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Estimated Forage Analysis for the Carracas Mesa Herd Area, Jicarilla Wild Horse Territory, and Jicarilla Joint Management Area

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It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

Rangeland plants provide forage for the different animal species in the Jicarilla Joint Management Area (JMA), which is comprised of the Bureau of Land Management (BLM) Carracas Mesa Herd Area (HA) and the United States Forest Service (USFS) Jicarilla Wild Horse Territory (WHT). Without rangeland vegetation, no foraging animals could use the area for food and habitat. Therefore, appropriate rangeland management is crucial to the lives of these foraging animals. Plant health can be directly impacted by the amount of removal or use it undergoes from animal grazing and browsing. If animal foraging use becomes too much on these plants, they will be negatively affected and may undergo long-term damage and even death. A common rangeland management saying is “eat the shoots, kill the roots”. If too much or inappropriate grazing or browsing use occurs, rangeland health declines and animals are negatively impacted as their sources of forage disappear. Because the JMA is managed for cattle, wild horses, mule deer, and Rocky Mountain elk, these areas require rangeland condition and forage production to be evaluated and the impacts of these foraging animals to be analyzed.

This analysis examines the estimated amount of forage produced and its allocation and estimated consumption by the multiple foraging animals on the Carracas Mesa HA. The estimated HA forage was then analyzed with Jicarilla WHT forage estimates in order to develop a total forage analysis for the JMA. The JMA total analysis evaluates the planned allocation of total forage with both the low and high wild horse AML and the current wild horse excess population. Information for this analysis came from the 6th edition of Range Management Principles and Practices (2011) by Dr. Jerry L. Holechek and Dr. Rex D. Pieper of New Mexico State University and Dr. Carlton Herbel of the Agricultural Research Service of the USDA. Numbers in this analysis are estimated, as there is no way to exactly quantify forage produced and consumed or the exact numbers of wild horses and wildlife due to seasonal movement.

In order to clarify the analyses, the following terms are used:

- **Soil Survey** – Classification of soil types based on factors such as geography, topography, vegetation, soil properties, and morphology.
- **Ecological Site Description (ESD)** – A description of a type of land with certain physical characteristics, including its soil, vegetation, climate, uses, and potential to produce certain types and amounts of vegetation.
- **Production** – The annual or yearly amount of vegetation that is produced.
- **Forage** – Vegetation produced that is usable and palatable to grazing and browsing animals.
- **Gross Forage** – The total forage produced annually before any reductions for range condition, slope, or proper use.
- **Net Forage**– For this analysis, net forage is considered to be the result of gross forage or production that has undergone reductions for slope, range condition, and forage losses to oil and gas and road development.
- **Available Forage**– Forage that has been reduced by a proper grazing use factor to a utilization level on which forage can be allocated to specific foraging animals.
- **Proper Grazing Use Factor** – According to Holechek (2011), it is the level of utilization or grazing or browsing on annual plant growth that is safe for the plant and will continue and/or maintain plant health.
- **Utilization** – The level of grazing or browsing on plants pertaining to the aboveground plant material removed.
- **Rangeland Carrying Capacity** – The capacity of the rangeland to support a certain number and type of foraging animals without undergoing plant damage
- **Key Area** – A site within a specific rangeland type that is considered to be most representative of the preferred grazing use area of foraging animals. Its condition is considered to be reflected of the overall grazing management in an area.

1. HA (32,088 acre) Estimated Gross Forage from Soil Survey and ESDs

In order to estimate forage on the HA, Rio Arriba County soil types and their acreages were estimated in ArcGIS. Total acreage for the HA equated to approximately 32,088 acres. Some minor variation exists in

the acreages due to rounding and minor discrepancies when boundaries were digitized in ArcGIS. The soil survey showed four primary soil types. The estimated acres in the HA for each Rio Arriba soil type are listed in Table 1.

Table 1. Carracas Mesa HA (32,088 ac) soil types and estimated acreages.

Soil Type	220	110	103	30[1]
Soil Name	Rock Outcrop-Vessilla-Menefee Complex, 14-45% slopes	Vessilla-Menefee-Orlie Complex, 1-30% slopes	Orlie fine sandy loam, 1-8% slopes	San Mateo sandy loam, 0-3% slope
Approximate Acres	8,187	16,545	5,165	2,191

[1] This value includes 14 acres listed in Soil Type 31.

A soil survey breaks down soil components by percentages, with each percentage assigned a specific ESD developed by the Natural Resources Conservation Service (NRCS).The HA lies within Major Land Resource Area (MLRA) 036-Southwestern Plateaus, Mesas, and Foothills. These ESDs have estimated vegetation production (pounds [lbs]/acre[ac]) based on low, normal or representative value (RV), and high precipitation years. The estimated production values from these ESDs were utilized in this analysis. Each ESD typically shows grass/grass-likes, forb, shrub, and tree annual production (lbs) based on the Historic Climax Plant Community (HCPC). This plant community is considered to be maximum state of equilibrium on plant successional stages and the plant community that existed at the site prior to European settlement of North America.

Among the different foraging animal species, certain species prefer specific types of forage vegetation, but will consume un-preferred forage when necessary. For this analysis, only grass/grass-like, forb, and shrub forage species were used. Tree production for pinyon and juniper was removed in this analysis as the BLM Farmington Field Office does not consider these trees to be forage sources in planning allocations. Though wildlife may consume parts of these trees, they are considered starvation foods in forage planning, meaning that foraging animals typically only utilize these tree species when forced to from lack of preferred forage, which can occur from competition with other species for preferred forage. Trees are also typically used as a starvation food in the winter when other forage is gone, dormant, and/or covered by snow. Wild horses and cattle primarily utilize grass/grass-likes as their forage year-long with some palatable forbs. However, horses and cattle will browse shrubs when necessary or as grass decreases, typically in the winter when grass is dormant and covered by deep snow. This also can occur in warm months if grasses have been overgrazed enough to severely damage or kill the plant; thereby, forcing horses and cattle to find other forage sources. If cool season grasses that grow in the early spring begin to decline, there will be a lack of grass available in the cool months and increased grazing pressure on browse species until the warm-season grasses grow in warm summer months. Dormant warm-season grasses are typically poorer winter forage sources than dormant cool-season grasses. Elk also strongly prefer grasses in the spring, summer, and fall (NRCS 1999), along with forbs. As the seasons move into winter, elk consume more forbs and browse shrubs. In the winter, they will consume some forage off of tree species as needed (NRCS 1999). Mule deer are similar to elk as they eat more grass and forbs in warmer months and browse shrubs and certain trees in the winter (NRCS 1999). Because dietary overlap can occur between all of these foraging animal species, the total vegetative forage was estimated and utilized in this analysis, and included grasses/grass-likes, forbs, and shrub production.

The ESDs, site numbers, forage production values by vegetation type, and abbreviations for this analysis are the following:

- Loamy (R036XB006NM) – "L"
- *Sandy Loam Upland 13-17" p.z. (JUOS, PIED) (F035XF628AZ)– "PJ"[a]

[a] The soil survey listed an ESD named Pinus-edulis-Juniperus monosperma/Quercus gambelii/Bouteloua gracilis, but this description does not exist in MLRA 36. Therefore, the most similar determined to match the pinyon-juniper areas on the HA was determined to be a site from MLRA 035-Colorado Plateau. This site is Sandy Loam Upland 13-17" p.z. (JUOS, PIED) (*Juniperus osteosperma-Pinus edulis/Artemesia tridentate spp. Wyomingensis-Purshia tridentate/Poa fendleriana-Achnatherum hymenoides*), and was verified in similarity after field assessments. Because this ESD lacks

- Salty Bottomland (R036XB010NM) – "SB"
- Sandy (R036XB011NM) – "S"
- Sandy Slopes (R036XB111NM) – "SS"

These ESDs provide detailed descriptions of sites and plant communities within the general sagebrush grassland and pinyon-juniper woodland rangeland types of the HA. For the primary ESDs, field verification was conducted to assess the plant species that actually exist on the site. Listed lbs of forage production in the appropriate ESDs were then selected for those species that exist on sites within the HA. Table 2 summarizes the estimated lbs/ac for existing species from the ESDs.

Table 2. Carracas Mesa HA soil survey ESD estimated (est.) production values (lbs /ac).

ESD	Loamy (L)			Pinyon-Juniper (PJ)			Salty Bottomland (SB)			Sandy (S)			Sandy Slopes (SS)		
Precipitation Level	**Low**	**RV**	**High**	**Low**	**RV**	**High**	**Low**	**RV**	**High**	**Low**	**RV**	**High**	**Low**	**RV**	**High**
Grass est. (lbs/ac)	393	534	673	150	250	350	390	714	975	287	373	455	270	360	450
Forb est. (lbs/ac)	43	64	85	30	50	70	60	105	158	21	28	35	30	45	60
Shrub est. (lbs /ac.)	86	128	170	110	223	335	117	164	211	56	116	175	30	45	60
Total Est. (lbs/ac)	**522**	**726**	**928**	**290**	**523**	**755**	**567**	**983**	**1344**	**364**	**517**	**665**	**330**	**450**	**570**

A description of the primary grass and shrub species in these ESDs that have been verified as present on the HA is displayed in Table 3. Furthermore, the forage value of these plants to different species is noted. Most of the information for this table is credited to North American Wildland Plants (2nd edition) by James Stubbendieck, Stephen L. Hatch, and Neal M. Bryan.

Table 3. HA rangeland grasses and shrubs with forage value descriptions.

Rangeland Plant	Season	Forage Value
Grasses		
Western wheatgrass	Cool	Good – livestock, horses. Fair – wildlife. Good forage even when dormant in winter.
Indian ricegrass	Cool	Good for all species. Good forage even in winter.
Needleandthread	Cool	Good livestock, horses. Fair -wildlife – important in spring. Good winter forage.
Muttongrass	Cool	Excellent - livestock, horses. Good – wildlife. Loses value as it matures.
Bottlebrush squirreltail	Cool	Fair – livestock, horses. Poor in winter
Cheatgrass (Non-native invasive annual)	Cool	Fair - all species in early spring prior to awns. No value after awn development.
Crested wheatgrass (Non-native)	Cool	Good – livestock, horses. Fair – wildlife. Good when dormant in winter.
Galleta	Warm	Good – all species in growing season. When dormant in fall/winter, is unpalatable and fair to worthless unless there is no other forage.
Blue grama	Warm	Good – all species. Decent forage when dormant in winter.
Alkali sacaton	Warm	Good/Fair – livestock, horses. Poor – wildlife. When dormant, poor for all species.
Sand dropseed	Warm	Good/fair – livestock, wildlife. Poor – wildlife. Loses value when mature and dormant.

some of the key browse species in the area, production estimates for Gambel oak was added from the ESD Pinyon-Juniper Skunkbush Sumac Shallow Sandy (F036XB133NM). Furthermore, mountain mahogany and skunkbush sumac estimates were added from ESD Woodland Uplands Transition 16-35 (F035XG005NM).

Shrubs		
Big sagebrush	Evergreen	Good – wildlife in winter. Fair -cattle. Horses will eat when no other preferred forage is available. High volatile oils.
Bitterbrush	Evergreen	Good/Excellent – wildlife (especially mule deer). Good cattle. . Horses will eat when no other preferred forage is available.
Gambel oak	Cool	Fair – all species. May poison horses and cattle. . Horses will eat when no other preferred forage is available.
Mountain mahogany	Cool	Fair – livestock. Good – wildlife, particularly winter. . Horses will eat when no other preferred forage is available.
Sumac	Cool	Fair/poor – livestock, horses. Good - wildlife
Fourwing saltbush	Evergreen	Good – livestock, wildlife. . Horses will eat when no other preferred forage is available.
Winterfat	Cool	Good – wildlife. Fair – livestock. . Horses will eat when no other preferred forage is available.
Broom snakeweed	Warm	Poor - all species except mule deer. Poisonous to livestock and horses. Can indicate poor range conditions.
Rubber rabbitbrush	Warm	Worthless – livestock, horses. Fair deer in winter. Can indicate poor range conditions.

