

Trend Study 16A-20-07

Study site name: Triangle Ranch.

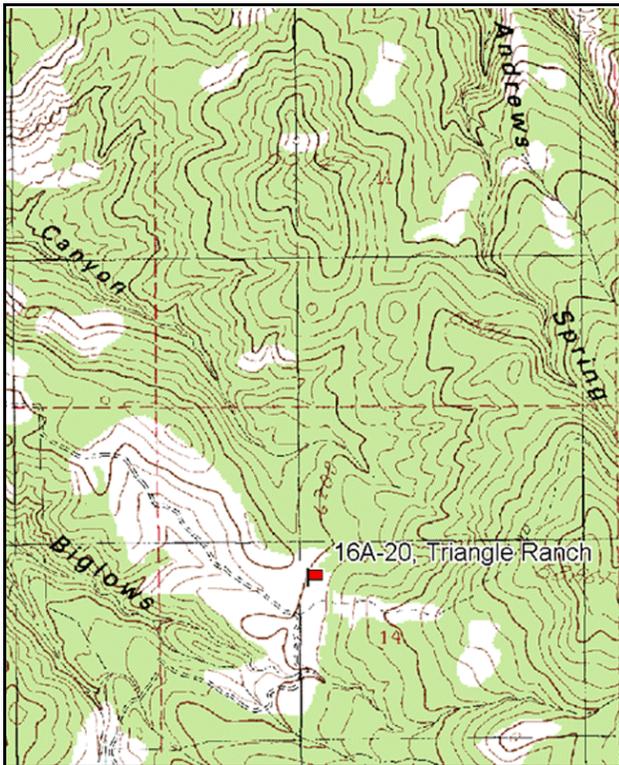
Vegetation type: Chained, Seeded P-J.

Compass bearing: frequency baseline 256 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft) 50' baseline, line 3 (59ft), line 4 (71ft). Rebar: belt 5 on 4ft.

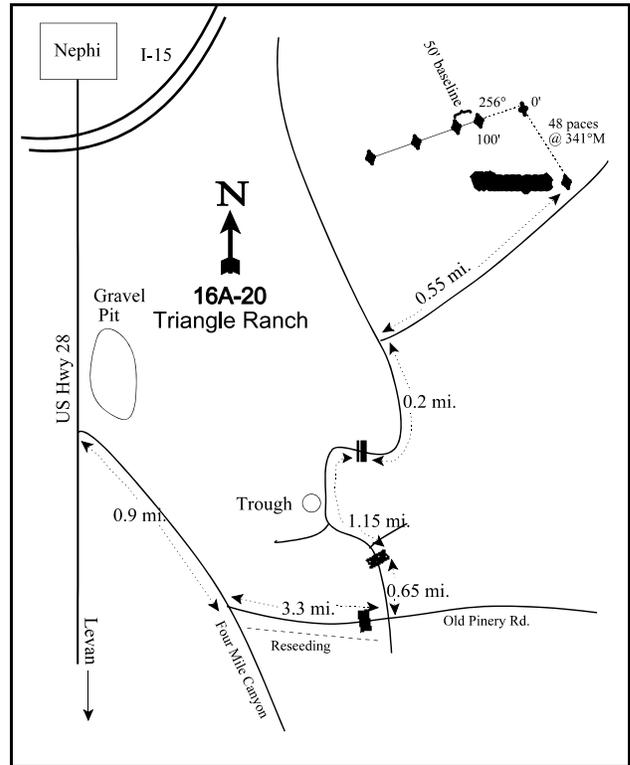
LOCATION DESCRIPTION

Just south of Nephi on Highway 28, turn south past the gravel pit onto a graded road. Go 0.9 miles to a fork. Bear left on the Old Pinery Road. Go 3.0 miles to a cattle guard. Continue 0.3 miles to an intersection. Turn left here and go 0.65 miles to a cattle guard at the top of the hill, then drive through Little Valley 1.1 miles to a gate at the north end of the valley and 0.05 more to a cattle guard. Proceed up the jeep trail 0.2 miles to a fork and bear right. Go 0.55 miles to another fork in a chaining. Take the right fork 0.05 miles to the witness post. From the witness post, go 48 paces at 341 degrees magnetic to the 0-foot baseline stake.



