Trend Study 28-9-98

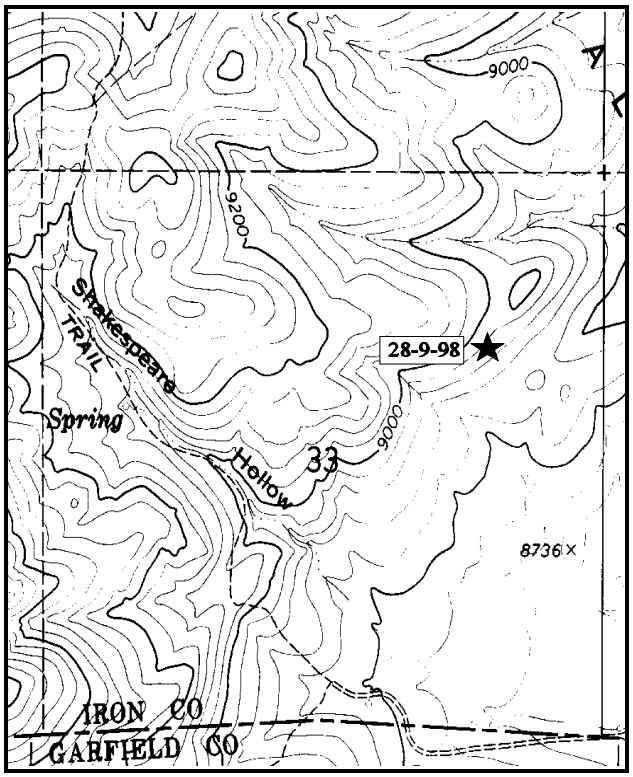
Study site name: Little Valley . Range type: Quaking Aspen .

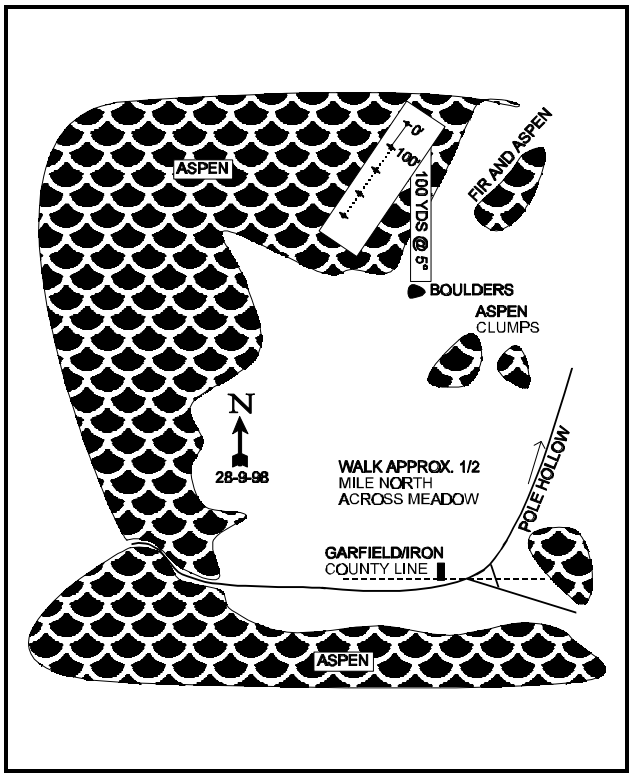
Compass bearing: frequency baseline 195 M degrees.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11 & 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

LOCATION DESCRIPTION

From Panguitch, go south towards Panguitch Lake. At mile marker 41, turn right onto a dirt road. Proceed up Pole Hollow 4.3 miles to the Five Mile Ridge Road. Continue straight 1.9 miles to a cattleguard. Continue 0.5 miles to a cattleguard and stockpond. Continue 1 mile to another cattleguard. Go 0.4 miles to a fork at the Iron County-Garfield County line. Bear right, go 50 yards, and park. The study is located on the hill to the northwest, so you must hike about 3/4 mile across the meadow, then up towards the aspens. Take a bearing from the large boulders in the meadow just below the large aspen stand. From here, walk north about 100 yards to 1st baseline stake, a short fencepost tagged #7845. The study runs basically southwest from here.