2. HA Estimated Net and Available Forage

The acreage of each soil type for the HA from ArcGIS was then multiplied by the ESD percentage breakdown to give total acres for a particular ESD. This is represented by the formula *ESD % x Est. Acres (ac) = Est. Total Acres (ac) of an ESD*. Respective ESD estimated production values were then multiplied by total acre values to yield total gross production estimates for low, RV, and high precipitation years. This is represented by the calculation *Est. Total Acres (ac) x Forage Production (lbs /ac) = Est. Gross Forage (lbs)*.

Because most grazing animals such as horses and cattle do not typically graze steeply sloped areas, a reduction in gross forage was applied to certain areas. Though true topographic variations exist and it is not exactly certain as to the level of effect that slope has specifically on the Jicarilla wild horses and wild ungulates, the same standard slope reduction criteria used for livestock grazing was applied to this analysis. Though wildlife is typically more affected by slope aspect than grade, standard slope reductions were included on their forage sources to account for some reductions that may come from aspect and for consistency with the 2001 USFS forage analysis criteria. Therefore, standard grazing reductions according to Holechek (2011) are the following:

- 0-10 % slope = no grazing capacity reduction
- 11-30% slope = 30% grazing capacity reduction
- 31-60% slope = 60% grazing capacity reduction
- Over 60% slope = 100% grazing capacity reduction

In this analysis, some of the Rio Arriba County soil types were listed with a range of slope percentage that crossed two of the above categories of slope reduction. ArcGIS was utilized to estimate slope, and it was determined that nearly all of the PJ ESD country fell in the 30% slope reduction category. A portion the HA was also found to be in the 60% reduction category, but this reduction was not used as bedrock and foraging producing lands cannot be separated in ArcGIS. Thus, more significant forage reductions than 30% slope may exist. Forage in areas with slope reductions was thus calculated by the formula *Gross Forage (lbs) x Slope reduction (%) = Net Forage (lbs) with Slope Reduction*. Furthermore, while most carrying capacity analyses also reduce forage based on far distances from water sources, this reduction was not performed on the estimated HA forage due to the ephemeral nature of both HA riparian areas and man-made water sources and the area's proximity to Navajo Dam.

Table 4 through Table 8 show estimated gross forage (GF) and net forage with slope reductions (NFSR) calculations for each soil type.

Table 4. Estimated gross forage (GF) and estimated net forage with slope reduction (NFSR) calculations for soil 110 – Vessilla-Menefee-Orlie Complex, 1-30% slopes (16,545 ac). ESD production values (lbs) are estimated for the HCPC.

ESD Description					Production by Precipitation Level					
					Est. GF (lbs)			Est. NSFR (lbs)		
Soil Component/ ESD	% Ac	Total Ac	Slope Range (%)	Slope Reduction (↓)	Low	RV	High	Low	RV	High
Vessilla - PJ	45	1,333	1-30%	↓30%	2,159,157	3,893,929	5,621,255	1,511,410	2,725,750	3,934,878
Menefee - PJ	25	741	2-30%	↓30%	1,199,532	2,163,294	3,122,919	839,672	1,514,306	2,186,043
Orlie - L	20	592	1-8%	↓0%	1,641,291	2,260,084	2,872,258	n/a	n/a	n/a
Gobernador - SB	3	89	0-2%	↓0%	281,435	487,920	667,105	n/a	n/a	n/a
Pinaventes - SS	3	89	3-12%	↓0%	134,017	178,689	223,361	n/a	n/a	n/a
Rock outcrop	4	118	0	0	0	0	0	0	0	0
n/a = no change in est. net forage from est. gross forage, 0 = no forage value										

Table 5. Estimated gross forage (GF) and estimated net forage with slope reduction (NFSR) calculations for soil 220 – Rock Outcrop-Vessilla-Menefee Complex, 14-45% slopes (8,187ac). ESD production values (lbs) are estimated for the HCPC.

ESD Description					Production by Precipitation Level					
					Est. GF (lbs)			Est. NSFR (lbs)		
Soil Component/ ESD	% Ac	Total Ac	Slope Range (%)	Slope Reduction (↓)	Low	RV	High	Low	RV	High
Vessilla - PJ	30	1,591	15-45%	↓ 30%	712,271	1,284,544	1,854,361	498,590	899,181	1,298,053
Menefee - PJ	20	1,060	15-45%	↓ 30%	474,847	856,363	1,236,241	332,393	599,454	865,368
Rock outcrop	40	2,121	0	0	0	0	0	0	0	0
Rubble	5	265	0	0	0	0	0	0	0	0
Badlands	5	265	0	0	0	0	0	0	0	0

Table 6. Estimated gross forage (GF) and estimated net forage with slope reduction (NFSR) calculations for soil 103 – Orlie fine sandy loam, 1-8% slopes (5,165 ac). ESD production values (lbs) are estimated for the HCPC.

ESD Description					Production by Precipitation Level					
					Est. GF (lbs)			Est. NSFR (lbs)		
Soil Component/ ESD	% Ac	Total Ac	Slope Range (%)	Slope Reduction (↓)	Low	RV	High	Low	RV	High
Orlie - L	80	516	1-8%	↓0%	2,049,354	2,821,993	3,586,369	n/a	n/a	n/a
Lindrith - L	10	65	2-7%	↓0%	256,169	352,749	448,296	n/a	n/a	n/a
Rosced - PJ	5	32	20-50	↓ 30%	52,422	94,540	136,477	52,422	94,540	136,477
Royosa – S	5	32	2-7%	↓0%	93,998	133,508	171,726	n/a	n/a	n/a
n/a = no change in est. net forage from est. gross forage, 0 = no forage value										

Table 7. Estimated gross forage and estimated net forage with slope reduction calculations for soil 30 – San Mateo sandy loam, 0-3% slope (2,191ac). ESD production values (lbs) are estimated for the HCPC.

ESD Description					Production by Precipitation Level					
					Est. GF (lbs)			Est. NSFR (lbs)		
Soil Component/ ESD	% Ac	Total Ac	Slope Range (%)	Slope Reduction (↓)	Low	RV	High	Low	RV	High

San Mateo – SB	85	221	1-8%	↓0%	1,056,140	1,831,016	2,503,444	n/a	n/a	n/a
Gobernador – SB	5	13	1-8	↓0%	62,126	107,707	147,261	n/a	n/a	n/a
Orlie – L	5	13	1-8%	↓0%	54,346	74,836	95,106	n/a	n/a	n/a
Vessilla – PJ	5	13	1-30%	↓0%	31,775	57,305	82,725	n/a	n/a	n/a
n/a = no change in est. net forage from est. gross forage, 0 = no forage value										

Table 8. HA (32,088 ac) total estimated gross production (GF) (lbs) for HCPC condition ratings from Table 4 through Table 7 and average lbs/ac.

Precipitation Level	Low	RV	High
Est. Total GF (lbs)	10,281,347	16,638,992	22,827,396
Est. Total GF (lbs/ac)	320	519	711

Then, the total estimated net forage with slope reduction (NFSR) were applied to the appropriate ESD and summed with GF values for ESDs with no slope reductions (Table 9).

Table 9. HA (32,088 ac) total estimated net production (lbs) with slope reductions for HCPC condition ratings from Table 4 through Table 7 and average lbs/acre.

Precipitation Level	Low	RV	High
Est. Total NFSR (lbs)	8,895,138	14,139,036	19,218,473
Est. Total NFSR Avg. lbs/ac	277	441	599

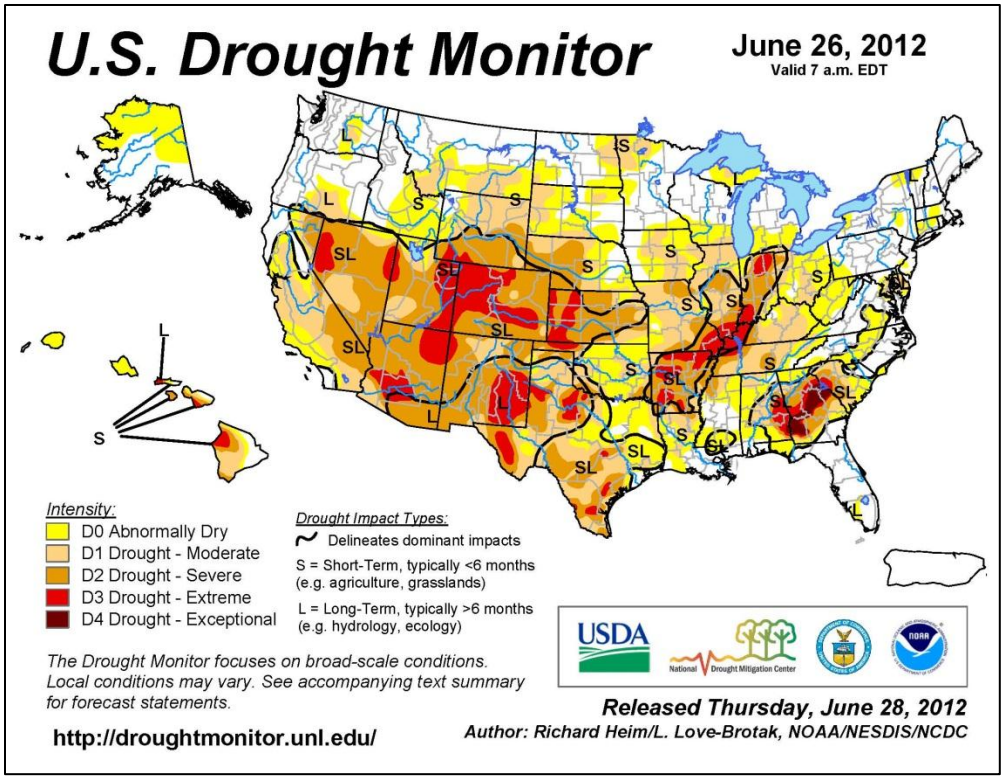
2.1 HA Monitoring

In order to evaluate the current condition of the rangeland forage vegetation on the HA, monitoring was conducted in varying forms. These include cover data, Range Condition Worksheets, wildlife browse studies, estimated annual production monitoring, and Rangeland Health Assessments (RHAs). Knowing the current condition of the range is necessary to adjust the estimated lbs of forage production from the above HCPC values above to match the actual HA range conditions.

2.1.1 Carracas Mesa SDA Area Range Condition Worksheets

In June 2012, range condition worksheets were completed on the north portion of the HA in the Carracas Mesa Special Designation Area (SDA). Range condition worksheets enable comparison of the cover and species on a transect with an ESD. The field cover data percentages must be converted into estimated actual weight percentages of the species present and then compared with the weight percentages allowed for HCPC species in the ESD. The form allows plant relative composition, grass/forb/shrub proportion, and estimated production to be evaluated and a range condition class (excellent, good, fair, or poor) to be selected for the site. Furthermore, trend (improving, stationary, and declining) for the site can also be evaluated. At the time of this monitoring, the Palmar Drought Index indicated the HA to be in moderate to severe drought conditions. This is shown in Figure 1 from the national Drought Monitor.

Figure 1. US Drought Monitor for June 26, 2012.



http://droughtmonitor.unl.edu/archive/2012/drmon0626.gif

Because the area was not in the worse state of drought at extreme or exceptional, the estimated expected production value used at the time of assessment was the average of HCPC low and RV production values.

