

FARM CREEK - TREND STUDY NO. 9-17-10

Vegetation Type: Mountain Big Sagebrush

Range Type: Crucial Deer Winter, Crucial Elk Winter

NRCS Ecological Site Description: Not Available

Land Ownership: USFS

Elevation: 7100 ft. (2165 m)

Aspect: South

Slope: 5%-6%

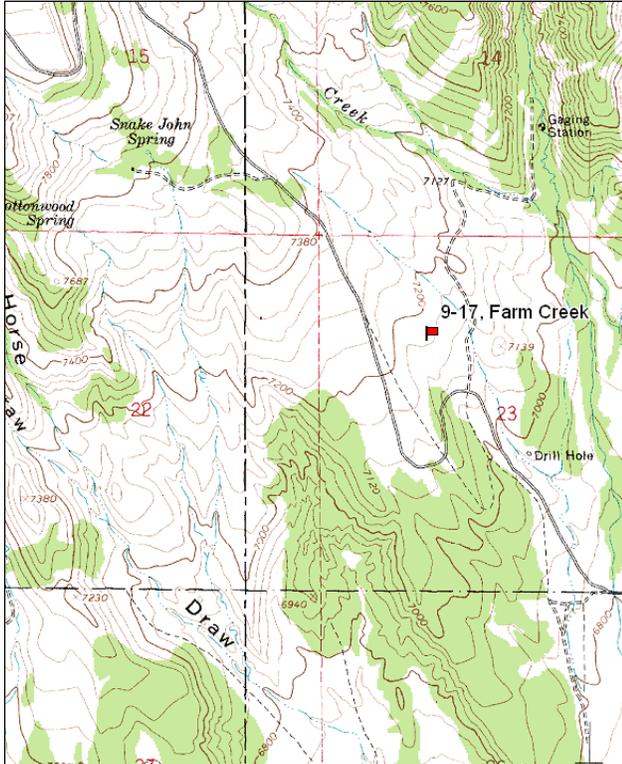
Transect bearing: 322° magnetic

Belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

Directions:

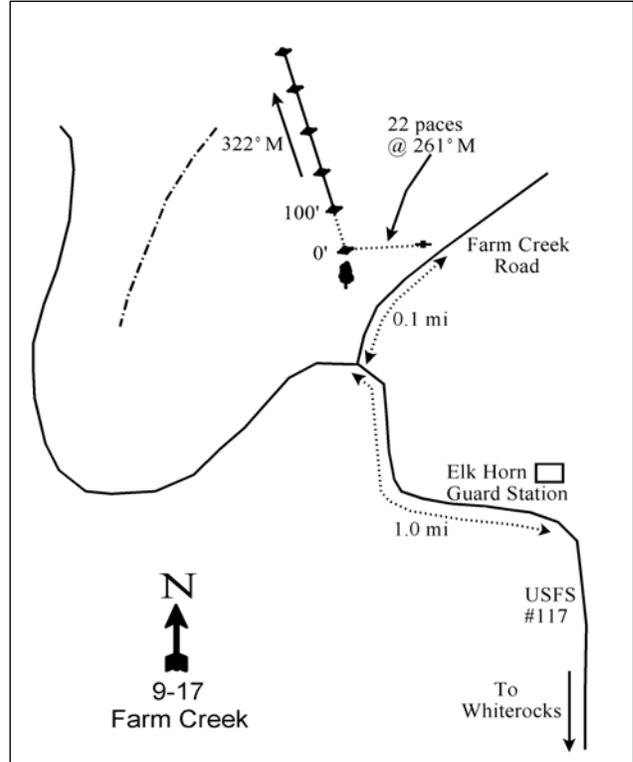
From Whiterocks, drive east on 11500 N (Tridell Hwy) to the junction of 5500 E (Whiterocks Loop Rd). Turn left (north) and drive 7.9 miles to the Elkhorn Guard Station located north of Whiterocks. The main road will bend west. Continue on this Forest Service road (Farm Creek Road) for 1 mile. At the first switchback turn right (north) and travel 0.1 miles to the witness located on the left (west) side of the road. From the witness post walk 22 paces at 261°M to the 0-foot baseline stake.