Map Name: Red Creek Reservoir Diagrammatic Sketch

Township 34S , Range 7W , Section 33 UTM 4186455.134 N, 355973.166 E

DISCUSSION

Trend Study No. 28-9 (47-9)

The Little Valley study was established to monitor use and trends in the aspen type. Elevation is 9,000 feet. Aspect is southeast with a slope of 5%. Scattered aspen clumps are found on the hillsides and in drainages above the large open meadows in the valleys. The stands are in differing stages of succession; from dense aspen regeneration in young stands, to decadent clumps with a grass understory and conifer invasion. The particular stand selected for the study is representative of the typical mixed browse-aspen stands in the area. At the time of study establishment, when cows were still on the allotment, cattle grazing had not impacted this stand as severely as the lower, more open stands closer to water. There were some signs of recent deer and elk use in 1992 and 1998.

This aspen grove is on a small bench surrounded by moderately steep and rocky slopes. Soil textural analysis indicates a sandy loam with a strongly acidic pH (5.3). The soil is deep with an average effective rooting depth (see methods) of almost 20 inches. Soil temperature was 42.4°F measured at nearly 18 inches. Percent organic matter content was high at an estimated 5.7%. Due to the high elevation and good precipitation, there is an abundance of vegetative cover. There is no evidence of erosion in the aspen, although surrounding areas showed signs of surface erosion and active gullies during the 1987 reading.

The key browse species in this type are aspen and snowberry. Aspen forms the dominant overstory with an estimated density of 5,798 plants/acre in 1987. During the 1987 reading, the density plots sampled two localized areas with particularly dense aspen regeneration. Consequently, the data showed 87% of the plants classified as young and a high percentage of seedlings. The young plants varied greatly in size, forage availability, and vigor. The average plants were 7-8 feet tall with available twigs being utilized. Most of the plants classified as decadent were suppressed seedlings or young trees. With the new larger sample size used in 1992, estimated density of aspen was lower at 3,200 plants/acre. Overall utilization was lighter and vigor and percent decadency improved. In 1998, aspen estimated density was 3,580 plants/acre. Utilization continues to be light and the sampled plants exhibit good vigor. The dead to live ratio is 1:4, with many of the tall aspen dead. The line intercept method indicates 39% aspen canopy cover, 10% white fir cover, and 3% Douglas fir cover in 1998.

Snowberry forms dense patches and had an overall density of 6,467 plants/acre in 1987. With the increased sample size used in 1992, the estimated density increased to 12,100 plants/acre with utilization considered light to moderate. In 1998, snowberry density decreased to an estimated 8,380 plants/acre. As in the past, these plants show light utilization and excellent vigor. Wood's rose density increased in 1992 with the increased sample size to an estimated density of 3,980 plants/acre. Over 75% of the plants encountered in 1992 were classified as seedling or young plants, indicating an increasing population. In 1998, density decreased to 1,380 plants/acre, nearly all of which were classified as mature. Other notable species are the preferred serviceberry and curlleaf mountain mahogany. Both of these species are relative uncommon in the aspen, but mature plants are dominant on the nearby rocky slopes above the site, along with big sagebrush, bitterbrush, and currant.

Grasses, along with the other herbaceous vegetation, form a lush and diverse understory and excellent ground cover. Ten grass species and one sedge were identified under the dense aspen canopy. The most common species are mountain brome, muttongrass, Carex, Kentucky bluegrass, and needlegrass, all of which are valuable, palatable forage plants. Fringed brome currently provides the most grass cover. A good diversity of forbs also occur on the site with 26 species encountered on the frequency belts in 1992 and 28 species encountered in 1998. Common plants that provide forage throughout the area are dandelion, yarrow, and salsify. Perennial herbaceous understory sum of nested frequency shows a steadily decline from 1987 to 1998.

1987 APPARENT TREND ASSESSMENT

The combination of a dense herbaceous understory and a fairly complete overstory of shrubs and aspen trees allows the buildup of an almost complete ground covering of litter. The percentage of vegetative cover is also high, leaving only 1% bare soil. Key browse species consisting of aspen and snowberry appear to have increasing populations. Herbaceous plants are abundant and diverse providing good forage for livestock and wildlife.

