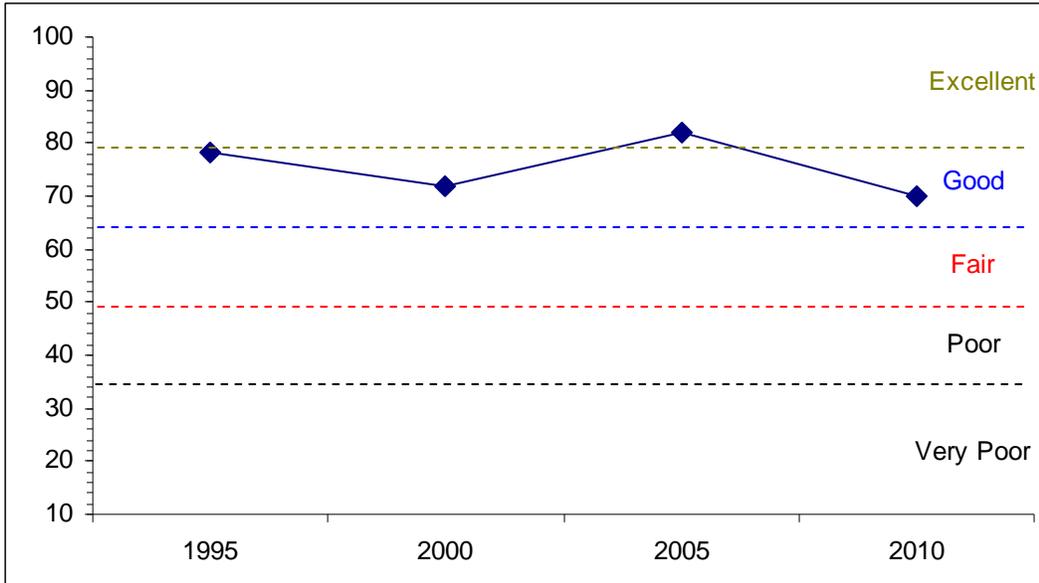
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
95	21.9	13.5	15.0	17.8	0.0	10.0	0.0	78.2	Good-Excellent
00	20.2	10.6	13.1	18.0	0.0	10.0	0.0	71.9	Good
05	27.5	10.7	8.1	25.7	0.0	10.0	0.0	82.1	Excellent
10	27.0	8.4	8.0	16.6	0.0	10.0	0.0	70.0	Good

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
 Management unit 10, Study no: 4



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--
 Management unit 10, Study no: 4



HERBACEOUS TRENDS--
 Management unit 10, Study no: 4

Type	Species	Nested Frequency					Average Cover %			
		'88	'95	'00	'05	'10	'95	'00	'05	'10
G	<i>Agropyron dasystachyum</i>	b195	b174	a74	a47	a81	1.58	.48	.31	.78
G	<i>Bouteloua gracilis</i>	b25	a-	a-	a-	a-	-	-	-	-
G	<i>Carex sp.</i>	b53	a22	ab33	a16	ab33	.05	.39	.05	.48
G	<i>Koeleria cristata</i>	a92	b172	b168	b143	a83	2.52	2.50	3.34	1.48
G	<i>Oryzopsis hymenoides</i>	-	-	1	1	-	-	.00	.00	-
G	<i>Poa fendleriana</i>	a-	bc84	d182	c118	b63	1.37	4.40	2.84	.64
G	<i>Poa pratensis</i>	a-	a-	a-	b81	b72	-	-	4.25	2.44
G	<i>Poa secunda</i>	c133	c137	b85	a10	a20	2.75	.69	.12	.37
G	<i>Sitanion hystrix</i>	-	-	2	1	-	-	.01	.00	-
G	<i>Stipa comata</i>	c225	ab42	a37	ab60	b83	.58	.50	1.91	2.08
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		723	631	582	477	435	8.89	9.00	12.86	8.28
Total for Grasses		723	631	582	477	435	8.89	9.00	12.86	8.28
F	<i>Agoseris glauca</i>	a-	b25	bc35	b21	c51	.11	.18	.19	.50
F	<i>Androsace septentrionalis (a)</i>	-	b65	a16	b52	a28	.18	.05	.39	.05
F	<i>Antennaria rosea</i>	c196	b99	b103	ab95	a57	2.40	3.19	2.44	1.20
F	<i>Arabis sp.</i>	b47	a5	a1	a-	a-	.01	.00	-	-
F	<i>Arenaria congesta</i>	c256	ab66	b96	b74	a39	.82	1.68	1.12	.55
F	<i>Aster sp.</i>	a-	b11	b10	b11	b12	.08	.08	.07	.05
F	<i>Astragalus convallarius</i>	a1	ab19	b33	b21	b33	.07	.42	.41	.26
F	<i>Astragalus sp.</i>	5	11	1	4	3	.59	.03	.01	.04
F	<i>Astragalus spatulatus</i>	-	1	5	-	4	.03	.06	-	.18
F	<i>Calochortus nuttallii</i>	a-	b9	a-	ab1	ab3	.02	-	.00	.01
F	<i>Castilleja flava</i>	a8	b41	ab22	a5	ab26	.31	.19	.04	.19

