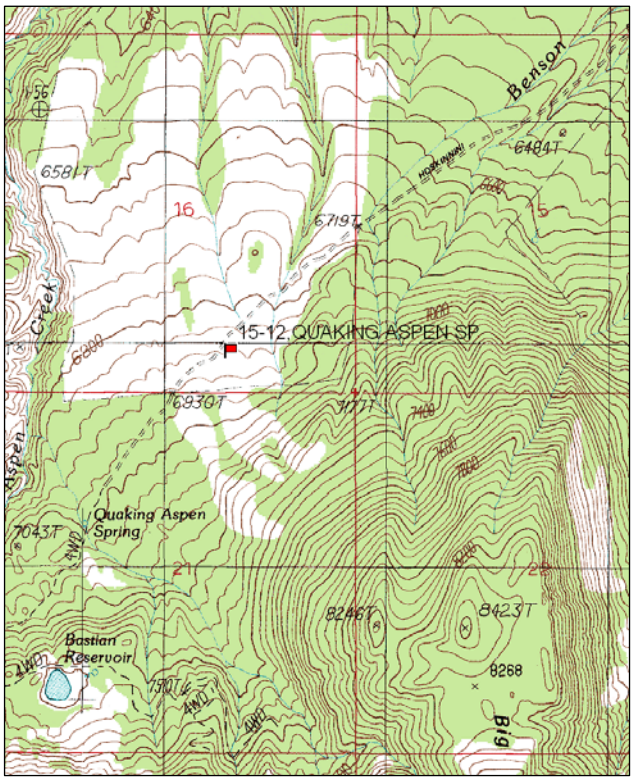
QUAKING ASPEN SPRING - TREND STUDY NO. 15-12-09

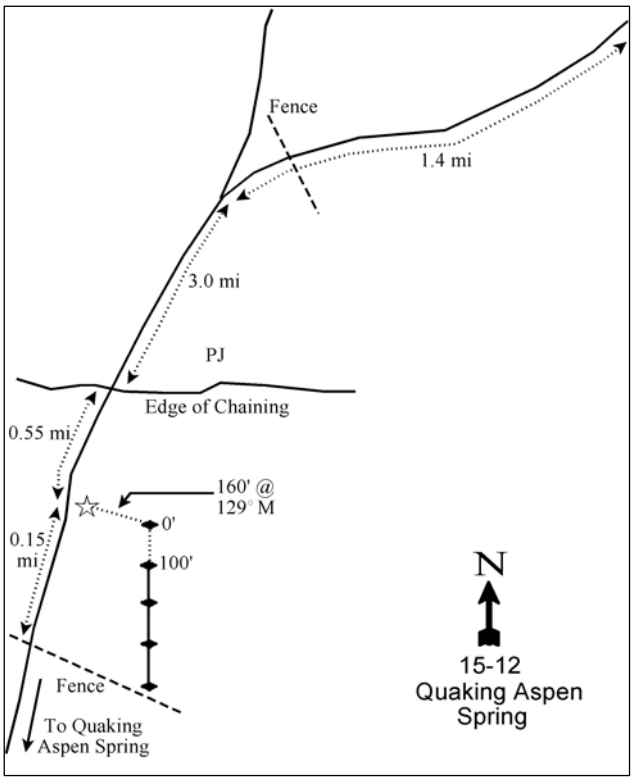
Vegetation Type: Chained, Seeded P-J
Range Type: Crucial Deer Winter, Crucial Bison Year-Long
NRCS Ecological Site Description: Upland Stony Loam (Wyoming Big Sagebrush), R035XY318UT
Land Ownership: SITLA
Elevation: 6,800 ft (2,073 m)
Aspect: north
Slope: 8%-12%
Transect bearing: 165 degrees magnetic.
Belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft)

Directions:
From the intersection of highways 95 and 276, go 4.7 miles south down SR 276 to a gravel road. Turn right and travel 3.1 miles to an abandoned cabin near the creek. Continue 0.6 miles to a fork. Stay right, cross the creek and go 0.8 miles to some mining cabins. Keep left on the main road. Continue 1.2 miles to a fence. Continue 0.2 miles to a fork. Take the left fork towards Quaking Aspen Spring. Go 3 miles to the edge of a chaining. Continue 0.55 miles to a witness post on the left side of the road. The 0-foot baseline stake, a 1 ½ foot tall fence post, is 160 feet southeast of witness post and is marked by a red browse tag #7135.
Alternate route- From study number 15-13, go 2.2 miles to a fork. Stay left and continue 1.6 miles to another fork. Stay left again and go 1.2 miles (you will go through Stanton Pass and pass Quaking Aspen Spring) passing through a fence to a witness post on the right.