1992 TREND ASSESSMENT

Ground cover estimates show increased bare ground and rock cover and significantly less litter cover. Much of these differences are due to the increased sample size which distributed the frequency belts over a much larger area. All soil evaluations still point to a stable trend with no erosion occurring. Browse is diverse and abundant. Key species have increased with the exception of aspen. The decline in aspen is most likely due to the larger sample size and not a real decline in population density. Overall, trend for browse is up. The herbaceous understory is also diverse and abundant. Sum of nested frequency for grasses have increased slightly while those of forbs have declined. This would be expected, for forbs are usually the group of plants that are the first effected most by prolonged drought. Combined sum nested frequencies of grasses and forbs have declined slightly but the trend is stable.

TREND ASSESSMENT
soil - stable
browse - up
herbaceous understory - stable

1998 TREND ASSESSMENT

The soil trend is stable with abundant ground cover to protect against any erosion. The browse trend is stable with little change in the key species. The browse species appear to be excluding herbaceous understory species at this time. The herbaceous understory trend is downward. It was noted that this is a poor aspen site for a big game range trend study. The site should be moved to the edge of the aspen where more grasses and forbs are found. It appears that the overstory of browse and trees are suppressing the herbaceous understory species. Although the herbaceous understory is still diverse and provides abundant cover, there is an overall downward trend with a decrease in perennial herbaceous sum of nested frequency values.

TREND ASSESSMENT
soil - stable
browse - stable
herbaceous understory - downward

HERBACEOUS TRENDS --
Herd unit 28 , Study no: 9

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'87	'92	'98	'87	'92	'98	'92	'98
G	Agropyron trachycaulum	$_{a}$10	$_{b}$75	$_{a}$27	5	33	14	1.12	.53
G	Bromus carinatus	124	95	99	47	39	38	1.99	2.40
G	Bromus ciliatus	$_{b}$92	$_{a}$25	$_{a}$14	36	11	5	.52	7.81
G	Carex spp.	$_{a}$33	$_{b}$87	$_{a}$42	14	37	18	1.52	2.05
G	Oryzopsis hymenoides	$_{a}$-	$_{b}$2	$_{ab}$2	-	1	1	.15	.06

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'87	'92	'98	'87	'92	'98	'92	'98
G	Poa fendleriana	$_{a}$23	$_{b}$50	50	10	22	21	1.42	1.80
G	Poa pratensis	$_{b}$63	$_{a}$19	$_{ab}$32	24	12	13	.62	.26
G	Sitanion hystrix	19	31	14	7	14	7	.59	.11
G	Stipa columbiana	$_{b}$37	$_{b}$47	$_{a}$10	18	20	4	1.09	.09
G	Stipa comata	$_{c}$49	$_{b}$27	$_{a}$8	20	11	4	1.48	.19
G	Stipa lettermani	$_{a}$-	$_{b}$11	$_{b}$21	-	5	7	.10	.40
G	Unknown grass - perennial	5	3	-	2	1	-	.00	-
Total Annual Grasses		0	124	194	0	45	72	2.26	2.14
Total Perennial Grasses		455	348	125	183	161	60	8.39	13.60
F	Achillea millefolium	$_{b}$63	$_{ab}$48	$_{a}$36	25	19	13	1.64	1.30
F	Agoseris glauca	13	19	23	7	9	9	.31	.16
F	Antennaria rosea	-	-	3	-	-	2	-	.18
F	Androsace septentrionalis (a)	-	-	3	-	-	1	-	.00
F	Antennaria spp.	3	-	-	2	-	-	-	-
F	Artemesia biennis	-	-	2	-	-	1	-	.03
F	Artemisia dracunculus	$_{a}$-	$_{ab}$4	$_{b}$9	-	2	4	.01	.02
F	Artemisia ludoviciana	21	38	34	9	14	15	.19	.79
F	Aster chilensis	$_{b}$34	$_{b}$55	$_{a}$3	14	18	1	1.31	.18
F	Astragalus miser	$_{b}$78	$_{a}$41	$_{a}$22	36	19	11	1.00	.90
F	Castilleja linariaefolia	-	3	2	-	2	1	.03	.03
F	Cirsium wheeleri	$_{a}$-	$_{b}$20	$_{c}$42	-	9	21	.84	1.31
F	Collomia linearis (a)	-	$_{a}$1	$_{b}$43	-	1	19	.00	.64
F	Collinsia parviflora (a)	-	-	2	-	-	1	-	.00
F	Crepis spp.	$_{a}$-	$_{b}$13	$_{a}$-	-	7	-	.53	-
F	Cymopterus spp.	$_{b}$17	$_{a}$-	$_{a}$-	9	-	-	-	-
F	Eriogonum cernuum (a)	-	-	1	-	-	1	-	.15
F	Eriogonum elatum	$_{a}$-	$_{b}$19	$_{a}$-	-	7	-	.28	-
F	Erigeron flagellaris	$_{b}$59	$_{a}$12	$_{a}$19	26	6	8	.57	.14
F	Erigeron spp.	-	-	11	-	-	5	-	.10
F	Fragaria virginiana	$_{b}$36	$_{a}$6	$_{b}$20	13	2	11	.18	1.99
F	Gentianella heterosepala	$_{a}$-	$_{b}$24	$_{ab}$3	-	9	1	.69	.03
F	Geranium spp.	13	5	2	6	3	1	.18	.03
F	Ligusticum porteri	$_{a}$-	$_{b}$9	$_{b}$16	-	5	8	.37	.95
F	Lupinus argenteus	-	-	5	-	-	2	-	.03
F	Lychnis drummondii	-	3	3	-	1	1	.00	.03
F	Penstemon spp.	2	-	1	2	-	1	-	.03
F	Potentilla gracilis	-	3	-	-	1	-	.03	-
F	Polygonum spp.	-	4	-	-	2	-	.01	-
F	Smilacina racemosa amplexicaulis	-	-	-	-	-	-	-	.00