Map Name: Nephi

Township 13S, Range 1E, Section 14



Diagrammatic Sketch

GPS: NAD 83, UTM 12S 431971 E 4393046 N

## DISCUSSION

### Triangle Ranch - Trend Study No. 16A-20

#### Study Information

This study was established in 1989 within a chaining treatment on the UDWR Triangle Ranch property. It is in a valley between the low hills south of Nephi [elevation: 6,200 feet (1,890 m), slope: 15%, aspect: west]. The area provides a variety and abundance of browse and herbaceous forage. There is an excellent stand of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and perennial grass, although Gambel oak (*Quercus gambelii*) and Utah juniper (*Juniperus osteosperma*) have reestablished since the treatment. In 1989, there was sign of moderate use by deer and elk, mainly from spring and fall as the area often receives significant snow cover. No deer pellets were sampled in 1997, but use was estimated at 35 deer days use/acre (88 ddu/ha) in 2002 and 40 days use/acre (99 ddu/ha) in 2007. Summer cattle use was estimated at 4 days use/acre (11 cdu/ha) in 2002 and 2007.

#### Soil

The soil is classified within the Lizzant series (USDA-NRCS 2007). The soils in this series are very deep and well-drained, and formed in alluvium and colluvium derived from sedimentary rocks. The soil texture is a loam. There are few rocks on the surface or in the soil profile, and organic matter is fairly low at 1.9%. Vegetation and litter have accounted for over 80% of the relative ground cover since 1989. The soil erosion condition was classified as stable in 2002 and 2007.

#### Browse

The preferred browse includes mostly mountain big sagebrush, with a low density of antelope bitterbrush (*Purshia tridentata*). Sagebrush density has slowly declined from 3,333 plants/acre (8,236 plants/ha) in 1989 to 2,320 plants/acre (5,733 plants/ha) in 2007. Decadence was high at 60% of the population in 1989, decreased to only 8% in 1997, then increased to 29% and 35% in 2002 and 2007, respectively. Young recruitment increased from 12% of the population in 1989 to 28% in 1997, then decreased to 10% and 6% in 2002 and 2007. All of the sampled plants were vigorous in 1989, and by 2007, 28% of the plants displayed poor vigor. Use was moderate in 1989, light-moderate in 1997 and 2002, and moderate-heavy in 2007. Annual leader growth averaged 1.5 inches (3.7 cm) in 2002 and 1.6 inches (4.1 cm) in 2007.

Gambel oak and juniper have reestablished since the treatment. Oak density was 300 plants/acre (741 plants/ha) in 2002 and 220 plants/acre (544 plants/ha) in 2007. Point-centered quarter data estimated juniper density at 72 trees/acre (178 trees/ha) in 1989, 97 trees/acre (240 trees/ha) in 1997, 110 trees/acre (272 trees/ha) in 2002, and 117 trees/acre (289 trees/ha) in 2007. Most trees were 10 feet (3 m) to 15 feet (4.6 m) tall in 2002, and in 2007, the sampled trees averaged approximately 8 feet (2.4 m) in height. Average trunk diameter has been approximately 4.2 inches (10.7 cm) since 1997.

#### Herbaceous Understory

The herbaceous understory is diverse. Perennial grasses provided 26% cover in 1997, 30% in 2002, and 46% in 2007. Bulbous bluegrass (*Poa bulbosa*) was the most abundant grass in 2002 and 2007, and accounted for approximately 30% of the total grass cover both years. Other abundant grass species include sheep fescue (*Festuca ovina*), orchardgrass (*Dactylis glomerata*), intermediate wheatgrass (*Agropyron intermedium*), and Kentucky bluegrass (*Poa pratensis*). Cheatgrass (*Bromus tectorum*) is present, but at a low frequency. Few forbs are particularly abundant. Total forb cover has been 5%-6% since 1997. Beckwith milkvetch (*Astragalus beckwithii*) provided 32% of the total forb cover in 1997, 42% in 2002, and 43% in 2007.