Map Name: Ice Cave Peak



Township: 2N Range: 1W Section: 23

Diagrammatic Sketch:



GPS: NAD 83, UTM 12T 587537 E 4490307 N

## FARM CREEK - TREND STUDY NO. 9-17

### Site Information

Site Description: The study monitors a mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and grass community in the Ashley National Forest. In the summer of 2007, the Neola North wildfire burned 43,806 acres in the area, including the site, effectively removing the browse component from the site. Some of the surrounding area was seeded in a rehabilitation effort following the fire, but the study site was not included in the seeding. The area is managed by the U.S. Forest Service as part of the Farm Creek/Buck Ridge allotment. Pellet group transect data estimated lightly moderate use by deer in 2000 with light use in 2005 and 2010. Estimated use by elk has been minimal since 2000. Cattle use was light in 2000 and moderate in 2005, but there was no cattle sign sampled in 2010 (Table - Pellet Group Data).

Browse: The dominant browse species on the site are mountain big sagebrush and antelope bitterbrush (*Purshia tridentata*), but the fire decreased both species markedly. Prior to the fire, mountain big sagebrush was comprised of a dense stand with a mixture of young, mature and decadent plants. Sagebrush plants were vigorous with light to moderate use. Following the fire, sagebrush was comprised of a small population with a mixture of young and small mature plants. The sagebrush plants displayed more moderate use, but decadence decreased. The more preferred antelope bitterbrush displayed heavy use prior to the fire, but more moderate use following the fire. The fire also reduced the density of bitterbrush substantially, but the small surviving population appears healthy with low decadence and good vigor. Other browse species include pricklypear cactus (*Opuntia* sp.), mountain low rabbitbrush (*Chrysothamnus viscidiflorus* ssp. *lanceolatus*) and broom snakeweed (*Gutierrezia sarothrae*). Pricklypear and broom snakeweed have decreased in density since the fire, but low rabbitbrush increased slightly in density (Table - Browse Characteristics).

Herbaceous Understory: Crested wheatgrass (*Agropyron cristatum*) dominates the herbaceous understory. The fire appeared to have little effect on the crested wheatgrass component. Bulbous bluegrass (*Poa bulbosa*) has fluctuated on the site, but has been abundant at times. Cheatgrass (*Bromus tectorum*) is also present, but in low numbers. Both bulbous bluegrass and cheatgrass should be watched closely for increases in abundance. Forbs are diverse, but prior to the fire provided little cover. Following the fire, cover and frequency of forbs increased substantially, primarily due to a large increase in scarlet globemallow (*Sphaeralcea coccinea*) (Table - Herbaceous Trends).

Soil: Soils are sandy loam in texture with a neutral soil reaction (pH 6.8). Bare ground had steadily increased from 1995 to 2005, but remained fairly low even after the fire. Vegetation and litter are abundant providing good protective cover (Table - Basic Cover). The soil erosion condition was classified as stable in 2005 and 2010.

### Trend Assessments

#### Browse:

- **1995 to 2000 - slightly up (+1):** There was little change in the density of bitterbrush, but cover increased from 7% to 11%. The density of mountain big sagebrush increased by 24% from 2,860 plants/acre to 3,560 plants/acre, and cover increased from 13% to 15%. However, decadence of sagebrush also increased from 1% to 29%.
- **2000 to 2005 - slightly down (-1):** The density of mountain big sagebrush decreased by 13% to 3,100 plants/acre, but cover remained similar. Decadence remained the same at 29%, but poor vigor increased from 1% to 15%. Bitterbrush density remained similar, but cover decreased to 8%.
- **2005 to 2010 - down (-2):** The fire removed much of the browse from the site.

#### Grass:

- **1995 to 2000 - stable (0):** There was little change in the sum of nested frequency of perennial grasses, but cover increased from 21% to 28%.

- **2000 to 2005 - stable (0):** The sum of nested frequency of perennial grasses increased by 13%, but much of that was due to a significant increase in the nested frequency of bulbous bluegrass. Cover of perennial grasses decreased slightly to 23%.
- **2005 to 2010 - slightly down (-1):** The perennial grass sum of nested frequency decreased by 26% and cover decreased to 17%. Again, much of the decrease was due to a significant decrease in the nested frequency of bulbous bluegrass as well as crested wheatgrass, with a subsequent decrease in cover.