Type	Species	Nested Frequency '87	Nested Frequency '92	Nested Frequency '98	Quadrat Frequency '87	Quadrat Frequency '92	Quadrat Frequency '98	Average Cover % '92	Average Cover % '98
F	Taraxacum officinale	$_{b}$171	$_{a}$93	$_{a}$61	63	37	29	1.95	2.18
F	Thalictrum fendleri	32	26	21	15	14	9	1.09	2.54
F	Tragopogon dubius	28	19	22	12	8	12	.28	.39
F	Trifolium longipes	40	32	21	17	13	9	.36	.24
F	Verbascum thapsus	-	3	-	-	2	-	.06	-
F	Viguiera multiflora	$_{a}$-	$_{b}$8	$_{b}$8	-	5	5	.34	.12
Total Annual Forbs		0	1	49	0	1	22	0	0.79
Total Perennial Forbs		610	507	389	256	214	180	12.31	13.76

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

BROWSE TRENDS --
Herd unit 28 , Study no: 9

Type	Species	Strip Frequency '92	Strip Frequency '98	Average Cover % '92	Average Cover % '98
B	Abies concolor	2	2	1.00	.63
B	Amelanchier utahensis	14	11	.34	.66
B	Artemisia tridentata wyomingensis	0	0	-	-
B	Cercocarpus ledifolius	4	5	.63	.04
B	Chrysothamnus nauseosus	0	5	-	.30
B	Chrysothamnus viscidiflorus	8	7	.45	.71
B	Juniperus communis	18	22	12.09	6.53
B	Mahonia repens	17	10	1.61	1.55
B	Pachistima myrsinites	6	3	.63	1.27
B	Pinus edulis	1	1	.78	.15
B	Populus tremuloides	62	68	38.28	5.55
B	Prunus virginiana	0	2	-	-
B	Pseudotsuga menziesii	3	0	4.63	-
B	Quercus gambelii	0	0	-	-
B	Ribes spp.	3	5	-	.21
B	Rosa woodsii	30	21	4.44	2.13
B	Symphoricarpos oreophilus	87	79	15.53	21.54
Total for Browse		255	241	80.44	41.31

CANOPY COVER --
Herd unit 28 , Study no: 9

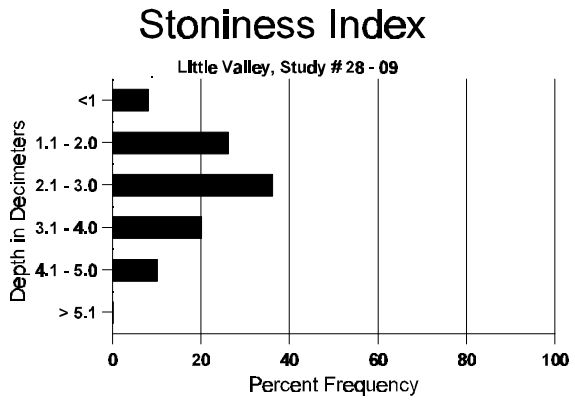
Species	Percent Cover '98
Abies concolor	10
Populus tremuloides	39
Pseudotsuga menziesii	3