Type	Species	Nested Frequency					Average Cover %			
		'88	'95	'00	'05	'10	'95	'00	'05	'10
F	Castilleja linariaefolia	-	-	-	1	-	-	-	.00	-
F	Chaenactis douglasii	a-	a4	a4	ab15	b25	.00	.01	.43	.31
F	Chenopodium fremontii (a)	-	-	-	-	3	-	-	-	.00
F	Cirsium sp.	3	-	-	-	-	-	-	-	-
F	Collinsia parviflora (a)	-	b30	a-	b16	b20	.12	-	.03	.09
F	Comandra pallida	c222	ab97	b127	a62	a75	.45	1.39	.61	.33
F	Cordylanthus sp. (a)	-	-	-	-	1	-	-	-	.00
F	Crepis acuminata	a6	b56	b45	b56	b42	.36	.54	.54	.42
F	Cryptantha sp.	7	-	-	8	1	-	-	.01	.00
F	Cymopterus sp.	-	1	-	8	3	.01	-	.03	.03
F	Delphinium nuttallianum	-	6	-	5	-	.01	-	.01	-
F	Erigeron eatonii	a-	a-	b31	b36	c65	-	.18	.42	.63
F	Erigeron pumilus	d174	c109	b35	a3	a-	.58	.25	.00	-
F	Eriogonum alatum	a-	b17	b10	ab9	b12	.15	.05	.05	.10
F	Eriogonum racemosum	-	-	4	-	5	-	.01	-	.01
F	Eriogonum umbellatum	ab41	b55	ab30	a22	a22	.98	.25	.36	.36
F	Gayophytum ramosissimum(a)	-	1	-	4	-	.00	-	.01	-
F	Hymenopappus filifolius	a-	b31	b31	a-	a-	.71	.47	-	-
F	Hymenoxys richardsonii	-	-	2	5	3	-	.03	.01	.03
F	Lesquerella ludoviciana	a-	b39	ab21	b33	b41	.23	.05	.57	.31
F	Linum lewisii	a-	c40	ab9	b17	b16	.18	.05	.10	.19
F	Lithospermum sp.	-	6	-	-	-	.01	-	-	-
F	Lupinus argenteus	a31	b59	ab45	a19	a28	1.80	.92	.08	1.49
F	Orthocarpus sp. (a)	-	1	3	1	-	.00	.00	.00	-
F	Penstemon caespitosus	a30	c99	bc70	bc65	b62	3.32	1.24	2.04	1.64
F	Penstemon sp.	a-	a2	b12	a-	a-	.00	.36	-	-
F	Phlox austromontana	a58	c137	bc124	bc110	ab107	1.89	3.11	2.36	1.61
F	Phlox longifolia	36	47	29	26	30	.19	.07	.17	.09
F	Polygonum douglasii (a)	-	b85	a3	b61	b70	.25	.00	.22	.30
F	Sedum lanceolatum	d164	bc111	c113	ab80	a63	2.38	1.13	.83	.77
F	Senecio integerrimus	a-	ab17	a1	b21	ab10	.06	.00	.38	.07
F	Senecio multilobatus	a-	b15	a-	a-	a-	.22	-	-	-
F	Sphaeralcea coccinea	-	4	-	-	2	.01	-	-	.00
F	Taraxacum officinale	ab1	b14	ab4	a-	a-	.05	.01	-	-
F	Zigadenus paniculatus	-	3	-	6	5	.01	-	.04	.03
Total for Annual Forbs		0	182	22	134	122	0.57	0.06	0.67	0.45
Total for Perennial Forbs		1286	1256	1053	839	845	18.17	16.05	13.42	11.49
Total for Forbs		1286	1438	1075	973	967	18.74	16.12	14.09	11.94