#### 1997 TREND ASSESSMENT

The trend for browse is stable. Sagebrush density decreased slightly from 3,333 plants/acre (8,236 plants/ha) to 3,180 plants/acre (7,858 plants/ha), but decadence decreased from 60% of the population to only 8%.

Young recruitment was high, and increased from 12% of the population to 28%. Most plants remained vigorous. Use decreased from moderate to mostly light, although approximately 20% of the sampled plants showed moderate-heavy hedging. The trend for grass is stable. The sum of nested frequency for perennial grasses, not including bulbous bluegrass, changed little. Orchardgrass, sheep fescue, and Kentucky bluegrass increased significantly in nested frequency, while crested wheatgrass (*Agropyron cristatum*) and western wheatgrass (*Agropyron smithii*) decreased significantly in nested frequency. The trend for forbs is up. The sum of nested frequency for perennial forbs increased almost 90%. The Desirable Components Index (DCI) was rated as good-excellent due to a favorable preferred browse component and ample perennial herbaceous cover.

winter range condition (DCI) - good-excellent (79) Mid-level potential scale  
browse - stable (0)                      grass - stable (0)                      forb - up (+2)

#### 2002 TREND ASSESSMENT

The trend for browse is slightly down. Sagebrush density decreased from 3,180 plants/acre (7,858 plants/ha) to 2,900 plants/acre (7,166 plants/ha), and decadence increased from 8% of the population to 29%. Young recruitment decreased to 10% of the population. Plants displaying poor vigor increased from 5% of the population to 11%, and 10% of the sampled plants were classified as dying. Use remained light-moderate. The trend for grass is down. The sum of nested frequency for perennial grasses, with the exception of bulbous bluegrass, decreased 23%. Western wheatgrass and Kentucky bluegrass both decreased in nested frequency, while bulbous bluegrass increased significantly in nested frequency. Average bulbous bluegrass cover increased from 2% to 8%. The trend for forbs is down. The sum of nested frequency for perennial forbs decreased 22%. Several individual species, including false dandelion (*Agoseris glauca*), Lewis flax (*Linum lewisii*), and yellow salsify (*Tragopogon dubius*), decreased significantly in nested frequency. The DCI rating declined to good due to an increase in decadence and decrease in recruitment of preferred browse.

winter range condition (DCI) - good (67) Mid-level potential scale  
browse - slightly down (-1)                      grass - down (-2)                      forb - down (-2)

#### 2007 TREND ASSESSMENT

The trend for browse is down. Sagebrush density continued to decrease to 2,320 plants/acre (5,733 plants/ha), and its average cover also decreased from 14% to 9%. Decadence increased from 29% of the population to 35%, and young recruitment decreased from 10% of the population to 6%. Plants displaying poor vigor increased from 11% of the population to 28%, while those classified as dying increased from 10% to 17%. Use increased to moderate-heavy. The trend for grass is slightly down. The sum of nested frequency for perennial grasses, not including bulbous bluegrass, decreased 10%. Kentucky bluegrass decreased significantly in nested frequency, while sheep fescue increased significantly in nested frequency. Bulbous bluegrass continued to spread. Its nested frequency increased significantly, and its average cover increased from 8% to 14%. The trend for forbs is down. The sum of nested frequency for perennial forbs decreased 22%. However, perennial forb cover remained stable at approximately 4%. The DCI rating continued to decline to fair, mainly due to the decrease in preferred browse cover.

winter range condition (DCI) - fair (58) Mid-level potential scale  
browse - down (-2)                      grass - slightly down (-1)                      forb - down (-2)