BASIC COVER --
Herd unit 28 , Study no: 9

Cover Type	Nested Frequency		Average Cover %		
	‘92	'98	'87	'92	'98
Vegetation	274	330	7.25	76.78	62.60
Rock	23	36	0	2.66	1.11
Pavement	20	20	0	0	1.00
Litter	232	399	91.50	82.80	90.13
Cryptogams	-	-	0	0	0
Bare Ground	32	42	1.25	3.47	4.39

SOIL ANALYSIS DATA --
Herd Unit 28, Study # 09, Study Name: Little Valley

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
19.8	42.4 (17.7)	5.3	58.7	23.4	17.8	5.7	28.8	291.2	.5



PELLET GROUP FREQUENCY --
Herd unit 28 , Study no: 9

Type	Quadrat Frequency	
	‘92	'98
Rabbit	6	-
Elk	5	-
Deer	6	-
Cattle	1	-

BROWSE CHARACTERISTICS --
Herd unit 28 , Study no: 9

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Abies concolor																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	+ 0%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'87	0	-
	'92	40	-
	'98	40	-

Amelanchier utahensis																		
S	87	5	1	-	-	-	-	-	-	-	6	-	-	-	400			6
	92	2	-	-	3	-	-	-	-	-	5	-	-	-	100			5
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	14	2	1	-	-	-	-	-	-	16	1	-	-	1133			17
	92	12	15	-	15	3	-	-	-	-	38	3	4	-	900			45
	98	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	87	-	1	-	-	-	-	-	-	-	1	-	-	-	66	63	28	1
	92	1	5	-	-	-	-	1	-	-	7	-	-	-	140	-	-	7
	98	17	1	-	1	-	-	-	-	-	19	-	-	-	380	35	19	19

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	17%	06%	00%	-13%
'92	44%	00%	08%	-58%
'98	05%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'87	1199	-
	'92	1040	-
	'98	440	-

Artemisia tridentata wyomingensis																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	13	15	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'87	0	-
	'92	0	-
	'98	0	-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus ledifolius																		
Y	87	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	92	-	2	2	1	-	-	-	-	-	5	-	-	-	100			5
	98	1	-	-	-	-	-	-	1	-	2	-	-	-	40			2
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	6	1	-	-	-	-	-	-	-	7	-	-	-	140	55	27	7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	100%	00%	00%	+34%
'92	40%	40%	00%	+44%
'98	11%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'87	66	-
	'92	100	-
	'98	180	-

Chrysothamnus nauseosus																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	2	-	-	4	-	-	-	-	-	6	-	-	-	120	19	18	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'87	0	-
	'92	0	-
	'98	120	-

Chrysothamnus viscidiflorus																		
S	87	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	92	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	7	-	-	-	-	-	-	-	-	7	-	-	-	466	17	5	7
	92	6	-	-	4	-	-	-	-	-	10	-	-	-	200	-	-	10
	98	7	-	-	1	-	-	-	-	-	8	-	-	-	160	13	18	8
D	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	-72%
'92	00%	00%	00%	-33%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'87	865	8%
	'92	240	0%
	'98	160	0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus communis																		
S	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	92	3	-	-	3	-	-	1	-	-	7	-	-	-	140			7
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	3	-	-	1	-	-	-	-	-	4	-	-	-	80			4
M	87	3	-	-	-	-	-	-	-	-	3	-	-	-	200	27	105	3
	92	7	-	-	20	-	-	7	-	-	34	-	-	-	680	-	-	34
	98	23	-	-	4	-	-	-	1	-	28	-	-	-	560	23	53	28

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	+71%
'92	00%	00%	00%	- 6%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	200	Dec:	-
'92	680		-
'98	640		-

Mahonia repens																		
S	87	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	92	51	-	-	80	-	-	24	-	-	134	-	21	-	3100			155
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	195	-	-	-	-	-	-	-	-	195	-	-	-	13000	6	16	195
	92	67	-	-	26	-	-	-	-	-	93	-	-	-	1860	-	-	93
	98	66	-	-	13	-	-	-	-	-	79	-	-	-	1580	4	22	79

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	-62%
'92	00%	00%	08%	-68%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'87	13133	Dec:	-
'92	4960		-
'98	1580		-