The monitoring in the Carracas Mesa SDA involved two Loamy sites, which are considered to be representative key foraging areas. A transect was read in each site. The two transects were named Eul #1 and Eul #2, respectively. Both sites were evaluated and rated as being in fair condition with a downward trend, with Eul #2 in worse condition than Eul #1. Two transects were read to collect ground and basal cover data and production (lbs /acre) was visually estimated. For both transects, the cover value for bare ground was 29%, litter ranged from 25% to 27%, and vegetation comprised 44% to 45 % cover. Bare ground values were less than expected for the site when compared to expected values of the Loamy ESD. Litter values were slightly higher than expected. Overall vegetation percent cover values were higher than expected for the sites. However, HCPC and desirable forage species were less than expected for the sites.

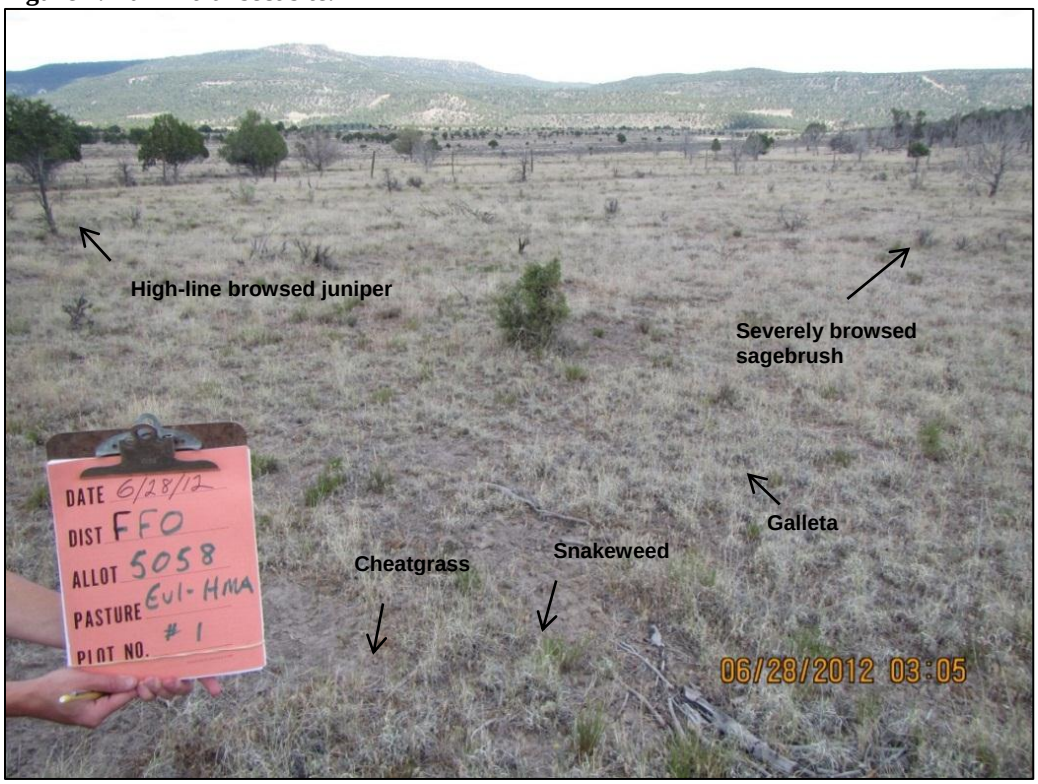
Eul #1 and was in better condition than the second transect site. Approximately 88% of the vegetation consisted of grasses; however, approximately half of the production weight and composition was galleta. This far exceeds the approximate 8% of allowable production of galleta in the ESD. Production at this site was estimated to be about 68% of expected production based on precipitation and general climatic conditions of the area at the time of monitoring. Eroded gullies were present, but appeared to be healing. Past horse presence was noted at Eul #1, but at the time of monitoring no recent horse sign was noticeable as the majority of wild horses remain on the WHT at this time. In combination with other factors, the lack of cool season grasses and prominence of warm-season galleta and invasive cheatgrass indicate a downward trend at Eul #1.

There was indication of heavy past horse use in Eul #2; however, no recent horse presence was noted due to timing. The site was extremely dry and large active gullies were present. Very little cool season grasses were found at the site, and the majority of the production consisted of annual forbs at approximately 60%. Increased production of annual forbs (as desired perennial grasses decrease) is also

an indicator of deteriorating range land. The estimated production was only 34% of the expected value. Though the general range condition rating for Eul #2 is the same as that for Eul #1, Eul #2 is deteriorating more than Eul #1.

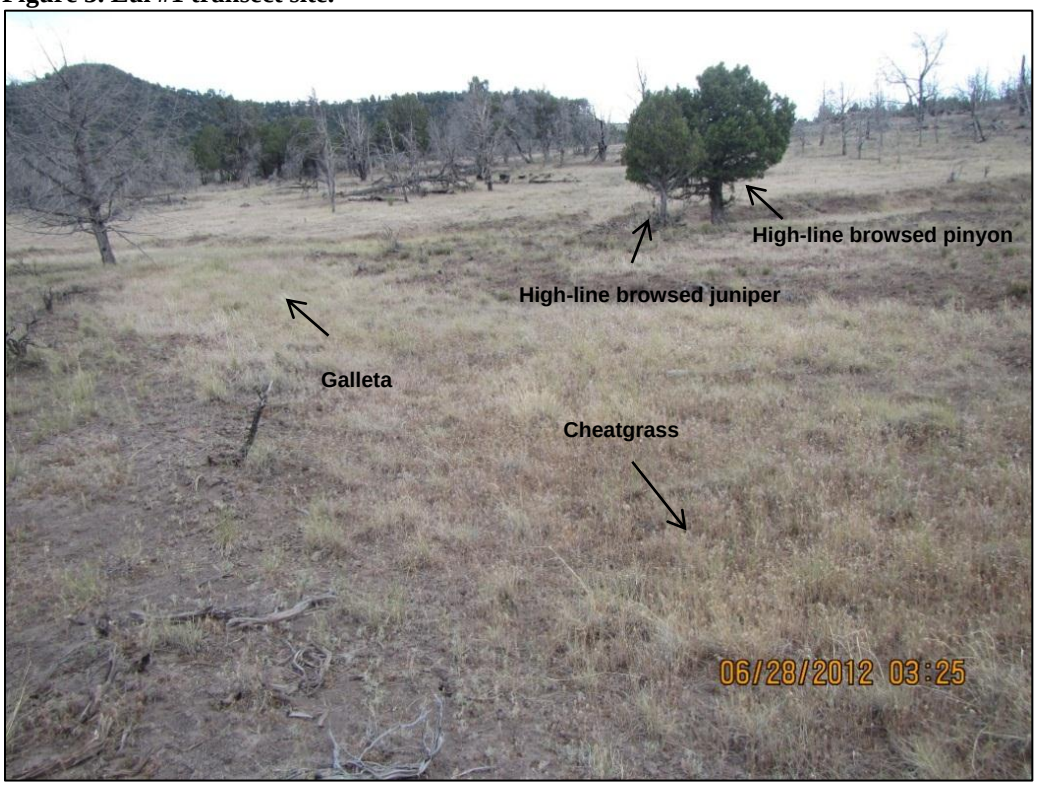
These two key foraging sites are shown in Figure 2 and Figure 7. Note cheatgrass, unpalatable snakeweed, and high-line browsed juniper trees in background. Galleta is the dominant native grass, indicating a decline in cool-season grasses in Figure 2.

Figure 2. Eul #1 transect site.



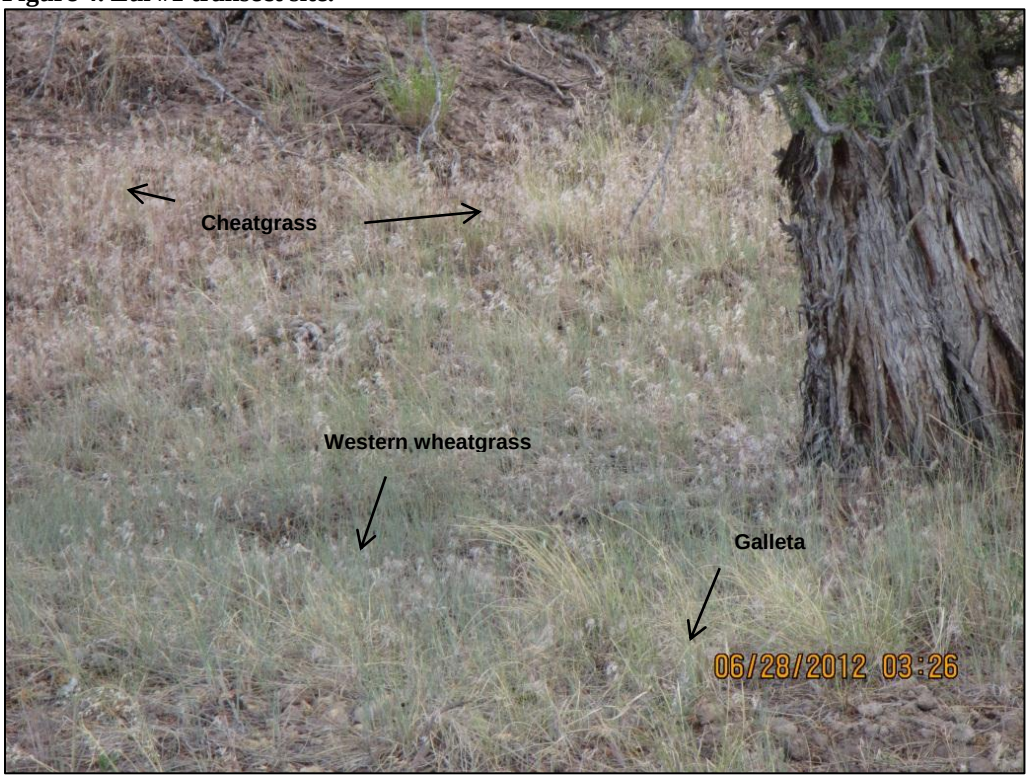
Note high amount of cheatgrass and high-line browsed pinyon and juniper trees. Galleta is the dominant native grass, indicating a decline in cool-season grasses in Figure 3.

Figure 3. Eul #1 transect site.