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS--

Management unit 10, Study no: 4

Type	Species	Strip Frequency				Average Cover %			
		'95	'00	'05	'10	'95	'00	'05	'10
B	Artemisia tridentata vaseyana	84	87	88	88	13.93	13.30	16.91	17.26
B	Ceratoides lanata	3	0	0	0	-	-	-	-
B	Chrysothamnus depressus	66	65	65	67	1.72	1.26	2.71	2.31
B	Chrysothamnus viscidiflorus viscidiflorus	57	44	36	35	.82	.65	.79	.77
B	Gutierrezia sarothrae	10	2	10	12	.51	-	.33	.01
B	Juniperus scopulorum	0	1	1	1	.03	.15	.15	-
B	Pediocactus simpsonii	0	2	4	0	.03	.03	.00	-
B	Peraphyllum ramosissimum	9	10	13	13	2.31	1.95	3.00	2.57
B	Pinus edulis	0	1	1	0	-	-	-	-
B	Symphoricarpos oreophilus	1	1	1	0	-	-	-	-
B	Tetradymia canescens	4	9	4	8	-	.07	.21	.03
Total for Browse		234	222	223	224	19.38	17.41	24.12	22.96

CANOPY COVER, LINE INTERCEPT--

Management unit 10, Study no: 4

Species	Percent Cover	
	'05	'10
Artemisia tridentata vaseyana	24.66	27.21
Chrysothamnus depressus	2.90	2.38
Chrysothamnus viscidiflorus viscidiflorus	.93	.88
Gutierrezia sarothrae	.33	.03
Juniperus scopulorum	.40	-
Peraphyllum ramosissimum	2.09	2.43
Pinus edulis	.08	-
Tetradymia canescens	.06	.16

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 10, Study no: 4

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata vaseyana	1.6	1.2
Peraphyllum ramosissimum	3.5	2.4

BASIC COVER--

Management unit 10, Study no: 4

Cover Type	Average Cover %					
	'82	'88	'95	'00	'05	'10
Vegetation	7.25	12.25	47.23	43.97	41.97	43.59
Rock	0	0	.16	.04	.03	0
Pavement	0	0	.56	.85	.23	.62
Litter	61.50	56.75	44.75	46.00	28.64	40.60
Cryptogams	0	8.00	1.20	2.07	1.21	.16
Bare Ground	39.00	23.00	26.94	35.99	41.28	35.12

SOIL ANALYSIS DATA --

Management unit 10, Study no: 4, Study Name: Wirefence Point

Effective rooting depth (in)	pH	clay loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
18.6	6.7	31.8	32.4	35.8	2.4	6.9	124.8	0.5

PELLET GROUP DATA--

Management unit 10, Study no: 4

Type	Quadrat Frequency				Days use per acre (ha)		
	'95	'00	'05	'10	'00	'05	'10
Rabbit	1	19	12	5	-	-	-
Horse	-	-	1	1	-	-	1 (3)
Elk	4	13	6	10	19 (47)	8 (20)	19 (48)
Deer	18	21	25	20	33 (82)	20 (50)	21 (53)
Cattle	4	1	-	-	5 (13)	2 (5)	9 (22)

BROWSE CHARACTERISTICS--

Management unit 10, Study no: 4

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization			Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy	% poor vigor	
Amelanchier utahensis									
82	66	0	100	-	-	100	0	0	26/10
88	66	100	0	-	-	0	100	100	-/-
95	0	0	0	-	-	0	0	0	-/-
00	0	0	0	-	-	0	0	0	-/-
05	0	0	0	-	-	0	0	0	-/-
10	0	0	0	-	-	0	0	0	-/-
Artemisia tridentata vaseyana									
82	4665	31	69	0	6666	0	0	0	29/29
88	7731	60	29	10	1666	35	16	0	27/24
95	5180	40	54	6	1680	20	.77	1	30/35
00	5640	29	57	14	300	26	1	8	31/34
05	5000	12	70	18	2800	14	4	9	28/35
10	4860	19	55	26	1520	29	26	7	29/37