Map Name: Cass Creek Peak



Diagrammatic Sketch:



Township: 33S, Range: 11E, Section: 21

GPS: NAD 83, UTM 12S 526219 E 4198142 N

QUAKING ASPEN SPRING - TREND STUDY NO. 15-12

Site Information

Site Description: The study is located in the foothills on the north slope of Mt. Hillars and about two-thirds of a mile from Quaking Aspen Spring. The area has historically been a pinyon-juniper vegetation type. It was chained years ago and trees were regaining their dominance of the area, until the Bulldog fire of 2003 burned all trees and browse on the site. The area was chained and seeded after the fire for fire rehabilitation (Table - Seed Mix). Water is available for wildlife and livestock at Quaking Aspen Spring and Quaking Aspen Creek. Pellet group data for bison and cattle were combined due to the difficulty of distinguishing between these species. Bison/cattle use was estimated to be light in 1999 prior to the fire, with no sign encountered in 2004 after the fire, but increasing to moderate use in 2009. Deer use was estimated to be light in 1999 and 2004, but increased to moderate use in 2009, as well. There was minimal elk use estimated in 2009 (Table - Pellet Group Data).

Browse: Prior to the fire in 2003, the dominant browse species were black sagebrush (*Artemisia nova*), pinyon pine (*Pinus edulis*), and Utah juniper (*Juniperus osteosperma*). None of these three species was sampled in 2004, after the fire, and only one juniper tree was sampled by point-quarter in 2009 (Table - Browse Characteristics, Table - Point-Quarter Tree Data).

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) was seeded as part of the fire rehabilitation and has been increased in cover since 2004 (Table - Browse Trends). Density of Wyoming big sagebrush has also been increasing since 2004 and the population has had some heavy use. Some true mountain mahogany (*Cercocarpus montanus*) survived the fire at low densities. Mountain mahogany had moderate to heavy use in 2009. Broom snakeweed (*Gutierrezia sarothrae*) has become the dominant browse since the fire (Table - Browse Characteristics).

Herbaceous Understory: The grasses on the site are diverse and abundant, but are dominated by the seeded species crested wheatgrass (*Agropyron cristatum*) and intermediate wheatgrass (*A. intermedium*). Native species have become rare on the site. These two species currently provide over 90% of the total grass cover on the site. Prior to the fire, most grasses occurred infrequently and most perennial grasses had been decreasing in frequency since the initial reading in 1987. Cheatgrass (*Bromus tectorum*) had also shown an increase in frequency and density since 1994. After the fire and subsequent reseeding in 2003, several new species were established and have increased in frequency and density since 2004. Cheatgrass frequency has decreased since the fire and reseeding (Table - Herbaceous Trends)

Forbs are also diverse and abundant on the site. The seeded species, alfalfa (*Medicago sativa*), is the dominant forb on the site. Perennial forb cover has been increasing since 1994, but showed a more dramatic increase in 2004, after the fire (Table - Herbaceous Trends).

The transect is located near the BLM/SITLA border. It appears that seed from the BLM WSA seed mix drifted onto the transect as slender wheatgrass, (*A. trachycaulum*), mountain brome (*Bromus carinatus*) and western yarrow (*Achillea millefolium*) were sampled after the fire (Table - Herbaceous Trends).

Soil: The soil is a rocky, sandy clay loam with an estimated effective rooting depth of just over 12 inches and a slightly alkaline pH (7.5). Nutrient levels are low with phosphorus and potassium both below the minimum levels determined necessary for normal plant development (Tiedemann and Lopez 2004). Organic matter is fairly low overall (Table - Soil Analysis Data). A calcium carbonate layer exists about four inches down in the profile. Bare ground cover has been moderately low over the span of the study with most protective soil cover coming from rock and litter cover (Table - Basic Cover). The soil erosion condition classification was rated as stable in 2004 and 2009.