HERBACEOUS TRENDS --  
Management unit 16A, Study no: 20

| Type                        | Species                  | Nested Frequency |                  |                  |                  | Average Cover % |       |       |
|-----------------------------|--------------------------|------------------|------------------|------------------|------------------|-----------------|-------|-------|
|                             |                          | '89              | '97              | '02              | '07              | '97             | '02   | '07   |
| G                           | Agropyron cristatum      | b <sub>40</sub>  | a <sub>17</sub>  | a <sub>13</sub>  | a <sub>11</sub>  | .78             | .36   | .37   |
| G                           | Agropyron intermedium    | a <sub>62</sub>  | a <sub>109</sub> | a <sub>122</sub> | a <sub>96</sub>  | 4.19            | 3.47  | 6.07  |
| G                           | Agropyron smithii        | c <sub>330</sub> | b <sub>140</sub> | a <sub>71</sub>  | a <sub>74</sub>  | 1.06            | .81   | .81   |
| G                           | Agropyron spicatum       | a <sub>4</sub>   | -                | -                | a <sub>1</sub>   | -               | -     | .03   |
| G                           | Bromus inermis           | a <sub>13</sub>  | ab <sub>37</sub> | b <sub>47</sub>  | b <sub>51</sub>  | 1.17            | 2.71  | 3.95  |
| G                           | Bromus japonicus (a)     | -                | -                | -                | 24               | -               | -     | .22   |
| G                           | Bromus tectorum (a)      | -                | a <sub>71</sub>  | a <sub>51</sub>  | a <sub>52</sub>  | .39             | .12   | .62   |
| G                           | Dactylis glomerata       | a <sub>28</sub>  | b <sub>83</sub>  | ab <sub>60</sub> | b <sub>73</sub>  | 2.34            | 3.06  | 6.34  |
| G                           | Elymus cinereus          | -                | a <sub>1</sub>   | a <sub>3</sub>   | a <sub>6</sub>   | .00             | .78   | .53   |
| G                           | Elymus salina            | -                | a <sub>5</sub>   | -                | a <sub>2</sub>   | .76             | -     | .03   |
| G                           | Festuca ovina            | a <sub>30</sub>  | b <sub>89</sub>  | b <sub>85</sub>  | c <sub>114</sub> | 4.06            | 6.15  | 11.03 |
| G                           | Poa bulbosa              | -                | a <sub>64</sub>  | b <sub>189</sub> | c <sub>252</sub> | 2.33            | 7.94  | 13.91 |
| G                           | Poa fendleriana          | -                | 1                | -                | -                | .03             | -     | -     |
| G                           | Poa pratensis            | b <sub>74</sub>  | c <sub>182</sub> | b <sub>112</sub> | a <sub>44</sub>  | 8.13            | 3.63  | 1.81  |
| G                           | Poa secunda              | b <sub>82</sub>  | ab <sub>59</sub> | ab <sub>47</sub> | a <sub>34</sub>  | 1.19            | .84   | .78   |
| Total for Annual Grasses    |                          | 0                | 71               | 51               | 76               | 0.39            | 0.12  | 0.84  |
| Total for Perennial Grasses |                          | 663              | 787              | 749              | 758              | 26.09           | 29.79 | 45.68 |
| Total for Grasses           |                          | 663              | 858              | 800              | 834              | 26.48           | 29.92 | 46.52 |
| F                           | Agoseris glauca          | a <sub>5</sub>   | c <sub>90</sub>  | b <sub>58</sub>  | ab <sub>28</sub> | .80             | .32   | .15   |
| F                           | Alyssum alyssoides (a)   | -                | a <sub>39</sub>  | b <sub>85</sub>  | b <sub>70</sub>  | .08             | .25   | .18   |
| F                           | Antennaria rosea         | -                | 6                | -                | -                | .01             | -     | -     |
| F                           | Arabis sp.               | a <sub>10</sub>  | a <sub>10</sub>  | a <sub>2</sub>   | -                | .02             | .00   | -     |
| F                           | Astragalus beckwithii    | -                | a <sub>60</sub>  | a <sub>76</sub>  | a <sub>66</sub>  | 1.83            | 2.09  | 2.37  |
| F                           | Aster chilensis          | -                | -                | a <sub>3</sub>   | a <sub>4</sub>   | -               | .15   | .18   |
| F                           | Astragalus convallarius  | b <sub>25</sub>  | a <sub>6</sub>   | a <sub>2</sub>   | a <sub>-</sub>   | .06             | .18   | .03   |
| F                           | Balsamorhiza sagittata   | -                | a <sub>3</sub>   | a <sub>3</sub>   | -                | .00             | .00   | -     |
| F                           | Camelina microcarpa (a)  | -                | -                | -                | 2                | -               | -     | .00   |
| F                           | Calochortus nuttallii    | -                | a <sub>9</sub>   | a <sub>14</sub>  | a <sub>10</sub>  | .02             | .04   | .02   |
| F                           | Cerastium sp.            | 4                | -                | -                | -                | -               | -     | -     |
| F                           | Cirsium sp.              | -                | -                | -                | -                | .03             | -     | -     |
| F                           | Collomia linearis (a)    | -                | a <sub>7</sub>   | a <sub>9</sub>   | -                | .05             | .02   | -     |
| F                           | Collinsia parviflora (a) | -                | b <sub>198</sub> | b <sub>165</sub> | a <sub>65</sub>  | .63             | .64   | .16   |
| F                           | Crepis acuminata         | a <sub>14</sub>  | a <sub>12</sub>  | b <sub>31</sub>  | ab <sub>30</sub> | .13             | .69   | .80   |
| F                           | Cymopterus sp.           | a <sub>8</sub>   | a <sub>4</sub>   | a <sub>8</sub>   | a <sub>6</sub>   | .03             | .02   | .01   |
| F                           | Draba sp. (a)            | -                | a <sub>3</sub>   | -                | a <sub>2</sub>   | .00             | -     | .00   |