Forb:

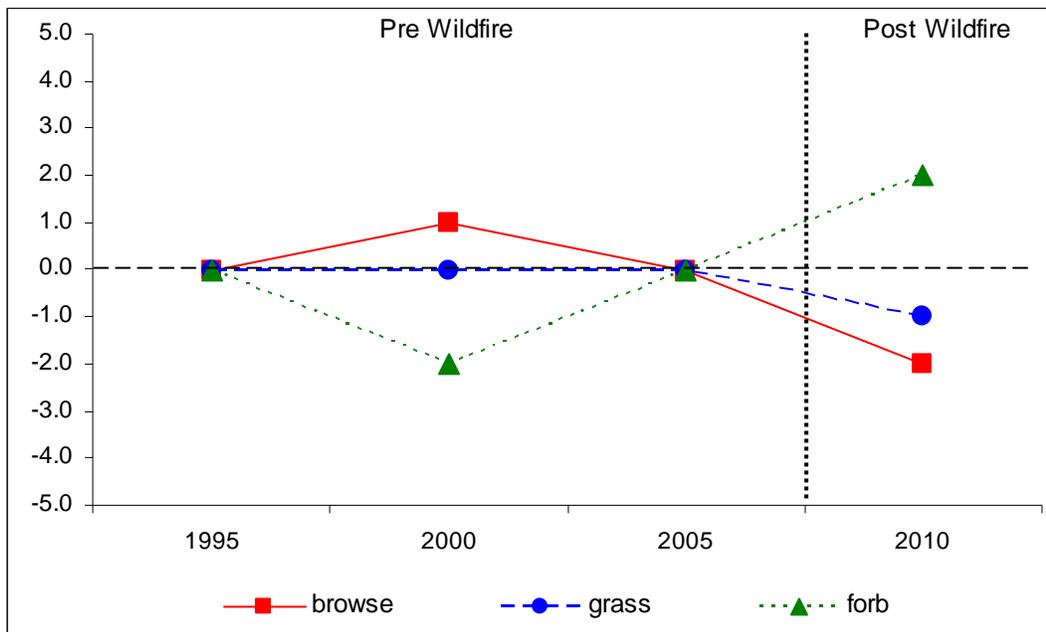
- **1995 to 2000 - down (-2):** The sum of nested frequency of perennial forbs decreased by 57%, but cover remained similar. Forbs were rare on the site.
- **2000 to 2005 - up (+2):** The perennial forb sum of nested frequency increased two-fold, though again, cover remained similar.
- **2005 to 2010 - up (+2):** There was a 97% increase in the sum of nested frequency of perennial forbs and cover increased from 2% to 8%. Much of the increase was due to a significant increase in the nested frequency of scarlet globemallow.

DEER DESIRABLE COMPONENTS INDEX - MID-LEVEL POTENTIAL SCALE --  
Management unit 9, study no: 17