SEED MIX -- DWR MIX FOR THE BULLDOG FIRE 2003
Management unit 15, study no. 12

Project name: Henry Mnts. Low Elevation			Project name: Henry Mnts. Dribbler		
Mix lot #: m-ser-lm-hmlo-04	Size (acre):	2200	Mix Lot #: m-ser-hmD-04	Size (acre):	900
Seed type	lbs in mix	lbs/acre	Seed type	lbs in mix	lbs/acre
Arizona Fescue "Redondo"	1250	0.57	Bitterbrush	350	0.39
Crested Wheatgrass "Hycrest"	2200	1.00	Fourwing Saltbush	450	0.50
Intermediate Wheatgrass	2200	1.00	Utah Serviceberry	50	0.06
Orchardgrass "Paiute"	1100	0.50	BULK POUNDS PER ACRE:		0.94
Pubescent Wheatgrass	2200	1.00	PLS POUNDS PER ACRE:		0.57
Russian Wildrye "Bozoisky"	1927	0.88			
Russian Wildrye "Bozoisky"	273	0.12			
Thickspike Wheatgrass "Critana"	2200	1.00			
Prairie Junegrass	350	0.16			
Alfalfa "Ranger"	242	0.11			
Alalfa "Ladak+"	2050	0.93			
Blue Flax "Appar"	500	0.23			
Rocky Mountain Beeplant	587	0.27			
Rocky Mountain Beeplant	500	0.23			
Sainfoin	2300	1.05			
Small Burnet "Delar"	2632	1.20			
Sagebrush, Wyoming	1120	0.51			
Sagebrush, Mountain	600	0.27			
BULK POUNDS PER ACRE:		11.01			
PLS POUNDS PER ACRE:		9.48			

Trend Assessments

Browse:

- **1987 to 1994 - slightly down (-1):** Differences in density may be related to the larger sample area used in 1994; therefore, trend was determined using other parameters. Black sagebrush plants displaying poor vigor increased from 2% to 17%, and decadence increased from 12% to 21%. Recruitment of young black sagebrush plants declined markedly.
- **1994 to 1999 - slightly down (-1):** Density of black sagebrush decreased 11% to 12,600 plants/acre, and cover decreased from 18% to 17%.
- **1999 to 2004 - down (-2):** The fire has removed almost all of the browse species from this site. Young plants and seedlings of the seeded species Wyoming big sagebrush were encountered in low numbers.
- **2004 to 2009 - slightly up (+1):** Browse species are still rare on this site. Wyoming big sagebrush density increased to 960 plants/acre, with many of those being mature, established plants. Cover of Wyoming big sagebrush also increased slightly. There was also a large increase in the density and cover of the undesirable species, broom snakeweed, which is currently the dominant browse species on the site.

Grass:

- **1987 to 1994 - down (-2):** The sum of nested frequency for perennial grasses decreased 34%. There was a significant decrease in the nested frequency of crested wheatgrass, blue grama, and bottlebrush squirreltail.
- **1994 to 1999 - slightly down (-1):** The sum of nested frequency for perennial grasses decreased 17% while cover remained similar to 1994 levels. There was a significant increase in the nested frequency of crested wheatgrass and Indian ricegrass (*Oryzopsis hymenoides*) and a significant decrease in nested

frequency of mutton bluegrass (*Poa fendleriana*) and bottlebrush squirreltail. Cheatgrass (*Bromus tectorum*) also increased significantly in nested frequency and cover increased from near 0% to 3%.

- **1999 to 2004 - stable (0):** After the fire and subsequent reseeding, the sum of nested frequency of perennial grasses was similar to 1999 levels while cover increased from 3% to 5% in only the first growing season after the fire. Cheatgrass decreased significantly in nested frequency and cover decreased from 3% to 1%.There was a significant increase in nested frequency of the seeded species crested wheatgrass, and intermediate wheatgrass. Mountain brome, slender wheatgrass, orchard grass (*Dactylis glomerata*), and Russian wildrye (*Elymus junceus*) were sampled for the first time. There was a significant decrease in the nested frequency of the native species Indian ricegrass and mutton bluegrass.
- **2004 to 2009 - up (+2):** Nested frequency of perennial grasses increased 56% and cover increased from 5% to 17%. Cheatgrass decreased significantly in nested frequency, is infrequent and provides almost no cover. There was a significant increase in the nested frequency of the seeded species: crested wheatgrass, intermediate wheatgrass, and Russian wildrye, and a significant decrease in the nested frequency of mountain brome. Crested and intermediate wheatgrass now dominate the site.