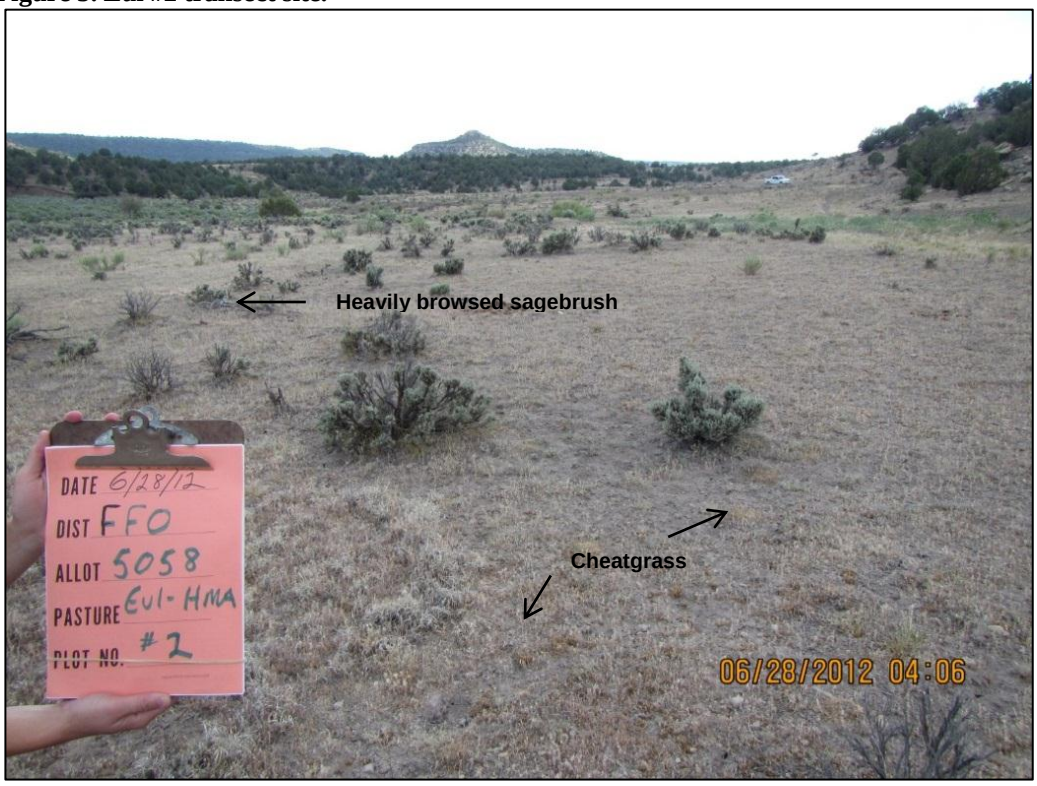
Note large amount of cheatgrass competing with native western wheatgrass and galleta in Figure 4.

Figure 4. Eul #1 transect site.



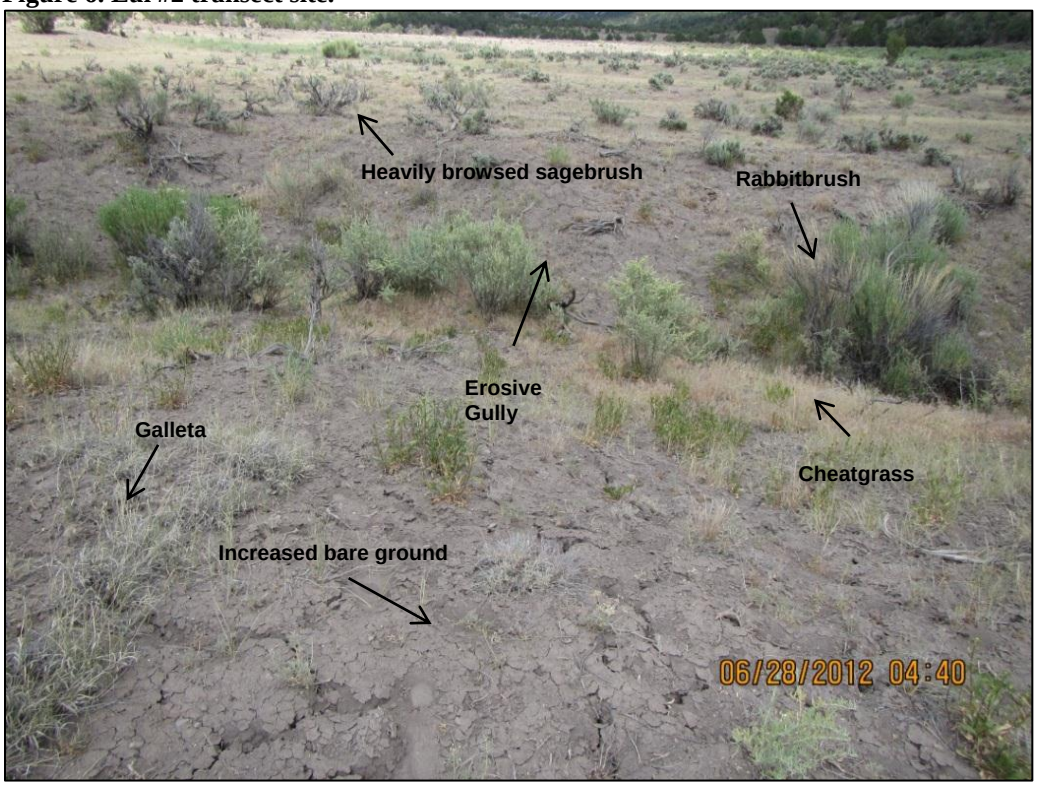
Note heavily grazed grass, little native grass cover, cheatgrass, and many sagebrush shrubs have been heavily browsed in Figure 5. Evidence of horse use at this site.

Figure 5. Eul #2 transect site.



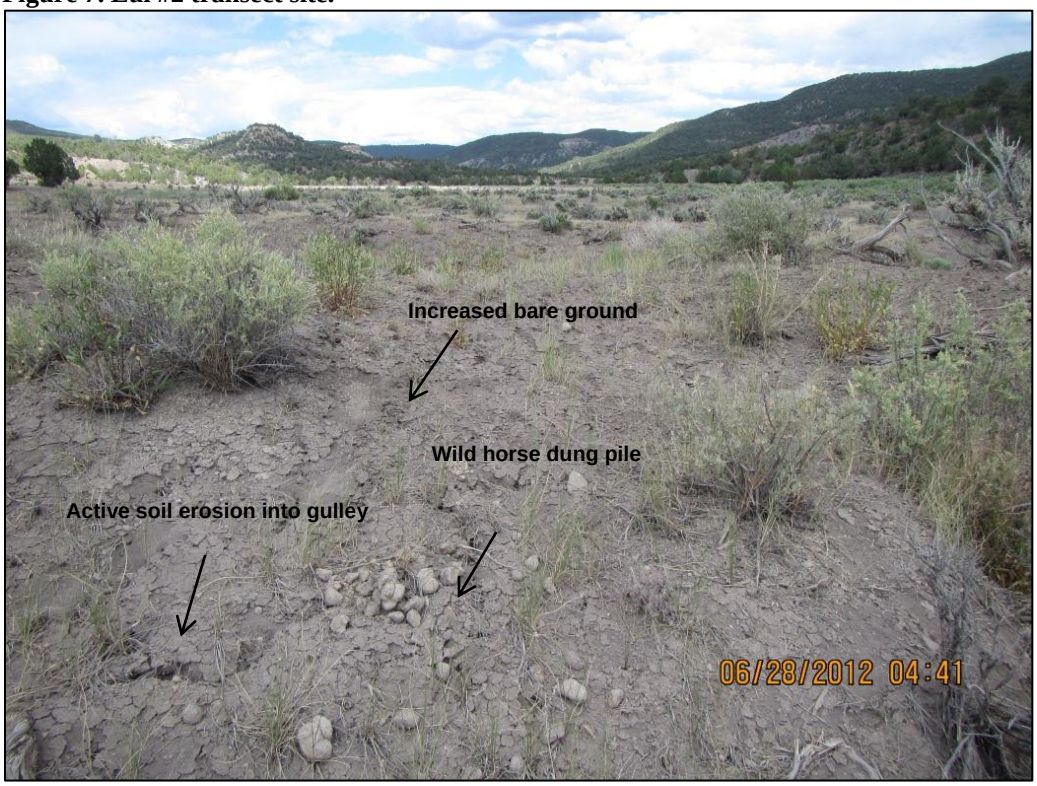
Note low native grass cover, cheatgrass, increased bare ground and forbs, and many heavily browsed sagebrush plants in background in Figure 6. Active soil erosion occurring and developing a gulley due to grass cover loss. Evidence of horse use at this site. Rabbitbrush (right side) is not a palatable species. Fourwing saltbush in foreground has not been browsed yet as this photo was taken in summer. Typically, wild horses and wildlife do not heavily use this area of the HA until winter.

Figure 6. Eul #2 transect site.



Note limited grass cover, increased bare ground, and active soil erosion and horse presence signs in Figure 7.

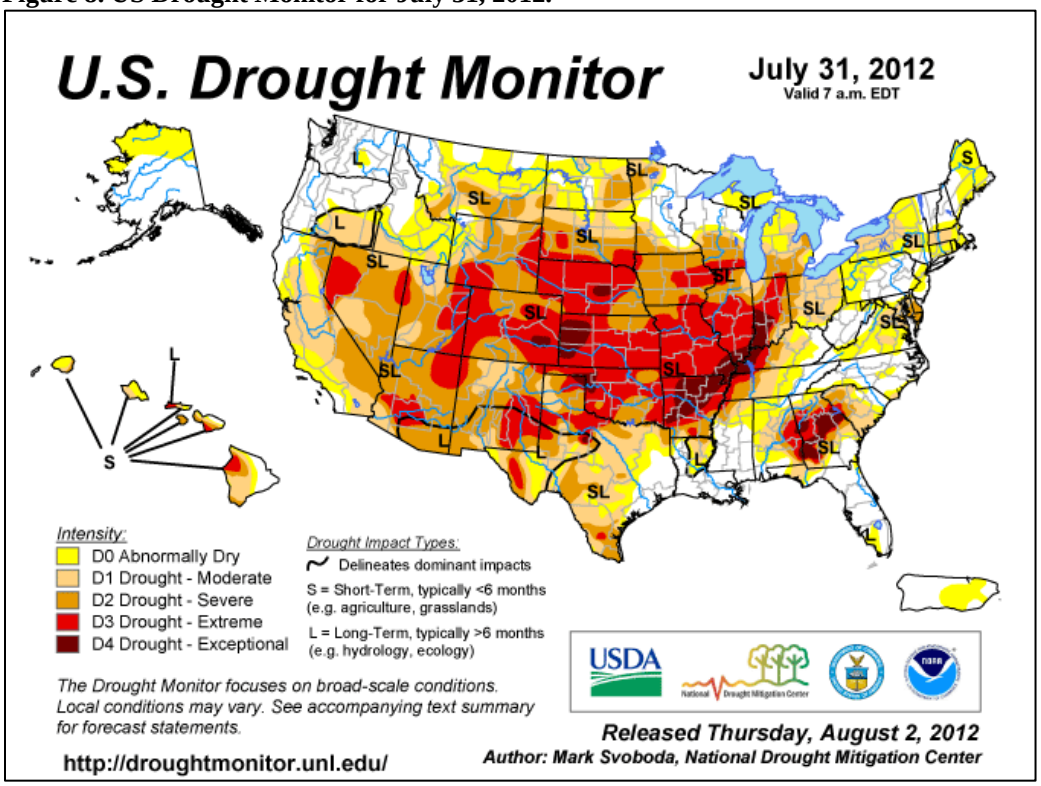
Figure 7. Eul #2 transect site.