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
<i>Ceratoides lanata</i>										
82	0	0	0	0	-	0	0	0	-/-	
88	0	0	0	0	-	0	0	0	-/-	
95	100	20	60	20	-	60	0	20	-/-	
00	0	0	0	0	-	0	0	0	-/-	
05	0	0	0	0	-	0	0	0	-/-	
10	0	0	0	0	-	0	0	0	-/-	
<i>Chrysothamnus depressus</i>										
82	11666	0	100	0	-	0	0	0	3/8	
88	3665	38	47	15	66	20	4	5	4/5	
95	5780	6	92	2	-	0	0	.69	5/8	
00	4680	10	87	3	-	.42	0	3	4/7	
05	5760	5	94	1	-	14	.34	.69	4/8	
10	5360	3	96	0	20	21	13	.37	4/9	
<i>Chrysothamnus viscidiflorus viscidiflorus</i>										
82	0	0	0	0	-	0	0	0	-/-	
88	0	0	0	0	-	0	0	0	-/-	
95	2700	36	64	0	-	0	0	0	9/11	
00	1780	39	58	2	-	0	0	1	9/10	
05	1240	11	85	3	-	2	0	0	8/11	
10	1480	19	81	0	140	0	0	0	9/10	
<i>Gutierrezia sarothrae</i>										
82	0	0	0	-	-	0	0	0	-/-	
88	0	0	0	-	-	0	0	0	-/-	
95	500	4	96	-	-	0	0	0	6/7	
00	80	0	100	-	-	0	0	0	3/6	
05	840	5	95	-	-	0	0	0	5/8	
10	300	47	53	-	-	0	0	0	7/8	
<i>Juniperus osteosperma</i>										
82	66	100	0	-	-	0	0	0	-/-	
88	66	100	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	-/-	
00	0	0	0	-	20	0	0	0	-/-	
05	0	0	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	-/-	
<i>Juniperus scopulorum</i>										
82	0	0	0	-	-	0	0	0	-/-	
88	0	0	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	-/-	
00	20	100	0	-	-	0	0	0	-/-	
05	20	100	0	-	-	0	0	0	-/-	
10	20	100	0	-	-	0	0	100	-/-	

		Age class distribution					Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)	
Pediocactus simpsonii										
82	0	0	0	-	-	0	0	0	-/-	
88	0	0	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	-/-	
00	40	50	50	-	-	0	0	0	2/4	
05	100	20	80	-	-	0	0	0	2/4	
10	0	0	0	-	-	0	0	0	-/-	
Peraphyllum ramosissimum										
82	466	0	29	71	-	0	0	0	31/28	
88	598	44	44	11	-	22	11	0	26/25	
95	220	9	91	0	-	45	9	0	24/30	
00	220	18	55	27	-	45	0	18	26/34	
05	400	50	45	5	-	40	35	0	21/32	
10	280	7	79	14	-	21	57	14	26/32	
Pinus edulis										
82	0	0	0	-	-	0	0	0	-/-	
88	0	0	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	-/-	
00	20	100	0	-	-	0	0	0	-/-	
05	20	100	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	-/-	
Purshia tridentata										
82	0	0	0	-	66	0	0	0	-/-	
88	0	0	0	-	-	0	0	0	-/-	
95	0	0	0	-	-	0	0	0	14/20	
00	0	0	0	-	-	0	0	0	11/24	
05	0	0	0	-	-	0	0	0	-/-	
10	0	0	0	-	-	0	0	0	12/17	
Symphoricarpos oreophilus										
82	199	0	100	-	-	0	0	0	8/12	
88	798	75	25	-	-	25	0	8	20/12	
95	20	0	100	-	-	0	0	0	7/10	
00	20	0	100	-	-	0	0	0	13/19	
05	20	100	0	-	-	0	0	0	8/10	
10	0	0	0	-	-	0	0	0	8/9	
Tetradymia canescens										
82	0	0	0	-	-	0	0	0	-/-	
88	0	0	0	-	-	0	0	0	-/-	
95	120	33	67	-	-	0	17	0	7/13	
00	260	8	92	-	-	0	0	0	7/10	
05	160	0	100	-	-	0	0	0	7/9	
10	300	13	87	-	-	33	0	0	9/11	