Forb:

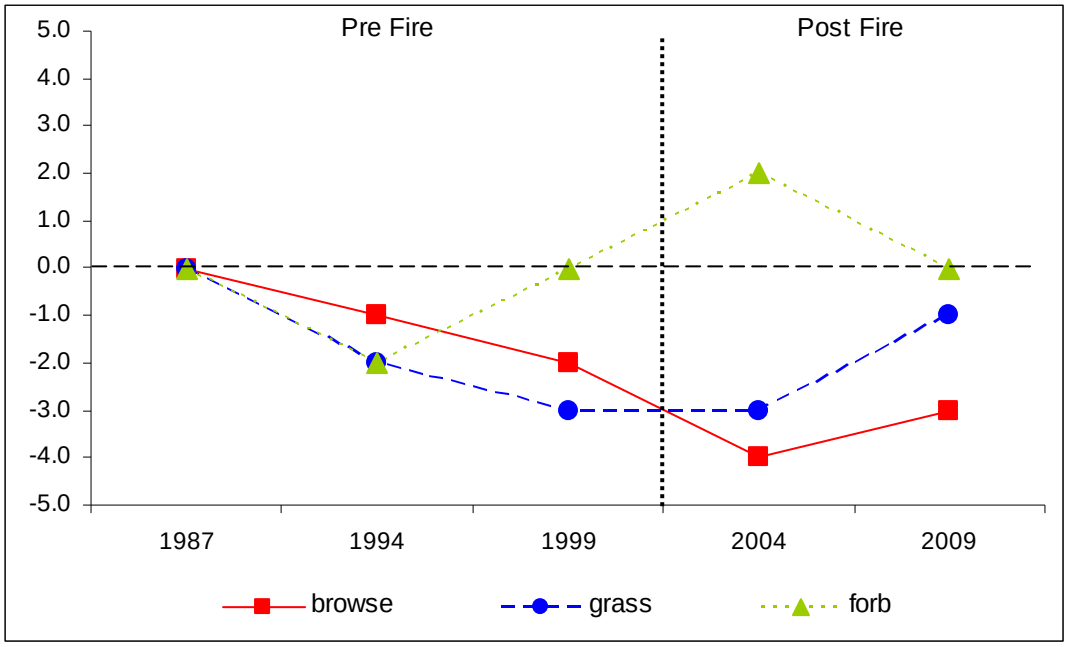
- **1987 to 1994 - down (-2):** The sum of nested frequency of perennial forbs decreased 34%.
- **1994 to 1999 - up (+2):** The sum of nested frequency of perennial forbs increased 27% and cover doubled to 3%.
- **1999 to 2004 - up (+2):** The sum of nested frequency of perennial forbs increased 28% and cover doubled to 6%. The introduction of seeded species such as alfalfa (*Medicago sativa*) and small burnett (*Sanguisorba minor*) helped the increases in forbs. As a caveat, weedy annual species increased greatly, annual cover increased from near 0% to 7.5%.
- **2004 to 2009 - down (-2):** The sum of nested frequency of perennial forbs decreased 34%, though cover remained similar to 2004 levels. Annual forbs decreased markedly as they now provide less than 1% cover and nested frequency decreased 95%.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --
Management unit 15, study no: 12