2.1.2 Rosa Community Allotment Rangeland Health Assessments and Range Condition Worksheets

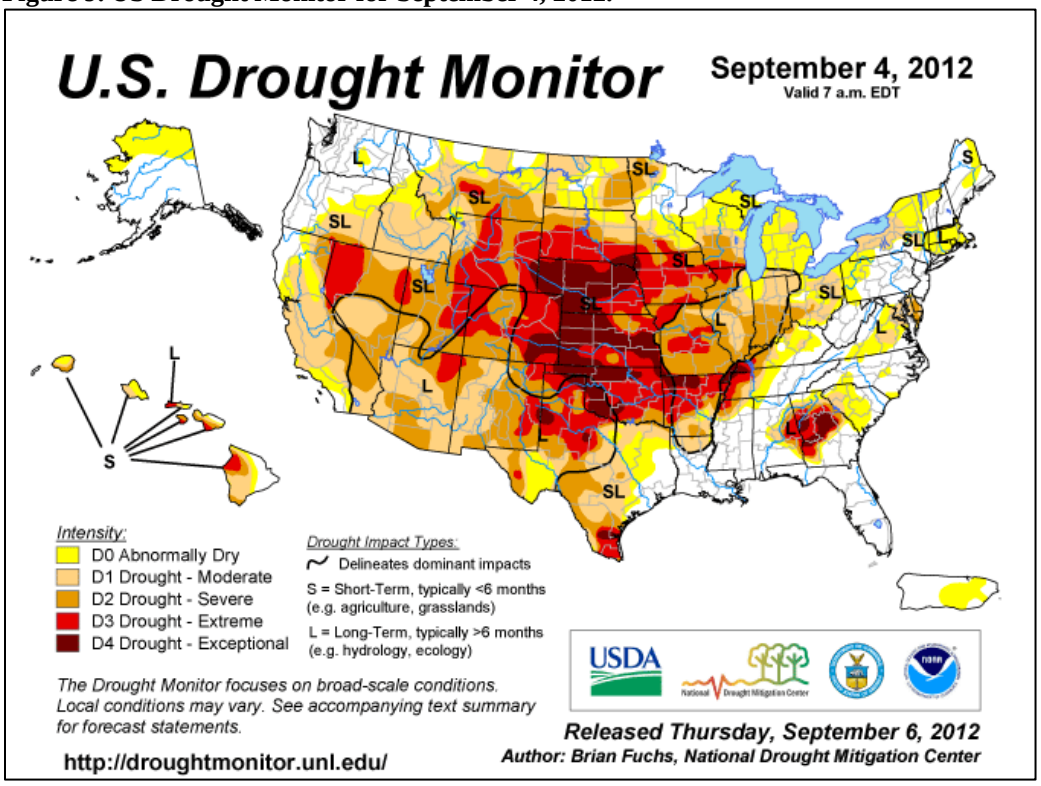
In the summer of 2012, five RHAs were completed on the Rosa Community Allotment and were subsequently named Rosa #1 through #5. All RHAs were conducted in August, with the exception of Rosa #5, which was completed in early September. RHAs consist of a cover data transect line and evaluation of a key foraging use site's biotic integrity, hydrologic function, and soil and site stability. Ratings of these factors are based on how much results deviate from what is expected for the site. These are considered to be a "snapshot in time" of the range's response to current grazing management. Like the sites in the Carracas Mesa SDA, all five RHAs were conducted in key use Loamy ESD areas. All five met basic rangeland health standards. However, when range condition worksheets were also completed for these areas, all were evaluated to be in fair condition like the Carracas Mesa SDA sites. Two were noted as being in a stationary trend, while three were noted to be in a downward trend. The same considerations for drought were used as those in the Section 2.2.1 Carracas Mesa SDA range condition evaluations. For both early August and early September, the HA was still in the severe drought category (Figure 8 and Figure 9). Therefore, the same expected estimated low and RV HCPC production values were used in the Rosa range condition assessments.

Figure 8. US Drought Monitor for July 31, 2012.



http://droughtmonitor.unl.edu/archive/2012/drmon0731.gif

Figure 9. US Drought Monitor for September 4, 2012.



http://droughtmonitor.unl.edu/archive/2012/drmon0904.gif

Rosa #1 RHA was conducted in August and cover results consisted of 54% bare ground, 8% litter, and 39% vegetation. The RHA noted it to be in fair condition and at risk. Pedestaling or exposure of plant bases from soil erosion was noted, as well as losses in soil surface resistance to erosion and decreased water infiltration. Cool season grasses were missing. The range condition worksheet evaluated this site to be in fair condition with a downward trend and estimated production in the fair rating at less than half of expected.

Rosa #2 RHA cover results consisted of 37% bare ground, 21% litter, and 42% vegetation. It was noted to be in fair condition with a downward trend in the RHA. Moderate water-flow patterns and pedestaling was observed. Like Rosa #1, cool season grasses were declining. Mortality of blue grama and sagebrush was observed. Cheatgrass was also present. The range condition worksheet also found this site to be in fair condition with a downward trend and estimated production to be less than 50% of expected.

Rosa #3 RHA was in the best condition of all of the RHAs. Its cover data transect showed 22% bare ground and 3% stone, 17% litter, and 58% vegetation. Nearly all of its attribute ratings were found to be in the none to slight categories of departure from expected, with the exception of cheatgrass invasion. The range condition worksheet rated the site as being in fair condition with a stationary trend, with less than half of expected production.

Rosa #4 RHA was noted to be fair condition at risk and had signs of wild horse use. Cover values were 35% bare ground, 21% litter, and 44% vegetation. It noted heavy browse use on sagebrush and that the area may be negatively affected by summer growing season grazing and wild horses. Furthermore, a decline in perennials and cool-season grasses with dominance in warm-season grasses and cheatgrass and some thistle was noted. The range condition worksheet found the area to be in fair condition with a stationary trend and expected production at less than half of expected.

Rosa #5 RHA noted fair condition. This site had cover results of 40% bare ground, 32% litter, and the lowest vegetation at 28%. Excess horse use was noted in addition to water flow patterns and gullying erosion. The forb purslane (which is not included in area HCPC ESDs) was the dominant plant species, cheatgrass was present, and sagebrush encroachment was noted. Because the area received some rain, the main grass species galleta exhibited good green-up and vigor. The range condition worksheet noted the area to be in fair condition with a downward trend. Some rainfall had occurred in the area, and galleta production had increased over the other sites.

2.1.3 Carracas Mesa SDA Production and Species Evaluation

In order to verify species present in the major EDS and estimate 2012 production, monitoring in early October was conducted across the Carracas Mesa SDA, as it is a portion of the HA and is the primary area of wild horse use on the BLM. No cattle grazing occurs in this portion of the HA. Only wildlife and wild horses use this area. This time period was chosen in order to ensure that the rangeland plants had reached their peak production for 2012 and because the SDA is the primary habitat area of wild horses on the HA. Ten plots were selected across the SDA, with the exception of the northern portion as it is inaccessible by roads and had very steep terrain. These sites were located in Soil Survey Types 220, 110, and 103. Soil Type 30 was excluded as it consists of a minor portion of the SDA. Furthermore, the sites evaluated were Loamy and Sandy to Silty Loam Forestland ecological sites. At each site, a 0.96 square foot hoop was randomly thrown, as shown in Figure 10.

Figure 10. Range production estimation hoop (0.96 sq. ft.).

After the hoop landed, the annual production of each species of plant within the hoop was either clipped and weighed or estimated in grams (g). Ground rules were established so to only estimate production on ungrazed plants. The results in grams for each species were then later multiplied by 10 to estimate production in lbs /acre (Sprinkle and Bailey 2004). The following pictures show each plot evaluated. Each of the 10 plots had past and/or recent wild horse feces and sign. Furthermore, evidence of foraging on grass and browse species from animal users was present on certain sites.

Figure 11.Plot 1. Soil Survey 220. ESD Pinyon-Juniper dominated.

Figure 12.Plot 1. Soil Survey 220. ESD Pinyon-Juniper dominated.

Figure 13. Plot 1. Soil Survey 220. ESD Pinyon-Juniper dominated. Note wild horse sign.

Figure 14. Plot 2. Soil Survey 110. ESD Loamy. Note severely browsed sagebrush and high-line browsed juniper.

Figure 15. Plot 2. Soil Survey 110. ESD Loamy.

Figure 16. Plot 2. Soil Survey 110. ESD Loamy.

Figure 17. Plot 3. Soil Survey 103. ESD Loamy. Note severely browsed sagebrush and high-line browsed juniper.

Figure 18. Plot 3. Soil Survey 103. ESD Loamy.

Figure 19. Plot 3. Soil Survey 103. ESD Loamy. Note severely browsed sagebrush and high-line browsed juniper.

Figure 20. Plot 4. Soil Survey 103. ESD Loamy. Note decreased grass cover, increased bare ground, and severely browsed sagebrush.

Figure 21. Plot 4. Soil Survey 103. ESD Loamy.

Figure 22. Plot 4. Soil Survey 103. ESD Loamy. Note decreased grass cover, increased bare ground, and severely browsed sagebrush, and wild horse sign.

Figure 23. Plot 5. Soil Survey 220. ESD Pinyon-Juniper dominated. Note severely browsed sagebrush.

Figure 24. Plot 5. Soil Survey 220. ESD Pinyon-Juniper dominated.

Figure 25. Plot 5. Soil Survey 220. ESD Pinyon-Juniper dominated. Note severely browsed sagebrush and wild horse sign in foreground.

Figure 26. Plot 6. Soil Survey 220. ESD Pinyon-Juniper dominated.

Figure 27. Plot 6. Soil Survey 220. ESD Pinyon-Juniper dominated. Note past wild horse sign.

Figure 28. Plot 6. Soil Survey 220. ESD Pinyon-Juniper dominated. Note past and recent wild horse sign.

Figure 29. Plot 7. Soil Survey 110. ESD Loamy at Pinyon-Juniper transition zone.

Figure 30. Plot 7. Soil Survey 110. ESD Loamy at Pinyon-Juniper transition zone.

Figure 31. Plot 7. Soil Survey 110. ESD Loamy at Pinyon-Juniper transition zone. Note severely browsed bitterbrush.

Figure 32. Plot 8. Soil Survey 220. ESD Pinyon-Juniper dominated.

Figure 33. Plot 8. Soil Survey 220. ESD Pinyon-Juniper dominated.

Figure 34. Plot 8. Soil Survey 220. ESD Pinyon-Juniper dominated. Note severely browsed bitterbrush.

Figure 35. Plot 8. Soil Survey 220. ESD Pinyon-Juniper dominated. Note severely browsed bitterbrush.

Figure 36. Plot 8. Soil Survey 220. ESD Pinyon-Juniper dominated. Note heavily utilized browse shrubs, wildlife, and wild horse sign in foreground.

Figure 37. Plot 9. Soil Survey 220. ESD Pinyon-Juniper dominated.

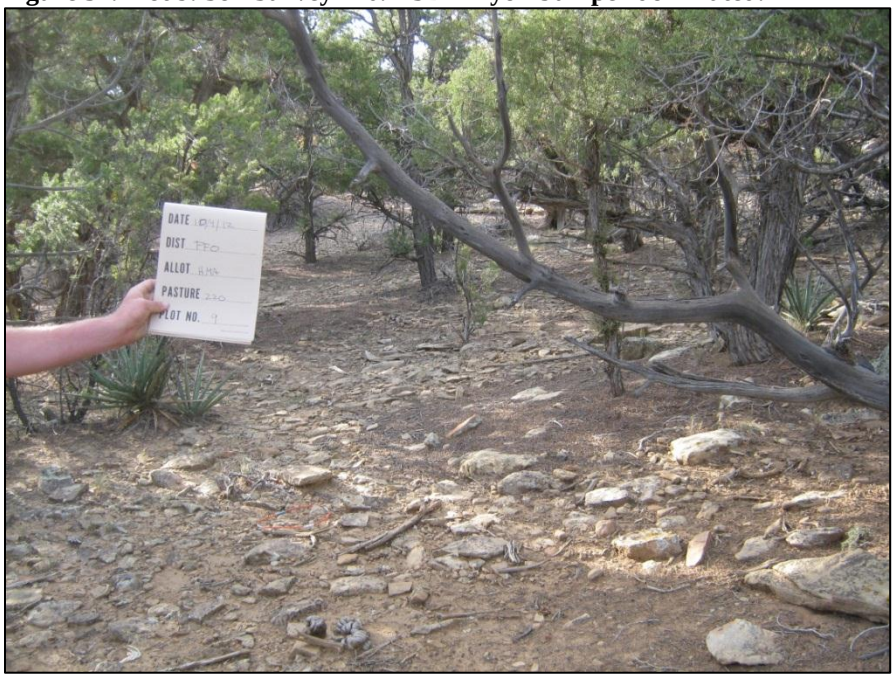


Figure 38. Plot 9. Soil Survey 220. ESD Pinyon-Juniper dominated.