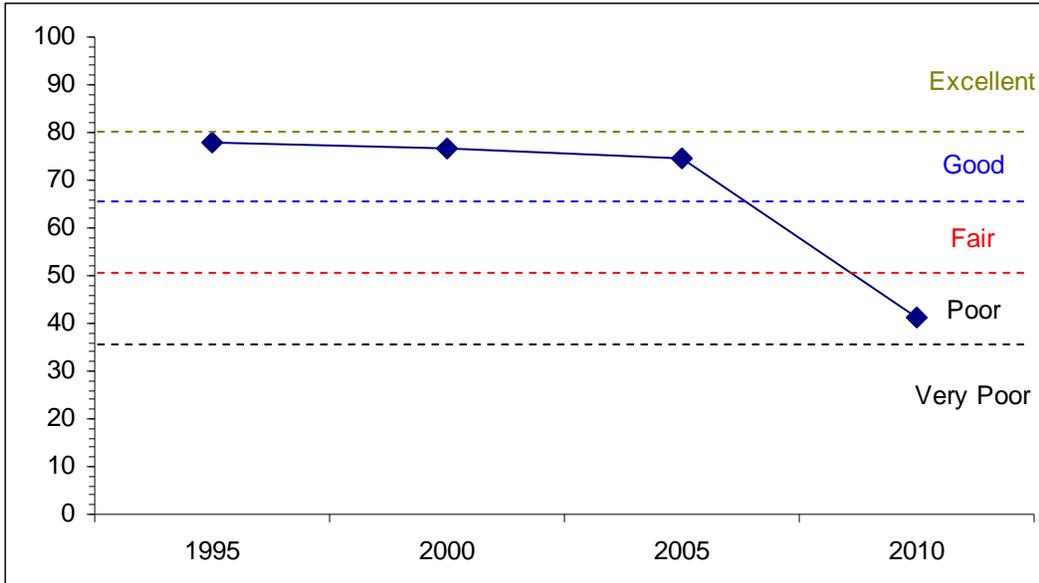
Year	Preferred Browse Cover	Preferred Browse Decadence	Preferred Browse Young	Perennial Grass Cover	Annual Grass Cover	Perennial Forb Cover	Noxious Weeds	Total Score	Ranking
95	26.4	13.5	5.4	30.0	0.0	2.6	0.0	<b>77.8</b>	Good
00	30.0	8.5	5.1	30.0	0.0	3.0	0.0	<b>76.6</b>	Good
05	30.0	8.4	3.3	30.0	-0.6	3.2	0.0	<b>74.4</b>	Good
10	1.8	0.0	0.0	30.0	-0.7	10.0	0.0	<b>41.1</b>	Poor

**Trend Summary**

CUMULATIVE RANGE TREND ASSESSMENT--  
Management unit 9, Study no: 17



DEER DESIRABLE COMPONENTS INDEX TREND, MID-LEVEL POTENTIAL--  
 Management unit 9, Study no: 17



HERBACEOUS TRENDS--  
 Management unit 09, Study no: 17

Type	Species	Nested Frequency				Average Cover %			
		'95	'00	'05	'10	'95	'00	'05	'10
G	<i>Agropyron cristatum</i>	bc387	c405	ab367	a319	17.89	26.90	17.95	16.35
G	<i>Agropyron dasystachyum</i>	a3	ab8	ab13	b18	.00	.05	.07	.11
G	<i>Bromus tectorum</i> (a)	b17	a-	c43	c67	.05	-	.77	.87
G	<i>Festuca ovina</i>	-	-	2	-	-	-	.03	-
G	<i>Poa bulbosa</i>	b85	ab51	c137	a49	2.67	.85	5.15	.72
G	<i>Poa fendleriana</i>	5	8	7	4	.06	.04	.06	.15
G	<i>Poa pratensis</i>	5	-	-	-	.03	-	-	-
G	<i>Poa secunda</i>	2	-	6	6	.00	-	.04	.04
Total for Annual Grasses		17	0	43	67	0.05	0	0.76	0.87
Total for Perennial Grasses		487	472	532	396	20.67	27.85	23.32	17.38
Total for Grasses		504	472	575	463	20.72	27.85	24.09	18.26
F	<i>Agoseris glauca</i>	-	-	3	3	-	-	.03	.03
F	<i>Allium</i> sp.	b20	a-	b25	b15	.06	-	.14	.11
F	<i>Antennaria rosea</i>	-	4	1	2	-	.38	.03	.03
F	<i>Arabis</i> sp.	b14	a3	ab11	a1	.06	.00	.03	.00
F	<i>Artemisia ludoviciana</i>	b27	a7	ab20	b33	.18	.18	.09	.62
F	<i>Astragalus convallarius</i>	7	2	6	8	.21	.03	.12	.14
F	<i>Balsamorhiza hookeri</i>	4	3	5	-	.01	.06	.21	-
F	<i>Calochortus nuttallii</i>	-	-	2	-	-	-	.00	-
F	<i>Castilleja linariaefolia</i>	1	-	-	-	.00	-	.00	-
F	<i>Chenopodium leptophyllum</i> (a)	-	-	-	1	-	-	-	.00
F	<i>Collinsia parviflora</i> (a)	-	4	-	-	-	.00	-	-
F	<i>Collomia linearis</i> (a)	c48	a-	b5	a-	.16	-	.03	-
F	<i>Conyza canadensis</i> (a)	6	-	-	-	.01	-	-	-