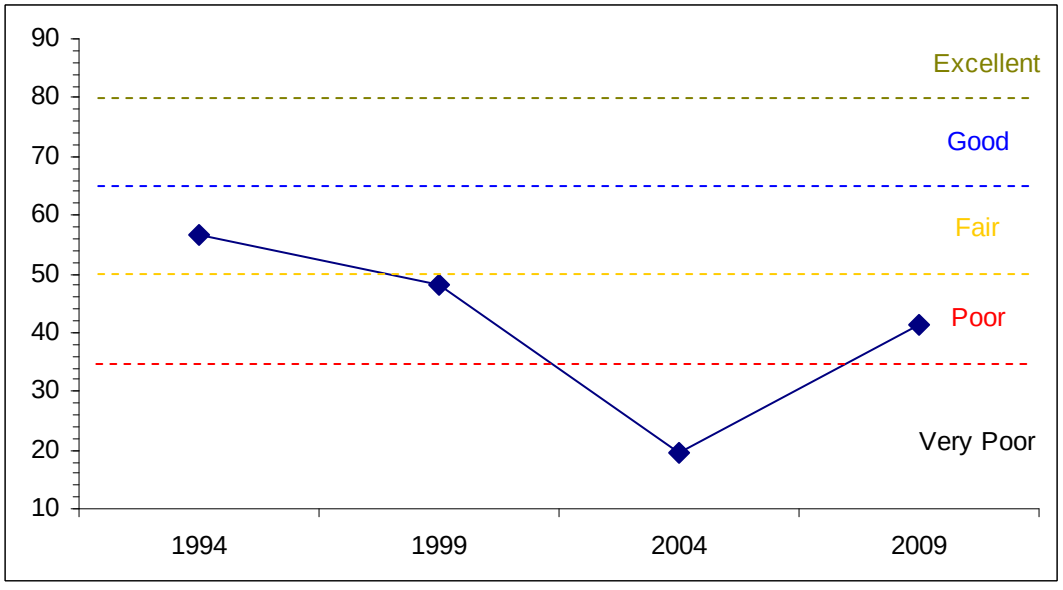
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	**Total Score**	Ranking
94	25.96	9.4	11.2	7.1	-0.1	3.1	0	**56.6**	Fair
99	25.3	9.1	3.6	6.3	-2.6	6.4	0	**48.1**	Poor-Fair
04	0.2	0	0	10.2	-1	10	0	**19.42**	Very Poor
09	1.3	0	0	30	0	10	0	**41.3**	Poor

Trend Summary

CUMULATIVE RANGE TREND ASSESSMENT--
Management unit 15 Study no: 12



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL
Management unit 15, Study no: 12



HERBACEOUS TRENDS--
Management unit 15, Study no: 12

Type	Species	Nested Frequency					Average Cover %			
		'87	'94	'99	'04	'09	'94	'99	'04	'09
G	Agropyron cristatum	bc63	a9	b46	c98	d200	.19	.66	2.43	8.93
G	Agropyron intermedium	a-	a-	a-	c85	b156	-	-	1.44	6.82
G	Agropyron trachycaulum	-	-	-	7	6	-	-	.04	.30
G	Bouteloua gracilis	c174	b118	b97	a-	a2	1.62	.93	-	.00
G	Bromus carinatus	a-	a-	a-	c35	a7	-	-	.70	.07
G	Bromus tectorum (a)	-	ab23	c177	b54	a11	.08	3.40	1.33	.02
G	Dactylis glomerata	-	-	-	9	1	-	-	.04	.03
G	Elymus junceus	a-	a-	a-	a7	b19	-	-	.19	.37
G	Koeleria cristata	-	-	1	-	-	-	.00	-	-
G	Oryzopsis hymenoides	a-	a1	b57	a8	a1	.03	.46	.01	.00
G	Poa fendleriana	c101	c95	b61	a8	a6	1.25	.88	.10	.09
G	Sitanion hystrix	c163	b113	a14	a12	a13	.43	.17	.12	.11
G	Sporobolus cryptandrus	-	-	-	-	6	-	-	-	.06
G	Stipa comata	4	-	3	-	3	-	.00	-	.03
Total for Annual Grasses		0	23	177	54	11	0.08	3.40	1.33	0.02
Total for Perennial Grasses		505	336	279	269	420	3.54	3.14	5.10	16.84
Total for Grasses		505	359	456	323	431	3.63	6.54	6.44	16.86
F	Achillea millefolium	a-	a-	a-	b24	b39	-	-	.11	.86
F	Agoseris glauca	a-	a3	b14	a-	a-	.03	.10	-	-
F	Allium sp.	2	-	-	-	-	-	-	-	-
F	Arabis demissa	b31	a8	ab25	a3	a-	.02	.09	.03	-
F	Aster sp.	-	4	-	-	-	.01	-	-	-
F	Astragalus moencopensis	a-	b12	a-	a-	c35	.03	-	-	.43
F	Astragalus sp.	b16	ab6	ab6	a-	a-	.04	.12	-	-
F	Astragalus utahensis	a-	a-	a-	b47	b33	-	-	.44	.25
F	Calochortus nuttallii	-	6	8	3	-	.02	.01	.00	-
F	Castilleja chromosa	c40	ab9	bc23	a-	a2	.05	.70	-	.03
F	Chenopodium fremontii (a)	-	-	-	3	-	-	-	.63	-
F	Chenopodium leptophyllum(a)	-	a-	a-	b24	a-	-	-	3.62	-
F	Cleome sp. (a)	-	-	-	4	-	-	-	.06	-
F	Comandra pallida	a-	ab14	a-	a6	b23	.11	-	.07	.46
F	Crepis acuminata	-	2	1	-	2	.00	.01	-	.01
F	Cryptantha sp.	-	-	3	-	1	-	.03	-	.00
F	Descurainia pinnata (a)	-	2	-	2	-	.01	-	.00	-
F	Erigeron eatonii	-	-	-	3	2	-	-	.00	.06
F	Erigeron pumilus	19	19	19	14	30	.22	.09	.05	.42
F	Eriogonum sp.	-	-	3	-	-	-	.00	-	-
F	Eriogonum umbellatum	7	-	2	-	-	-	.00	-	-
F	Gayophytum ramosissimum(a)	-	b28	a-	b27	a1	.07	-	.72	.00
F	Gilia sp. (a)	-	-	-	3	-	-	-	.03	-
F	Halogeton glomeratus (a)	-	-	-	-	3	-	-	-	.00
F	Haplopappus acaulis	-	-	1	-	-	-	.00	.00	-
F	Hymenoxys acaulis	b44	b29	b29	a2	a-	.10	.15	.00	-