| Type                      | Species                            | Nested Frequency |                  |                 |                 | Average Cover % |      |      |
|---------------------------|------------------------------------|------------------|------------------|-----------------|-----------------|-----------------|------|------|
|                           |                                    | '89              | '97              | '02             | '07             | '97             | '02  | '07  |
| F                         | <i>Epilobium brachycarpum</i> (a)  | -                | <sub>b</sub> 66  | <sub>a</sub> 20 | <sub>a</sub> 26 | .17             | .05  | .07  |
| F                         | <i>Eriogonum racemosum</i>         | <sub>a</sub> 5   | <sub>a</sub> 3   | <sub>a</sub> 1  | <sub>a</sub> 5  | .00             | .00  | .01  |
| F                         | <i>Eriogonum umbellatum</i>        | <sub>a</sub> 6   | <sub>a</sub> 6   | <sub>a</sub> 6  | <sub>a</sub> 6  | .06             | .03  | .06  |
| F                         | <i>Galium aparine</i> (a)          | -                | <sub>a</sub> 25  | -               | <sub>a</sub> 25 | .50             | -    | .81  |
| F                         | <i>Holosteum umbellatum</i> (a)    | -                | -                | -               | 1               | -               | -    | .00  |
| F                         | <i>Lappula occidentalis</i> (a)    | -                | 12               | -               | -               | .02             | -    | -    |
| F                         | <i>Lactuca serriola</i>            | <sub>a</sub> 5   | <sub>a</sub> 2   | -               | <sub>a</sub> 1  | .00             | -    | .00  |
| F                         | <i>Linum lewisii</i>               | <sub>ab</sub> 13 | <sub>b</sub> 19  | <sub>a</sub> 6  | <sub>a</sub> -  | .15             | .04  | .07  |
| F                         | <i>Medicago sativa</i>             | -                | -                | -               | 1               | -               | -    | .00  |
| F                         | <i>Microsteris gracilis</i> (a)    | -                | -                | <sub>b</sub> 21 | <sub>a</sub> 5  | -               | .04  | .02  |
| F                         | <i>Penstemon</i> sp.               | -                | -                | 2               | -               | -               | .00  | -    |
| F                         | <i>Phlox longifolia</i>            | <sub>a</sub> 18  | <sub>a</sub> 21  | <sub>a</sub> 20 | <sub>a</sub> 22 | .04             | .04  | .09  |
| F                         | <i>Polygonum douglasii</i> (a)     | -                | <sub>a</sub> 8   | <sub>a</sub> 3  | -               | .01             | .00  | -    |
| F                         | <i>Ranunculus testiculatus</i> (a) | -                | <sub>b</sub> 101 | <sub>a</sub> 44 | <sub>a</sub> 27 | .26             | .14  | .14  |
| F                         | <i>Sanguisorba minor</i>           | 1                | -                | -               | -               | -               | -    | -    |
| F                         | <i>Sphaeralcea coccinea</i>        | <sub>b</sub> 12  | <sub>ab</sub> 9  | <sub>a</sub> 3  | <sub>ab</sub> 5 | .02             | .01  | .01  |
| F                         | <i>Taraxacum officinale</i>        | -                | 1                | -               | -               | .00             | -    | -    |
| F                         | <i>Tragopogon dubius</i>           | <sub>b</sub> 45  | <sub>b</sub> 53  | <sub>a</sub> 12 | <sub>a</sub> 6  | .57             | .08  | .04  |
| F                         | Unknown forb-annual (a)            | -                | 22               | -               | -               | .05             | -    | -    |
| F                         | <i>Vicia americana</i>             | -                | -                | -               | 3               | -               | -    | .15  |
| F                         | <i>Viola</i> sp.                   | -                | <sub>b</sub> 5   | <sub>a</sub> 1  | <sub>a</sub> -  | .02             | .00  | .00  |
| F                         | <i>Zigadenus paniculatus</i>       | <sub>a</sub> 1   | <sub>a</sub> 6   | <sub>a</sub> 7  | <sub>a</sub> 5  | .04             | .07  | .06  |
| Total for Annual Forbs    |                                    | 0                | 481              | 347             | 223             | 1.81            | 1.16 | 1.40 |
| Total for Perennial Forbs |                                    | 172              | 325              | 255             | 198             | 3.89            | 3.81 | 4.11 |
| Total for Forbs           |                                    | 172              | 806              | 602             | 421             | 5.71            | 4.97 | 5.51 |