Type	Species	Nested Frequency				Average Cover %			
		'95	'00	'05	'10	'95	'00	'05	'10
F	Cryptantha sp.	5	-	-	6	.01	-	-	.02
F	Delphinium nuttallianum	-	-	1	-	-	-	.03	-
F	Descurainia pinnata (a)	a <sup>-</sup>	a <sup>-</sup>	a <sup>2</sup>	b <sup>23</sup>	-	-	.00	.31
F	Draba reptans (a)	b <sup>64</sup>	a <sup>1</sup>	b <sup>37</sup>	a <sup>-</sup>	.11	.00	.10	-
F	Erigeron eatonii	a <sup>-</sup>	ab <sup>6</sup>	ab <sup>3</sup>	b <sup>11</sup>	-	.01	.03	.50
F	Erigeron flagellaris	a <sup>4</sup>	b <sup>13</sup>	a <sup>-</sup>	a <sup>-</sup>	.00	.22	-	-
F	Eriogonum racemosum	10	4	9	14	.14	.07	.15	.49
F	Grindelia squarrosa	-	-	-	12	-	-	-	.19
F	Heterotheca villosa	12	5	5	14	.33	.18	.01	.23
F	Lactuca serriola	a <sup>2</sup>	a <sup>-</sup>	a <sup>-</sup>	b <sup>29</sup>	.00	-	-	.19
F	Lappula occidentalis (a)	a <sup>9</sup>	a <sup>-</sup>	a <sup>5</sup>	b <sup>55</sup>	.02	-	.01	.43
F	Lepidium densiflorum (a)	c <sup>55</sup>	a <sup>-</sup>	c <sup>66</sup>	b <sup>19</sup>	.17	-	.24	.11
F	Lithospermum ruderales	-	4	3	13	.03	.18	.15	.53
F	Lomatium sp.	3	-	2	2	.01	-	.01	.00
F	Lupinus argenteus	-	4	3	3	-	.04	.03	.03
F	Microsteris gracilis (a)	1	-	-	5	.00	-	-	.01
F	Orobancha sp.	2	-	-	-	.00	-	-	-
F	Penstemon sp.	-	-	3	-	-	-	.00	-
F	Phlox longifolia	14	-	6	-	.02	-	.01	-
F	Polygonum douglasii (a)	c <sup>49</sup>	a <sup>-</sup>	a <sup>5</sup>	b <sup>35</sup>	.12	-	.01	.22
F	Schoenocrambe linifolia	a <sup>9</sup>	a <sup>-</sup>	a <sup>7</sup>	b <sup>33</sup>	.01	-	.01	.63
F	Sphaeralcea coccinea	a <sup>21</sup>	a <sup>11</sup>	a <sup>18</sup>	b <sup>92</sup>	.10	.12	.29	3.75
F	Tragopogon dubius	ab <sup>1</sup>	a <sup>-</sup>	a <sup>-</sup>	b <sup>14</sup>	.00	-	-	.12
F	Trifolium gymnocarpon	ab <sup>9</sup>	a <sup>3</sup>	b <sup>20</sup>	a <sup>2</sup>	.05	.03	.13	.00
F	Zigadenus paniculatus	1	2	3	-	.00	.00	.03	-
Total for Annual Forbs		232	5	120	138	0.60	0.00	0.40	1.10
Total for Perennial Forbs		166	71	156	307	1.30	1.51	1.58	7.67
Total for Forbs		398	76	276	445	1.90	1.52	1.99	8.77

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

#### BROWSE TRENDS--

Management unit 09, Study no: 17

Type	Species	Strip Frequency				Average Cover %			
		'95	'00	'05	'10	'95	'00	'05	'10
B	Amelanchier utahensis	1	1	1	1	-	-	-	-
B	Artemisia tridentata vaseyana	66	77	76	5	13.01	15.14	14.89	.00
B	Chrysothamnus viscidiflorus lanceolatus	2	0	0	7	-	-	-	.03
B	Gutierrezia sarothrae	14	26	22	22	.04	.88	.09	.62
B	Opuntia sp.	21	18	19	9	.39	.16	.13	.00
B	Pediocactus simpsonii	2	1	2	0	-	-	.00	-
B	Purshia tridentata	51	54	53	10	6.77	11.37	8.26	1.17
Total for Browse		51	105	107	63	20.23	27.55	23.39	1.84