Type	Species	Nested Frequency					Average Cover %			
		'87	'94	'99	'04	'09	'94	'99	'04	'09
F	Lappula occidentalis (a)	-	$_{b}$20	$_{a}$-	$_{b}$16	$_{a}$-	.12	-	.25	-
F	Lesquerella kingii	$_{c}$40	$_{bc}$16	$_{d}$86	$_{a}$-	$_{b}$15	.04	.54	-	.17
F	Linum lewisii	$_{cd}$51	$_{bc}$43	$_{ab}$21	$_{d}$71	$_{a}$9	.13	.34	.57	.09
F	Lomatium sp.	-	-	1	-	-	-	.00	-	-
F	Lygodesmia spinosa	20	14	3	7	12	.17	.01	.33	1.06
F	Machaeranthera canescens	3	-	-	-	3	-	-	.00	.03
F	Medicago sativa	$_{a}$-	$_{a}$-	$_{a}$-	$_{c}$107	$_{b}$43	-	-	1.42	1.22
F	Nicotiana attenuata (a)	-	-	-	6	-	-	-	.07	-
F	Onobrychis viciaefolia	$_{a}$-	$_{a}$-	$_{a}$-	$_{b}$26	$_{a}$-	-	-	.38	-
F	Penstemon comarrhenus	2	6	3	-	-	.18	.01	-	-
F	Phlox longifolia	$_{c}$167	$_{b}$116	$_{b}$119	$_{b}$88	$_{a}$-	.33	.66	1.50	-
F	Physaria sp.	$_{a}$-	$_{a}$-	$_{a}$-	$_{b}$21	$_{a}$-	-	-	.15	-
F	Polygonum douglasii (a)	-	$_{b}$47	$_{a}$8	$_{b}$59	$_{a}$3	.10	.02	2.10	.01
F	Sanguisorba minor	$_{a}$-	$_{a}$-	$_{a}$-	$_{c}$67	$_{b}$43	-	-	1.06	.77
F	Senecio multilobatus	$_{bc}$21	$_{a}$1	$_{c}$25	$_{ab}$7	$_{c}$26	.00	.25	.02	.61
F	Sphaeralcea coccinea	$_{a}$1	$_{a}$2	$_{a}$-	$_{ab}$9	$_{b}$12	.00	-	.10	.11
F	Unknown forb-perennial	3	-	-	-	-	-	-	-	-
F	Zigadenus paniculatus	2	1	2	-	3	.00	.03	-	.00
Total for Annual Forbs		0	97	8	144	7	0.30	0.01	7.51	0.01
Total for Perennial Forbs		469	311	394	505	333	1.53	3.21	6.29	6.63
Total for Forbs		469	408	402	649	340	1.83	3.23	13.81	6.65