Figure 39. Plot 9. Soil Survey 220. ESD Pinyon-Juniper dominated. Note severely browsed bitterbrush, wildlife, and wild horse sign in foreground.

Figure 40. Plot 10. Soil Survey 110. ESD Pinyon-Juniper dominated.

Figure 41.Plot 10. Soil Survey 110. ESD Pinyon-Juniper dominated.

Figure 42. Plot 10. Soil Survey 110. ESD Pinyon-Juniper dominated. Note wild horse sign in foreground.

Figure 43. Plot 10. Soil Survey 110. ESD Pinyon-Juniper dominated. Heavily to severely utilized browse species and wild horse sign on right side.

The following table summarizes the results of the plots for grass, forb, and shrub estimates for species that were found within the hoop. Other species were present on plots, but their production was not estimated as they were not found in hoop samples.

Table 10. Carracas Mesa SDA grass production estimates.

Plot	Soil Type	Grass Species[1]								
		Blue grama	Galleta	Cheatgrass[2]	Western wheatgrass	Indian ricegrass	Bottlebrush squirreltail	Muttongrass	Total (g)	Est. lbs/ac
1	220						0.5	0.5		
2	110		11.75	3.25	7.25				1	10
3	103	1.75	14.9	0.6	0.75				19	190
4	103		10						17.4	174
5	220		4.5			0.5		0.5	10	100
6	220		0.1			0.5		1.45	5.5	55
7	110		5.7			2.6	0.5		2.05	20.5
8	220		0.5			0.3			8.8	88
9	220						0.2	1	0.8	8
10	110	3.6					0.1		1.2	12

[1] Other grass species observed included needleandthread, sand dropseed, and crested wheatgrass.
[2] Cheatgrass is a non-native noxious weed and has been removed from the total production estimates.

Table 11. Carracas Mesa SDA forb production estimates.

Plot	Soil Type	Forb Species[1]				
		Purslane	Aster spp.	*Astragalus* spp.[2]	Total (g)	Est. lbs/ac
1	220		3			
2	110				3	30
3	103				0	0
4	103	16		1	0	0
5	220				16	160
6	220				0	0
7	110				0	0
8	220				0	0
9	220				0	0
10	110		0.9		0	0

[1] Other forb species observed included buckwheat, goosefoot, and an *Amaranth* species.
[2] Astragalus was removed from total production estimates as it is a poisonous forb.

Table 12. Carracas Mesa SDA shrub production estimates.

Plot	Soil Type	Shrub Species[1]					
		Broom snakeweed	Bitterbrush	Big sagebrush	Gambel oak	Total (g)	Est. lbs/ac
1	220				6.5		
2	110					6.5	65
3	103	4		1		0	0
4	103					5	50
5	220	2				0	0
6	220				12	2	20
7	110	3.3				12	120
8	220					3.3	33
9	220		0.1			0	0
10	110	0.1				0.1	1

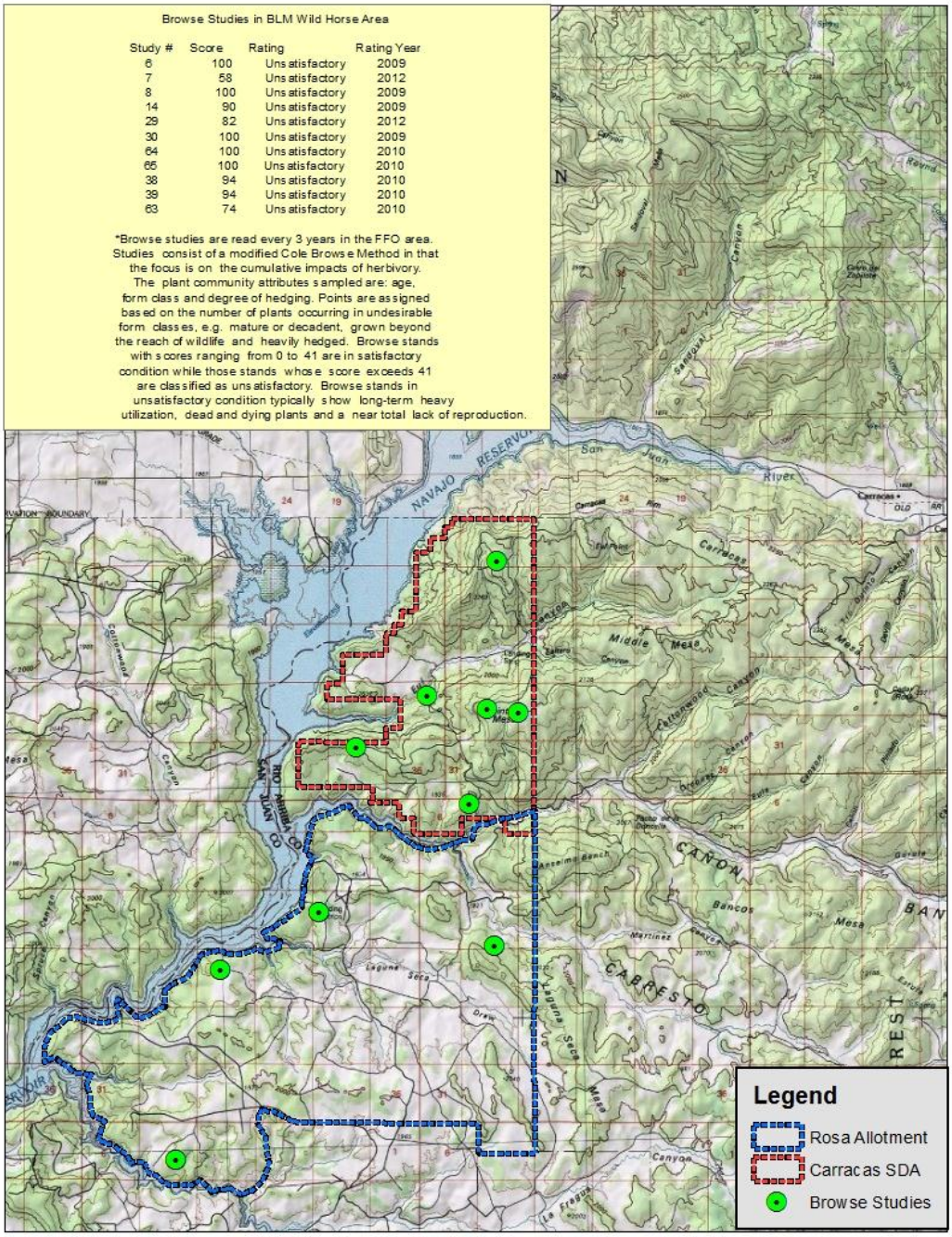
[1] Other shrub species observed included serviceberry, mountain mahogany, sumac, fourwing saltbush, rabbitbrush, and winterfat. Trees included pinyon and juniper. Furthermore, yucca, picklypear, barrel cactus, and cholla were observed.

Though the above numbers are estimates and results could be more accurately found with further plots and hoop sampling, it is very evident that annual production for 2012 on forage species for wildlife, horses and cattle is low and not directly equal to the ESD values for the HCPC communities. Repetitive overuse coupled with drought conditions impact HCPC vegetation to the point it is weakened, enters poor condition, and becomes unusable as forage. Once the desirable HCPC vegetation enters this state, undesirable plants can invade and replace them. The above forage production estimates verify that there is a decrease in the condition of the rangeland sites and their estimated forage production and that there is an increase in less desirable vegetation.

2.1.4 Wildlife Browse Studies

Furthermore, wildlife browse studies in the Carracas Mesa SDA and Rosa allotment have indicated that overuse on browse species is occurring. These studies consist of plots in which the first 50 browse plants encountered on a transect within a 15 foot radius are evaluated for the effects of foraging. These plants are given a satisfactory or unsatisfactory rating. All browse studies have been found to have an unsatisfactory rating. Further discussion is found in the following figures.

Figure 44. Browse studies results in the BLM Carracas Mesa SDA and Rosa Allotment.



2.2 HA Fair Condition Production Estimates

Both the range transects in key foraging sites and browse utilization studies indicate that the range is not producing the forage it should be. Because the range is considered to be in fair condition at best, HA total net forage production with slope reductions (NFSR) is estimated to be at 50% of HCPC values. This is considered generous for some areas and species of the HA that have been heavily utilized, such as key browse plants. NFSR estimates in fair condition are shown in the following table.

Table 13. HA (32,088 ac) estimated net forage with slope reduction (NFSR) values production in fair (50%) condition rating and average lbs/acre.

Precipitation Level	Low	RV	High
Est. NFSR - 50% Fair lbs)	4,447,569	7,069,518	9,609,236
Est. NFSR – 50% Fair Avg. lbs/ac	139	220	299

In order to verify that these overall estimated net lbs/ac of total forage production across the HA were reasonable, the analysis in the following table was completed by evaluating the percentages of each ESD and its specific fair (50%) estimated low year gross productivity with no reductions for slope or well pad/road development.

Table 14. HA (32,088 ac) gross forage (GF) estimate in fair (50%) condition (32,088 ac) verification by ESD approximate acreage percentages and lbs/acre.

ESD Type	Percent (%) of HA	Approx. Total Acreage (ac)	Est. Low HCPC lbs/ac	Est. Low Fair (50%) Condition lbs/ac	Est. Total Forage per ESD for Low (50%) Condition (lbs)	Est. Low Total lbs/ac per ESD
PJ	50%	16,043	290	145	2,326,206	72
L	25%	8,067	522	261	2,105,500	66
SB	8%	2,468	567	284	699,749	22
SS	2%	496	330	165	81,898	3
S	1%	258	364	182	47,002	1
Unusable[1]	15%	4,755	0	0	0	0
Est. Totals	**100%**	**32,088**	**n/a**	**n/a**	**5,260,354**	**164**

[1] Unusable includes rock outcrop, rubble, and badlands

The concluding estimated gross forage low fair (50%) value of 164 lbs/ac from the above Table 14 is reasonable as it nearly equals the value calculated from applying 50% fair condition to the gross overall estimated HCPC average forage value of 320 lbs/ac from Table 8, which is approximately 160 lbs/acre. This low overall gross production estimate occurs because such a high percentage of the HA is low-producing pinyon-juniper rangeland (50%) and unusable rock type (15%) land, which does not allow the other highly productive ESD sites to greatly increase overall total estimated gross forage.

For the previous fair condition net production values from Table 13, loss from oil and gas well development and road construction must be estimated. In order to calculate forage loss, ArcGIS was used to identify wells and roads. Currently, there are 562 wells and 121 miles of associated access roads in the HA. On average, gas wells disturb approximately 3 acres each when being constructed. Reseeding and/or reclamation efforts typically reduce the disturbance impact to approximately 1.5 acres per well once seeded vegetation becomes established. Though many wells have reached successful reclamation, 3 acres was given as a disturbance impact per pad to be conservative. Roads are generally 14 feet wide, while collector roads can be as wide as 25 feet. To estimate an average road width, a generous 20 feet is used. For the well disturbance acreage loss, the calculation 562 wells x 3 acres per well resulted in approximately 1,686 acres of potential well caused forage loss. Roads resulted in approximately 293 lost acres from the calculations 121 miles x 5,280 ft. /mile x 20 ft. = 12,777,600 square ft. and 12,777,600 square ft. x 1 acre/43,560 square ft. = 293 acres. Total acreage loss from well and roads was estimated to be approximately 1,686 well acres + 293 acres = 1,979 acres. This is a loss of approximately 6% of the forage acreage of the HA (1,979 ac/ 32,088 ac.). By multiplying each estimated total vegetative production fair (50%) condition lbs /acre values from Table 13 by 1,686 acres, total net forage loss can be estimated in lbs and then subtracted from the total net forage values.