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

BROWSE TRENDS --

Management unit 16A, Study no: 20

| Type             | Species                            | Strip Frequency |     |     | Average Cover % |       |       |
|------------------|------------------------------------|-----------------|-----|-----|-----------------|-------|-------|
|                  |                                    | '97             | '02 | '07 | '97             | '02   | '07   |
| B                | Artemisia tridentata vaseyana      | 62              | 64  | 58  | 12.08           | 13.80 | 9.26  |
| B                | Chrysothamnus nauseosus albicaulis | 6               | 6   | 4   | .06             | .68   | .18   |
| B                | Gutierrezia sarothrae              | 6               | 28  | 16  | .02             | .26   | .45   |
| B                | Juniperus osteosperma              | 2               | 8   | 8   | 1.14            | 3.04  | 4.75  |
| B                | Purshia tridentata                 | 2               | 1   | 0   | .15             | -     | -     |
| B                | Quercus gambelii                   | 0               | 2   | 3   | .63             | .63   | .85   |
| Total for Browse |                                    | 78              | 109 | 89  | 14.09           | 18.43 | 15.51 |

CANOPY COVER, LINE INTERCEPT --

Management unit 16A, Study no: 20

| Species                            | Percent Cover |      |
|------------------------------------|---------------|------|
|                                    | '02           | '07  |
| Artemisia tridentata vaseyana      | -             | 7.76 |
| Chrysothamnus nauseosus albicaulis | -             | .28  |
| Gutierrezia sarothrae              | -             | .05  |
| Juniperus osteosperma              | .21           | .68  |
| Quercus gambelii                   | .16           | -    |

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 16A, Study no: 20

| Species                       | Average leader growth (in) |     |
|-------------------------------|----------------------------|-----|
|                               | '02                        | '07 |
| Artemisia tridentata vaseyana | 1.5                        | 1.6 |

POINT-QUARTER TREE DATA --

Management unit 16A, Study no: 20

| Species               | Trees per Acre |     | Average diameter (in) |     |
|-----------------------|----------------|-----|-----------------------|-----|
|                       | '02            | '07 | '02                   | '07 |
| Juniperus osteosperma | 110            | 117 | 4.0                   | 4.2 |