Pachistima myrsinites																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	-	-	20	-	-	4	-	-	25	-	-	-	500			25
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	27	43	-	-	-	-	57	-	-	127	-	-	-	2540	-	-	127
	98	150	-	-	-	-	-	-	-	-	150	-	-	-	3000	6	10	150

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	28%	00%	00%	- 1%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'87	0	Dec:	-
'92	3040		-
'98	3000		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus edulis																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	1	-	-	-	-	-	-	-	-	1	-	-	20	-	-	1
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	100%	00%	00%	+ 0%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:	-
'92	20		-
'98	20		-

AGE	YR	1	2	3	4	5	6	7	8	9	1	2	3	4	Plants Per Acre	Ht.	Cr.	Total
Populus tremuloides																		
S	87	33	9	-	-	-	-	-	-	-	39	-	3	-	2800			42
	92	38	7	-	41	-	-	-	-	-	84	2	-	-	1720			86
	98	17	-	-	1	-	-	-	-	-	18	-	-	-	360			18
Y	87	6	17	15	1	-	-	-	37	-	73	-	2	1	5066			76
	92	61	16	2	11	-	-	3	42	-	119	8	8	-	2700			135
	98	102	-	-	15	-	-	1	-	-	118	-	-	-	2360			118
M	87	-	-	-	-	-	-	-	1	-	1	-	-	-	66	393	157	1
	92	1	-	-	-	-	-	1	15	-	17	-	-	-	340	-	-	17
	98	6	-	-	-	-	-	-	54	-	60	-	-	-	1200	-	-	60
D	87	5	4	1	-	-	-	-	-	-	7	-	2	1	666			10
	92	4	1	-	2	-	-	1	-	-	6	-	2	-	160			8
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	1020			51

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	24%	18%	07%	-45%
'92	11%	01%	06%	+11%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'87	5798	Dec:	11%
'92	3200		5%
'98	3580		1%

AGE	YR	1	2	3	4	5	6	7	8	9	1	2	3	4	Plants Per Acre	Ht.	Cr.	Total
Prunus virginiana																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	1	-	-	2	-	-	-	-	-	3	-	-	-	60	25	11	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'87	0	Dec:	-
'92	0		-
'98	60		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pseudotsuga menziesii																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	2	-	-	2	-	-	-	40	-	-	2
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:	-
'92	60		-
'98	0		-

Quercus gambelii																		
Y	87	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	61	17	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	100%	00%	00%	
'92	00%	00%	00%	
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'87	66	Dec:	-
'92	0		-
'98	0		-

Ribes spp.																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66	57	26	1
	92	3	-	-	-	-	-	-	-	-	3	-	-	-	60	-	-	3
	98	4	-	-	1	-	-	-	-	-	5	-	-	-	100	53	29	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	+18%
'92	00%	00%	00%	+20%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'87	66	Dec:	-
'92	80		-
'98	100		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Rosa woodsii																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	-	2	-	-	-	-	-	-	-	2	-	-	-	133			2
	92	93	21	-	28	-	-	11	-	-	153	-	-	-	3060			153
	98	7	-	-	4	-	-	-	-	-	11	-	-	-	220			11
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	18	19	-	7	-	-	2	-	-	46	-	-	-	920	-	-	46
	98	44	-	-	14	-	-	-	-	-	55	3	-	-	1160	19	15	58

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	100%	00%	00%	+97%
'92	20%	00%	00%	-65%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'87	133	-
	'92	3980	-
	'98	1380	-

Symphoricarpos oreophilus																		
S	87	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	92	9	-	-	10	-	-	6	-	-	25	-	-	-	500			25
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	23	4	-	-	-	-	-	-	-	26	1	-	-	1800			27
	92	78	14	-	111	-	-	11	-	-	214	-	-	-	4280			214
	98	22	5	-	12	-	-	-	-	-	39	-	-	-	780			39
M	87	53	14	-	-	-	-	-	-	-	67	-	-	-	4466	24	26	67
	92	247	15	-	124	-	-	5	-	-	391	-	-	-	7820	-	-	391
	98	282	1	-	97	-	-	-	-	-	380	-	-	-	7600	21	31	380
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	19%	00%	00%	+48%
'92	05%	00%	00%	-31%
'98	01%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'87	6266	-
	'92	12100	-
	'98	8380	-