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

BROWSE TRENDS--
Management unit 15, Study no: 12

Type	Species	Strip Frequency				Average Cover %			
		'94	'99	'04	'09	'94	'99	'04	'09
B	Amelanchier utahensis	4	3	0	0	.03	.03	-	-
B	Artemisia nova	96	94	0	0	18.32	16.84	-	-
B	Artemisia tridentata wyomingensis	0	0	3	31	-	-	.08	.84
B	Atriplex canescens	0	0	1	0	-	-	.03	-
B	Cercocarpus montanus	17	13	4	6	1.15	2.04	.03	.15
B	Chrysothamnus depressus	15	19	0	0	.39	.31	-	-
B	Chrysothamnus nauseosus	5	0	0	1	.18	-	-	.03
B	Coryphantha vivipara arizonica	0	0	0	0	-	.01	-	-
B	Eriogonum microthecum	63	26	3	4	.64	.59	.03	.01
B	Gutierrezia sarothrae	12	4	16	54	.01	.04	.11	2.35
B	Juniperus osteosperma	0	18	0	0	2.73	6.50	-	-
B	Opuntia sp.	4	1	0	0	.00	.00	-	-
B	Pinus edulis	0	12	0	0	3.24	7.62	-	-
B	Tetradymia canescens	1	0	0	2	.00	-	-	.00
Total for Browse		217	190	27	98	26.71	34.00	0.29	3.40

CANOPY COVER, LINE INTERCEPT--
Management unit 15, Study no: 12

Species	Percent Cover		
	'99	'04	'09
Artemisia tridentata wyomingensis	-	-	1.14
Cercocarpus montanus	-	-	.20
Eriogonum microthecum	-	.03	.01
Gutierrezia sarothrae	-	.01	1.75
Juniperus osteosperma	4.80	-	-
Pinus edulis	8.39	-	-

KEY BROWSE ANNUAL LEADER GROWTH--
Management unit 15, Study no: 12

Species	Average leader growth (in)
	'09
Artemisia tridentata wyomingensis	1.2
Cercocarpus montanus	1.4

POINT-QUARTER TREE DATA--
Management unit 15, Study no: 12

Species	Trees per Acre		
	'99	'04	'09
Juniperus osteosperma	128	<18	18
Pinus edulis	252	<18	<18

Average diameter (in)		
'99	'04	'09
2.1	-	1.6
3.2	-	-

BASIC COVER--
Management unit 15, Study no: 12

Cover Type	Average Cover %				
	'87	'94	'99	'04	'09
Vegetation	7.75	33.40	39.97	18.57	29.25
Rock	18.50	22.14	24.27	29.15	27.43
Pavement	2.25	2.52	6.59	7.19	6.70
Litter	57.00	30.12	35.56	25.75	35.61
Cryptogams	.25	.00	1.26	0	0
Bare Ground	14.25	12.17	12.61	31.50	19.21

SOIL ANALYSIS DATA --
Management unit 15, Study no: 12, Study Name: Quaking Aspen Spring

Effective rooting depth (in)	pH	sandy clay loam			%0M	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
12.3	7.5	51.3	22.2	26.6	2.1	6.6	44.8	0.6

PELLET GROUP DATA--
Management unit 15, Study no: 12

Type	Quadrat Frequency			
	'94	'99	'04	'09
Rabbit	17	28	16	34
Elk	-	-	2	1
Deer	9	16	2	10
Bison/Cattle	1	3	-	6

Days use per acre (ha)		
'99	'04	'09
-	-	-
-	-	1 (3)
118 (44)	1 (3)	25 (63)
3 (7)	-	24 (59)