BASIC COVER --

Management unit 16A, Study no: 20

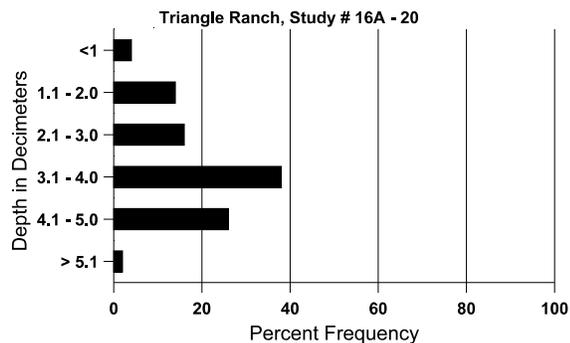
| Cover Type  | Average Cover % |       |       |       |
|-------------|-----------------|-------|-------|-------|
|             | '89             | '97   | '02   | '07   |
| Vegetation  | 6.50            | 48.11 | 55.36 | 60.52 |
| Rock        | 1.00            | .22   | .22   | .13   |
| Pavement    | .50             | 1.14  | 1.77  | 2.41  |
| Litter      | 79.75           | 51.00 | 42.92 | 40.18 |
| Cryptogams  | 1.25            | .07   | .15   | .18   |
| Bare Ground | 11.00           | 12.95 | 19.10 | 12.50 |

SOIL ANALYSIS DATA --

Herd Unit 16A, Study no: 20, Triangle Ranch

| Effective rooting depth (in) | Temp °F (depth) | pH  | Loam  |       |       | %OM | ppm P | ppm K | dS/m |
|------------------------------|-----------------|-----|-------|-------|-------|-----|-------|-------|------|
|                              |                 |     | %sand | %silt | %clay |     |       |       |      |
| 21.3                         | 43.8 (17.7)     | 6.2 | 42.0  | 31.4  | 26.6  | 1.9 | 17.7  | 185.6 | .4   |

### Stoniness Index



PELLET GROUP DATA --

Management unit 16A, Study no: 20

| Type   | Quadrat Frequency |     |     | Days use per acre (ha) |         |
|--------|-------------------|-----|-----|------------------------|---------|
|        | '97               | '02 | '07 | '02                    | '07     |
| Rabbit | 2                 | 8   | 13  | -                      | -       |
| Elk    | -                 | -   | 1   | -                      | -       |
| Deer   | -                 | 9   | 11  | 35 (88)                | 40 (99) |
| Cattle | 7                 | 5   | 2   | 4 (11)                 | 4 (11)  |