Table 15. HA (32,088 ac) estimated total net forage (lbs) with slope and development reductions (NFSDR) for total estimated fair (50%) condition ratings and average lbs/acre.

Precipitation Level	Low	RV	High
Est. Forage Loss (lbs)	233,686	371,449	504,892
Est. NFSDR (lbs)	4,213,883	6,698,069	9,104,344

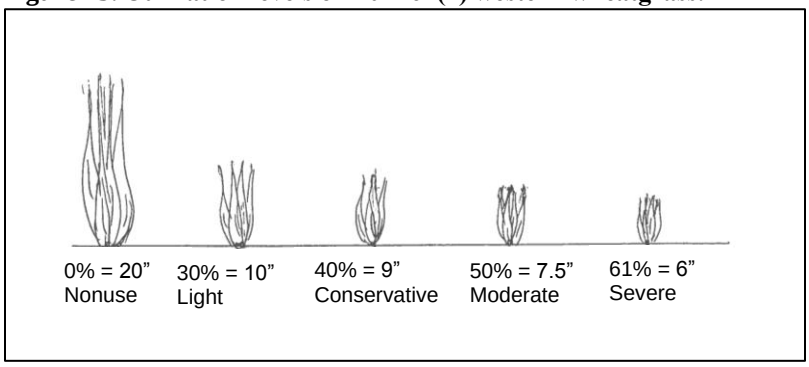
Est. NFSDR - Fair 50% Avg. lbs/ac	131	209	284

A 45% grazing proper use factor was then applied to the total remaining estimated net forage values from Table H-10, which gave available forage for animals by the formula Est. Net Production (lbs) x 45% = Est. Available Forage (lbs). Again, a proper use factor is the utilization level of animal grazing or browsing on the current annual production that will enable vegetation to maintain health. The BLM FFO considers 45% use as the maximum level of grazing safe for the HA rangeland vegetation and uses this as a standard. This means that no more than 45% of a plant's aboveground material should be removed by grazing and browsing animals. This utilization applies to cattle, wild horses, and wildlife, with no exception for any species. The BLM will advise and work with permittees and issue decisions if necessary to reduce livestock grazing pressure in drought years. Furthermore, the BLM readily welcomes grazing utilization levels below 45% use. A 45% utilization level is considered moderate grazing intensity according to Holechek (2011). Holechek places estimated utilization levels into grazing intensity rating levels along with their descriptions. These ratings are:

- **Nonuse to Light** = 0-30% use – this level allows forage plants to be their most productive.
- **Conservative** = 31-40% use – this level and light to nonuse are most appropriate in low-producing drought years.
- **Moderate** = 41-50% use – this level allows forage plant health to be maintained, but does not typically enhance production. This level can be too high in drought years if plant condition has declined.
- **Heavy** = 51-60% use – this level does not allow forage plants to maintain their health.
- **Severe** = 61+% use – this level leads to long-term forage plant damage.

The following image is an example of these utilization levels on a 20 inch tall ungrazed western wheatgrass plant. Utilization is based on the aboveground material or "mass" of the plant. On this type of grass, the heavier portion is toward the base.

Figure 45. Utilization levels on 20 inch(") western wheatgrass.



Each drawing represents the maximum end of a utilization category except for the severe category. Severe is shown at the lowest end of its range 61% since its maximum is 100% utilization (no aboveground plant remaining).

As the Holechek descriptions imply, any utilization greater than moderate at 50% maximum is detrimental to nearly all rangeland vegetation and may result in major long-term damage. Because of this, forage allocation planning is based on available forage in low precipitation years with this proper use factor in order to protect rangeland vegetation and maintain TNEB. For the sagebrush grassland and pinyon-juniper forestland rangeland types that are found across the HA, Holecheck recommends 30-40% conservative use if the rangeland is in good condition and/or if foraging only occurs when plants are dormant and not actively growing (Holecheck 2011). Holecheck recommends that if grazing occurs when plants are actively growing in the spring and summer or if the rangeland is in poor condition, utilization should be in the lower range of conservative use. Because of the current drought and the fact that active growing season grazing does occur on the HA and the range is in fair condition with a downward trend in many areas, conservative grazing use is desirable. In order to adjust for bad forage years, livestock numbers are reduced or even removed from the range and wildlife may be hunted, but wild horses must also be managed.

Though grazing use is desirable in the conservative utilization range for the current rangeland condition, estimated total available forage (AF) for the HA was calculated based on the 45% proper grazing use factor, as this is the maximum level permitted by the BLM. Values for estimated HA total available forage (AF) is shown in the following table.

Table 16. HA (32,088 ac) estimated total available forage (AF) for fair condition (50%) range at 45% grazing proper use factor.

Precipitation Level	Low	RV	High
Est. Total AF (lbs)	1,896,247	3,014,131	4,096,955

3. HA Forage Analysis – Planned Allocation, Current 2012 Situation and Scenario, and Projected 2013 Situation

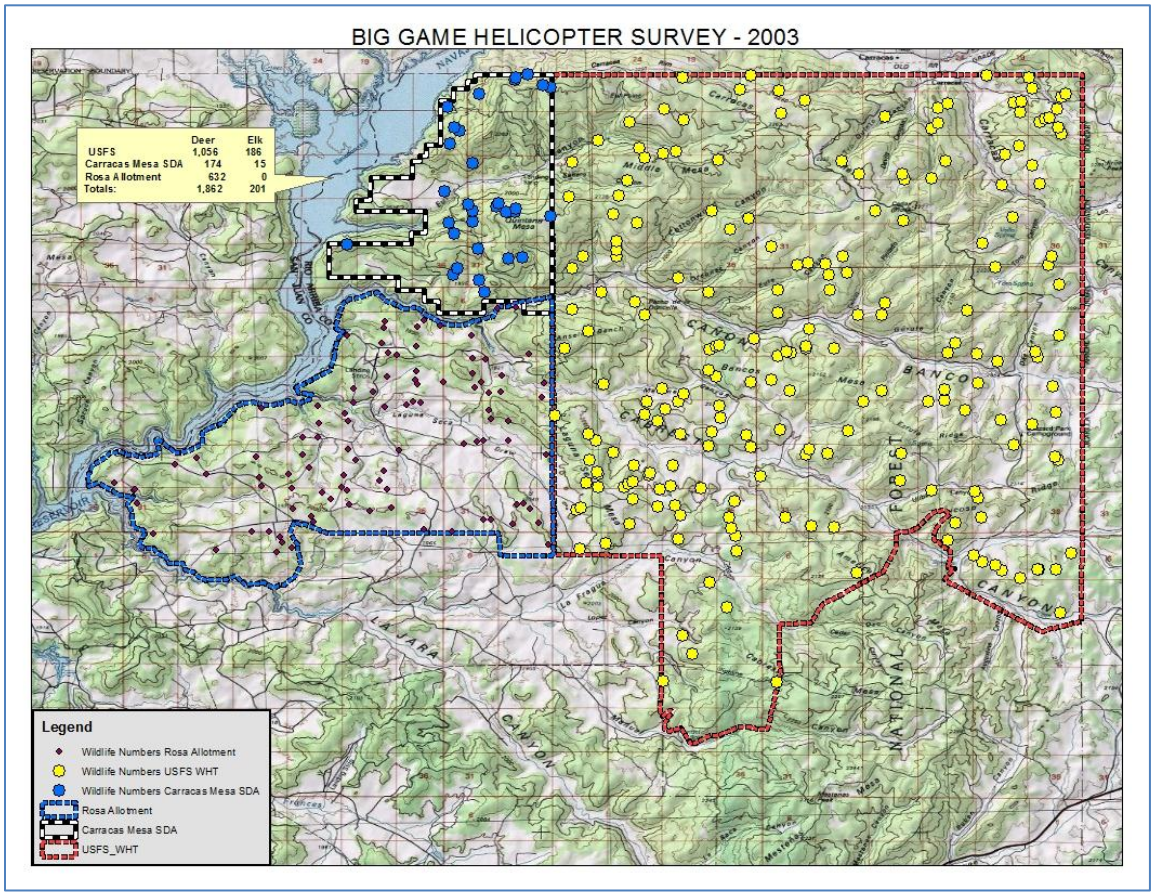
The HA net and available total forage estimates were used to evaluate the planned allocation, current excess wild horse situation, and projected 2013 situation.

In order to estimate the amount of forage needed for the animals, Animal Unit Months (AUMs) were calculated. An AUM is defined as the forage demanded by an animal for approximately 1 month of 30.42 days (365 days/12 month) (Holechek 2011).

To estimate a cattle AUM (cow-calf pair), the standard daily intake value used in rangeland carrying capacity is 2% body weight of a 1000 lb. cow per day (20 lbs /day), or about 608 lbs /month. The value of 2% body weight is applied to a cow because it is a ruminant and is therefore very successful in completely digesting fiber and efficiently absorbing protein from food sources (Holecheck 2011).This AUM value was applied to the 259 cattle permitted on the Rosa Community allotment for 6 months for planning allocation. Because of the 2012 drought and increased wild horse use and their preferred diet overlap with cattle, the permitted cattle grazing on the Rosa Community allotment has not exceeded 180 cattle for 2012. Though this analysis does not separate portions of the HA, it must be reemphasized that no cattle grazing occurs on 9,170 acres of the HA in the Carracas Mesa SDA.

Wildlife population estimates only involved winter use for mule deer and elk. Though both of these ungulates are known to have resident herds on the HA in the summer, surveys have not been performed at this time to estimate the summer resident wildlife numbers. It is known that deer and elk primarily use the HA in the winter from approximately mid-October to mid-April, or about 6 months. The most complete New Mexico Fish and Game winter sitability surveys were conducted in 2003 and estimated approximately 806 deer and 15 elk to be present on the HA during these winter months. This is the sum the Carracas Mesa SDA results and the numbers on the Rosa Community Allotment as shown in Figure 46 below. Because elk and deer are ruminants like cattle, both species typically consume approximately 2% body weight per day (Holecheck 2011). For a 150 mule deer, this animal consumes about 2% of its 150 lb. body weight per day, or about 3 lbs/day (Holechek 2011). This is approximately 91 lbs/month/deer. Holechek (2011) estimates that a 700 lb. elk consumes 2% body weight per day also, or about 14 lbs/day. This is approximately 426 lbs/month/elk. Because summer wildlife use is not included in this analysis, wildlife consumption on the HA should be slightly higher. However, this analysis used only known winter values. The wildlife survey data for both the HA and the USFS WHT is shown in the following figure.

Figure 46. HA (SDA and Rosa Allotment) and WHT mule deer and Rocky Mountain elk aerial survey results for 2003.



Horses are cecum digesters and unlike the aforementioned ruminants, they do not efficiently utilize microbial protein digestion in their cecums and do not completely digest fiber from forage (Holechek 2011). In order to account for the inefficiency of their digestive systems, horses can eat less quality forage but in turn must consume more of it than ruminants do (Holecheck 2011). Therefore, horses grazing on rangeland are considered to consume 3% of body weight (Holecheck 2011). For a 1,000 lb. adult horse, the average number of lbs /day is approximately 30 lbs /day. This equates to approximately 913 lbs /month or about 1.5 times that of cow intake. Some may argue that this intake is very high when considering domesticated horses however, wild horses are highly active, travel very frequently, are constantly "on the alert", have a high breeding rate, and consume fair to poor quality forage throughout much of the year, all of which require increases in calories and forage intake. Though some adult horses may be larger and others smaller than 1,000 lbs, the Jicarilla wild horses are relatively large, and their current high body condition indicates that they are consuming a high amount of forage.