CANOPY COVER, LINE INTERCEPT--

Management unit 09, Study no: 17

Species	Percent Cover	
	'05	'10
Amelanchier utahensis	.11	-
Artemisia tridentata vaseyana	21.06	.78
Chrysothamnus viscidiflorus lanceolatus	-	1.38
Gutierrezia sarothrae	.30	1.43
Opuntia sp.	.11	.31
Purshia tridentata	7.51	.10

KEY BROWSE ANNUAL LEADER GROWTH--

Management unit 09, Study no: 17

Species	Average leader growth (in)	
	'05	'10
Artemisia tridentata vaseyana	2.2	-
Purshia tridentata	3.8	2.8

BASIC COVER--

Management unit 09, Study no: 17

Cover Type	Average Cover %			
	'95	'00	'05	'10
Vegetation	45.22	52.87	48.65	31.39
Rock	10.75	10.65	10.05	13.55
Pavement	.50	.92	.28	.91
Litter	56.27	58.82	38.82	50.70
Cryptogams	.39	1.21	.23	.01
Bare Ground	7.24	11.98	16.14	15.78

SOIL ANALYSIS DATA --

Management unit 9, Study no: 17, Study Name: Farm Creek

Effective rooting depth (in)	pH	sandy loam			%OM	PPM P	PPM K	ds/m
		%sand	%silt	%clay				
10.6	6.8	58.9	22.8	18.3	3.7	19.2	211.2	1.0

PELLET GROUP DATA--

Management unit 09, Study no: 17

Type	Quadrat Frequency			
	'95	'00	'05	'10
Rabbit	10	16	10	2
Elk	4	2	2	2
Deer	9	2	7	5
Cattle	22	11	16	-

Days use per acre (ha)		
'00	'05	'10
-	-	-
8 (20)	1 (3)	-
27 (66)	17 (41)	14 (35)
15 (36)	38 (93)	-

BROWSE CHARACTERISTICS--

Management unit 09, Study no: 17

Year	Plants per Acre (excluding seedlings)	Age class distribution			Seedling (plants/acre)	Utilization		% poor vigor	Average Height Crown (in)
		% Young	% Mature	% Decadent		% moderate	% heavy		
<i>Amelanchier utahensis</i>									
95	20	0	100	-	-	0	100	100	8/22
00	20	0	100	-	-	0	0	0	22/27
05	20	0	100	-	-	0	100	0	23/36
10	20	0	100	-	-	100	0	0	19/28
<i>Artemisia tridentata vaseyana</i>									
95	2860	8	91	1	60	23	.69	0	24/41
00	3560	11	61	29	60	19	0	1	28/39
05	3100	7	64	29	480	21	0	15	29/40
10	120	33	67	0	-	50	0	0	10/12
<i>Chrysothamnus viscidiflorus lanceolatus</i>									
95	140	14	86	-	-	0	0	0	14/23
00	0	0	0	-	-	0	0	0	15/28
05	0	0	0	-	-	0	0	0	17/28
10	180	11	89	-	60	0	0	0	12/16
<i>Gutierrezia sarothrae</i>									
95	500	0	100	0	20	0	0	0	9/12
00	2280	2	96	2	-	0	0	0	7/8
05	940	2	98	0	-	0	0	0	9/9
10	660	18	82	0	-	0	0	0	13/19
<i>Opuntia sp.</i>									
95	1060	0	100	0	20	0	0	0	5/9
00	680	9	82	9	-	0	0	3	2/9
05	680	6	88	6	-	0	0	3	3/8
10	300	20	80	0	-	0	0	0	3/11
<i>Pediocactus simpsonii</i>									
95	40	0	100	-	-	0	0	0	2/3
00	20	0	100	-	-	0	0	0	2/3
05	100	20	80	-	-	0	0	0	2/3
10	0	0	0	-	-	0	0	0	2/4
<i>Purshia tridentata</i>									
95	2100	16	70	13	-	43	41	.95	13/37
00	2080	9	80	12	40	58	21	2	19/42
05	1980	6	85	9	-	11	86	2	18/34
10	300	7	93	0	-	47	0	0	14/29