BROWSE CHARACTERISTICS --  
Management unit 16A, Study no: 20

|  |                                       | Age class distribution (plants per acre) |       |        |          |      | Utilization |         |            |         |              |                           |  |
|--|---------------------------------------|--|-------|--------|----------|------|-------------|---------|------------|---------|--------------|---------------------------|--|
| Year   | Plants per Acre (excluding seedlings) | Seedling                                 | Young | Mature | Decadent | Dead | % moderate  | % heavy | % decadent | % dying | % poor vigor | Average Height Crown (in) |  |
| <b>Amelanchier utahensis</b>                     |                                       |  |       |        |          |      |             |         |            |         |              |                           |  |
| 89   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |  |
| 97   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 32/30                     |  |
| 02   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 44/42                     |  |
| 07   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 32/33                     |  |
| <b>Artemisia tridentata vaseyana</b>             |                                       |  |       |        |          |      |             |         |            |         |              |                           |  |
| 89   | 3333                                  | 66                                       | 400   | 933    | 2000     | -    | 54          | 0       | 60         | -       | 0            | 22/24                     |  |
| 97   | 3180                                  | 140                                      | 880   | 2060   | 240      | 180  | 16          | 3       | 8          | 4       | 5            | 26/38                     |  |
| 02   | 2900                                  | 20                                       | 280   | 1780   | 840      | 180  | 26          | 0       | 29         | 10      | 11           | 25/37                     |  |
| 07   | 2320                                  | -  | 140   | 1360   | 820      | 120  | 27          | 28      | 35         | 17      | 28           | 26/39                     |  |
| <b>Chrysothamnus nauseosus albicaulis</b>        |                                       |  |       |        |          |      |             |         |            |         |              |                           |  |
| 89   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | 0          | -       | 0            | -/-                       |  |
| 97   | 140                                   | -  | 40    | 80     | 20       | -    | 0           | 0       | 14         | 14      | 14           | 34/29                     |  |
| 02   | 140                                   | -  | -     | 60     | 80       | 20   | 71          | 0       | 57         | -       | 0            | 29/31                     |  |
| 07   | 80                                    | -  | -     | -      | 80       | -    | 50          | 25      | 100        | 75      | 75           | 32/32                     |  |
| <b>Chrysothamnus viscidiflorus viscidiflorus</b> |                                       |  |       |        |          |      |             |         |            |         |              |                           |  |
| 89   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |  |
| 97   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |  |
| 02   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 11/15                     |  |
| 07   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |  |
| <b>Gutierrezia sarothrae</b>                     |                                       |  |       |        |          |      |             |         |            |         |              |                           |  |
| 89   | 3199                                  | -  | 533   | 2400   | 266      | -    | 0           | 0       | 8          | 2       | 6            | 7/8                       |  |
| 97   | 240                                   | 20                                       | 100   | 140    | -        | 40   | 0           | 0       | 0          | -       | 0            | 5/3                       |  |
| 02   | 1320                                  | -  | 280   | 960    | 80       | -    | 0           | 0       | 6          | 5       | 5            | 4/7                       |  |
| 07   | 520                                   | 20                                       | 20    | 400    | 100      | -    | 0           | 0       | 19         | 4       | 4            | 7/8                       |  |
| <b>Juniperus osteosperma</b>                     |                                       |  |       |        |          |      |             |         |            |         |              |                           |  |
| 89   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |  |
| 97   | 40                                    | -  | 40    | -      | -        | 80   | 0           | 0       | -          | -       | 0            | -/-                       |  |
| 02   | 160                                   | -  | -     | 160    | -        | -    | 0           | 0       | -          | -       | 0            | 71/43                     |  |
| 07   | 160                                   | -  | 40    | 120    | -        | 20   | 0           | 0       | -          | -       | 0            | -/-                       |  |
| <b>Peraphyllum ramosissimum</b>                  |                                       |  |       |        |          |      |             |         |            |         |              |                           |  |
| 89   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |  |
| 97   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |  |
| 02   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 51/64                     |  |
| 07   | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |  |

|                                  |                                       | Age class distribution (plants per acre) |       |        |          |      | Utilization |         |            |         |              |                           |
|----------------------------------|---------------------------------------|--|-------|--------|----------|------|-------------|---------|------------|---------|--------------|---------------------------|
| Year                             | Plants per Acre (excluding seedlings) | Seedling                                 | Young | Mature | Decadent | Dead | % moderate  | % heavy | % decadent | % dying | % poor vigor | Average Height Crown (in) |
| <b>Purshia tridentata</b>        |                                       |  |       |        |          |      |             |         |            |         |              |                           |
| 89                               | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | -/-                       |
| 97                               | 40                                    | -  | -     | 40     | -        | -    | 0           | 100     | -          | -       | 0            | 23/32                     |
| 02                               | 20                                    | -  | -     | 20     | -        | -    | 0           | 100     | -          | -       | 0            | 19/51                     |
| 07                               | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | -          | -       | 0            | 30/39                     |
| <b>Quercus gambelii</b>          |                                       |  |       |        |          |      |             |         |            |         |              |                           |
| 89                               | 200                                   | 66                                       | 200   | -      | -        | -    | 0           | 0       | 0          | -       | 0            | -/-                       |
| 97                               | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | 0          | -       | 0            | -/-                       |
| 02                               | 300                                   | -  | -     | 300    | -        | -    | 53          | 0       | 0          | -       | 0            | 64/36                     |
| 07                               | 220                                   | -  | 20    | 160    | 40       | 20   | 0           | 0       | 18         | 18      | 27           | -/-                       |
| <b>Symphoricarpos oreophilus</b> |                                       |  |       |        |          |      |             |         |            |         |              |                           |
| 89                               | 132                                   | -  | -     | 66     | 66       | -    | 0           | 100     | 50         | -       | 0            | 40/34                     |
| 97                               | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | 0          | -       | 0            | -/-                       |
| 02                               | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | 0          | -       | 0            | -/-                       |
| 07                               | 0                                     | -  | -     | -      | -        | -    | 0           | 0       | 0          | -       | 0            | -/-                       |