BROWSE CHARACTERISTICS--
Management unit 15, Study no: 12

		Age class distribution				Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
Amelanchier utahensis									
87	**66**	100	0	-	199	100	0	0	-/-
94	**80**	25	75	-	-	0	0	0	32/51
99	**60**	0	100	-	-	0	100	0	34/45
04	**0**	0	0	-	-	0	0	0	29/36
09	**0**	0	0	-	-	0	0	0	26/44
Artemisia nova									
87	**12332**	23	64	12	4333	28	9	2	9/10
94	**14160**	5	74	21	360	0	.42	17	11/18
99	**12600**	6	72	22	60	18	.63	.79	12/19
04	**0**	0	0	0	-	0	0	0	-/-
09	**0**	0	0	0	-	0	0	0	-/-
Artemisia tridentata wyomingensis									
87	**0**	0	0	-	-	0	0	0	-/-
94	**0**	0	0	-	-	0	0	0	-/-
99	**0**	0	0	-	-	0	0	0	-/-
04	**60**	100	0	-	840	0	0	0	8/6
09	**960**	8	92	-	120	6	15	0	10/10
Atriplex canescens									
87	**0**	0	0	-	-	0	0	0	-/-
94	**0**	0	0	-	-	0	0	0	-/-
99	**0**	0	0	-	-	0	0	0	-/-
04	**20**	0	100	-	-	0	0	0	5/7
09	**0**	0	0	-	-	0	0	0	-/-
Cercocarpus montanus									
87	**799**	17	83	-	66	25	67	0	22/30
94	**440**	23	77	-	20	45	18	0	33/26
99	**400**	15	85	-	-	25	55	0	36/41
04	**160**	0	100	-	140	0	0	0	17/12
09	**160**	0	100	-	-	13	38	0	20/29

		Age class distribution				Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
Chrysothamnus depressus									
87	**1465**	14	77	9	333	9	14	0	6/6
94	**580**	14	83	3	120	0	0	0	4/7
99	**660**	12	79	9	40	9	0	6	4/9
04	**0**	0	0	0	-	0	0	0	-/-
09	**0**	0	0	0	-	0	0	0	-/-
Chrysothamnus nauseosus									
87	**0**	0	0	-	-	0	0	0	-/-
94	**120**	0	100	-	-	0	0	0	3/7
99	**0**	0	0	-	-	0	0	0	-/-
04	**0**	0	0	-	-	0	0	0	-/-
09	**20**	0	100	-	-	0	0	0	-/-
Coryphantha vivipara arizonica									
87	**0**	0	0	-	-	0	0	0	-/-
94	**0**	0	0	-	-	0	0	0	-/-
99	**0**	0	0	-	40	0	0	0	3/4
04	**0**	0	0	-	-	0	0	0	-/-
09	**0**	0	0	-	-	0	0	0	-/-
Eriogonum microthecum									
87	**1932**	31	69	0	799	28	0	0	5/4
94	**3380**	11	88	1	80	0	0	2	5/6
99	**1640**	11	60	29	-	38	2	2	3/5
04	**120**	0	100	0	-	0	0	0	4/9
09	**200**	70	30	0	220	0	0	0	2/3
Gutierrezia sarothrae									
87	**998**	13	80	7	199	0	0	7	7/6
94	**320**	6	63	31	-	0	0	6	8/7
99	**120**	50	33	17	60	0	0	0	5/5
04	**360**	39	61	0	20	0	0	0	6/5
09	**3300**	33	64	3	220	.60	0	2	8/10
Juniperus osteosperma									
87	**0**	0	0	-	-	0	0	0	-/-
94	**0**	0	0	-	-	0	0	0	-/-
99	**400**	60	40	-	40	0	0	0	-/-
04	**0**	0	0	-	-	0	0	0	-/-
09	**0**	0	0	-	-	0	0	0	-/-
Opuntia sp.									
87	**399**	0	100	-	-	0	0	0	6/9
94	**80**	25	75	-	-	0	0	0	-/-
99	**20**	0	100	-	-	0	0	0	6/15
04	**0**	0	0	-	-	0	0	0	-/-
09	**0**	0	0	-	-	0	0	0	2/5

		Age class distribution				Utilization			
Year	Plants per Acre (excluding seedlings)	% Young	% Mature	% Decadent	Seedling (plants/acre)	% moderate	% heavy	% poor vigor	Average Height Crown (in)
Pinus edulis									
87	**532**	88	12	-	-	0	0	0	55/43
94	**0**	0	0	-	-	0	0	0	-/-
99	**280**	21	79	-	20	0	0	0	-/-
04	**0**	0	0	-	-	0	0	0	-/-
09	**0**	0	0	-	-	0	0	0	-/-
Tetradymia canescens									
87	**0**	0	0	0	-	0	0	0	-/-
94	**20**	0	100	0	-	0	0	0	1/99
99	**0**	0	0	0	-	0	0	0	-/-
04	**0**	0	0	0	-	0	0	0	-/-
09	**40**	0	50	50	20	0	50	50	4/7