For this analysis, 913 lbs /month was applied to all of the estimated wild horses over 1 year old, regardless of exact age over 1 or sex. The BLM recognizes that all of these horses may not be fully grown, but the exact number cannot be accurately quantified and applied to the entire herd at this time. This overall average forage intake value was applied to all of the estimated adult horses because there is no possible way to quantify exact lbs /month intake for every wild horse. Using 30 lbs/day wild horse forage intake is intended as an overall estimated average to account for non-breeding adult horses with other horses such as lactating mares, growing young horses, and breeding stallions that require even higher amounts of forage. For all of the wild horse portions of the forage analysis, 30 lbs/month was multiplied by the number of horses. This is appropriate to use for the HA AML of 23 horses, as the AML does not include foals. For the 23 horses, 12 months of grazing was applied as forage is allocated to them for the entire year. In the current situation scenarios, estimated seasonal horse numbers were used.

Though not exactly known, the estimated winter population for 6 months was estimated to be 100 horses, which is based on 75 wild horses counted on BLM land in the 2011 aerial direct count and accounts for unseen horses. This is further supported by the ground surveys discussed in Chapter 3.1 of the Environmental Assessment. Because at least 30 individuals have been observed on a small portion of the HA this summer of 2012, a wild horse population of 50 horses was used to account for the unseen horses. Because the ground surveys were performed only on roads, there were very likely more unseen horses. For the projected 2013 situation, the following process was used to estimate the potential number of excess horses on the HA. The estimated HA 2012 winter population of approximately 100 horses is about 30% of the total estimated population of the herd (100 horses/337 horses). The estimated 2012 summer population of 50 horses is about 15% of the herd (50 horses/337 horses). Once the 2013 estimated population of adult horses reaches 405 after the 2012 foals have grown, the estimated winter population is 120 horses (405 horses x 30%) and the estimated summer population is 60 horses (15% x 405 horses). These numbers are the same as a 20% growth rate applied to both the 2012 winter and summer population (winter 100 horses x 120% = 120 horses, summer 50 horses x 120% = 60 horses).

Foraging animal estimated consumption scenarios for planning allocation and current situations on HA estimated net forage with slope and development reductions (NFSDR) and available forage (AF) is shown in the following tables. Discussion of results follows each table.

Table 17. HA Planning Allocation – Wild Horse AML, Permitted Cattle.

HA Est. NFSDR (4,213,883 lbs) Animal Use (lbs)		**Percent of HA Est. NFSDR Used (%)**	**Percent of HA Est. AF (1,896,247 lbs) Used (%)**
Rosa Permitted Livestock (259 cows x 608 lbs/mo. x 6 mo.)	945,350	22%	50%
Elk (15 elk x 426 lbs/mo. x 6 mo.)	38,325	1%	2%
Deer (806 deer x 6 mo. X 91 lbs/mo.)	441,285	10%	23%
Wild Horses (23 horses x 913 lbs /mo. x 12 mos.)	251,850	6%	13%
Est. Utilized Forage	**1,676,810**	**40%**	**Total Est. Available Forage Used = 88%**
Est. Remaining Forage	2,537,073	60%	Est. Remaining Available Forage = 12%
Grazing Intensity Level	**Conservative (40%)**		
Note: Estimated HA (32,088 ac) total net forage with slope and development reductions (NFSDR) (4,213,883 lbs) use with adult wild horse AML (23 horses), Rosa permitted cattle numbers (259 cattle), and current wildlife estimates. Estimated animal use applied to HA est. available forage AF (1,896,247 lbs) to estimate AF percentage (%) used.			

This conservative grazing intensity is appropriate for drought years and verifies that 23 wild horses all year is an appropriate AML considering the permitted cattle and wildlife estimated forage use. Considering the different animal users and their estimated numbers, forage planning allocation is in balance. Forage use remains within the maximum allocated amount at 45% proper use. If summer wildlife numbers were added, the estimated forage use would still likely remain within 45% proper use.

Table 18. HA Current 2012 Situation – Excess Wild Horses, Reduced Cattle.

HA Est. NFSDR (4,213,883 lbs) Animal Use (lbs)		**Percent of HA Est. NFSDR Used (%)**	**Percent of HA Est. AF (1,896,247 lbs) Used (%)**
Rosa Reduced Livestock (180 cows x 608 lbs/mo. x 6 mo.)	657,000	16%	35%
Elk (15 elk x 426 lbs/mo. x 6 mo.)	38,325	1%	2%
Deer (806 deer x 6 mo. X 91 lbs/mo.)	441,285	10%	23%
Winter Wild Horses (100 horses x 913 lbs/mo. x 6 mo.)	547,500	13%	29%

Summer Wild Horses (50 horses x 913 lbs /mo. x 12 mos.)	273,750	6%	14%
Total Wild Horse (Winter + Summer)[1]	**821,250**	**19%**	**43%**
Est. Utilized Forage	**1,957,860**	**46%**	Total Est. Available Forage Used = 103%
Est. Remaining Forage	1,389,513	54%	Est. Remaining Available Forage = -3%
Grazing Intensity Level	**Moderate (46%)**		

[1] This value is the total of estimated winter and summer wild horse use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Note: Estimated HA (32,088 ac) total net forage with slope and development reductions (NFSDR) (4,213,883 lbs) use for the current 2012 situation of estimated seasonal excess adult wild horses (100 winter, 50 summer), reduced 2012 cattle numbers (180 cattle), and current wildlife estimates. Estimated animal use applied to HA est. available forage AF (1,896,247 lbs) to estimate AF percentage (%) used.

For the current estimated grazing for 2012 with reduced cattle and excess wild horses, the grazing intensity level is over 45% and is not appropriate for the condition of the range and drought year. Though this estimated level of use does not greatly exceed the maximum proper use factor of 45%, grazing intensity of 46% can negatively affect rangeland plants. If summer wildlife numbers were added, this intensity would be higher. This estimated utilization level of 46% is not evenly spread across the HA, as many areas have seen detrimental heavy and intense grazing and browsing. Furthermore, cattle grazing does not occur in the north Carracas Mesa SDA portion of the HA, which is only used by wild horses and wildlife. This area undergoes the most wild horse use on the HA, and much of its condition is worse and its utilization levels on grass are heavier than that in the Rosa Allotment portion of the HA. This overall estimated utilization level of 46% is on the verge of creating rangeland damage and indicates an urgent need to manage the wild horse population before negative impacts to range and forage increase and the range deteriorates from fair to poor condition.

Table 19. HA 2012 Scenario– Excess Wild Horses, Permitted Cattle.

HA Est. NFSDR (4,213,883 lbs) Animal Use (lbs)		Percent of HA Est. NFSDR Used (%)	Percent of HA Est. AF (1,896,247 lbs) Used (%)
Rosa Permitted Livestock (259 cows x 608 lbs/mo. x 6 mo.)	945,350	22%	50%
Elk (15 elk x 426 lbs/mo. x 6 mo.)	38,325	1%	2%
Deer (806 deer x 5 mo. X 91 lbs/mo.)	441,285	10%	23%
Winter Wild Horses (100 horses x 913 lbs/mo. x 6 mo.)	547,500	13%	29%
Summer Wild Horses (50 horses x 913 lbs /mo. x 12 mos.)	273,750	6%	14%
Total Wild Horse (Winter + Summer)[1]	**821,250**	**19%**	**43%**
Est. Utilized Forage	**2,246,210**	**53%**	Total Est. Available Forage Used = 118%
Est. Remaining Forage	1,967,673	47%	Est. Remaining Available Forage = -18%
Grazing Intensity Level	**Heavy (53%)**		

[1] This value is the total of estimated winter and summer wild horse use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Note: Estimated HA (32,088 ac) total net forage with slope and development reductions (NFSDR) (4,213,883 lbs) use for the 2012 scenario of estimated seasonal excess adult wild horses (100 winter, 50 summer), permitted 2012 cattle numbers (259 cattle), and current wildlife estimates. Estimated animal use applied to HA est. available forage AF (1,896,247 lbs) to estimate AF percentage (%) used.

If the permitted HA livestock grazing had not been reduced, the utilization level would have reached into the heavy category and over the level of 45% permitted on the HA, which negatively impacts rangeland

plant health and is even more compounding in a drought year. At this level, rangeland forage cannot be maintained over the long-term and will very likely result in effects similar to those at severe utilization as drought increases negative utilization effects. This is unacceptable range management. This scenario demonstrates the need to manage the wild horse excess population before projected utilization levels become more intense and detrimental in 2013.

Table 20. HA Projected 2013 Scenario– Excess Wild Horses, Reduced 2012 Cattle.

HA Est. NFSDR (4,213,883 lbs) Animal Use (lbs)		Percent of HA Est. NFSDR Used (%)	Percent of HA Est. AF (1,896,247 lbs) Used (%)
Rosa Reduced Livestock (180 cows x 608 lbs/mo. x 6 mo.)	657,000	16%	35%
Elk (15 elk x 426 lbs/mo. x 6 mo.)	38,325	1%	2%
Deer (806 deer x 5 mo. X 91 lbs/mo.)	441,285	10%	23%
Winter Wild Horses (120 horses x 913 lbs/mo. x 6 mo.)	657,000	16%	35%
Summer Wild Horses (60 horses x 913 lbs /mo. x 12 mos.)	328,500	8%	17%
Total Wild Horse (Winter + Summer)[1]	**985,500**	**23%**	**52%**
Est. Utilized Forage	**2,122,110**	**50%**	Total Est. Available Forage Used = 112%
Est. Remaining Forage	2,091,773	50%	Est. Remaining Available Forage = -12%
Grazing Intensity Level	**Moderate (50%)**		

[1] This value is the total of estimated winter and summer wild horse use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Note: Estimated HA (32,088 ac) total net forage with slope and development reductions (NFSDR) (4,213,883 lbs) use for the projected 2013 scenario of estimated seasonal excess adult wild horses (120 winter, 60 summer), reduced 2012 cattle numbers (259 cattle), and current wildlife estimates. Estimated animal use applied to HA est. available forage AF (1,896,247 lbs) to estimate AF percentage (%) used.

In this scenario, even if livestock grazing was reduced to 2012 levels, total estimated utilization would be at the highest end of moderate intensity and bordering on heavy utilization. This level exceeds permitted use and rangeland forage cannot be maintained over the long-term. With drought and summer wildlife use, effects similar to those in the actual heavy category are likely. This scenario is leading into unacceptable range management and demonstrates the need to manage the wild horse excess population before projected utilization levels become more intense and detrimental in 2013.

Table 21. HA Projected 2013 Scenario– Excess Wild Horses, Permitted Cattle.

HA Est. NFSDR (4,213,883 lbs) Animal Use (lbs)		Percent of HA Est. NFSDR Used (%)	Percent of HA Est. AF (1,896,247 lbs) Used (%)
Rosa Permitted Livestock (259 cows x 608 lbs/mo. x 6 mo.)	945,350	22%	50%
Elk (15 elk x 426 lbs/mo. x 6 mo.)	38,325	1%	2%
Deer (806 deer x 5 mo. X 91 lbs/mo.)	441,285	10%	23%
Winter Wild Horses (120 horses x 913 lbs/mo. x 6 mo.)	657,000	16%	35%
Summer Wild Horses (60 horses x 913 lbs /mo. x 12 mos.)	328,500	8%	17%
Total Wild Horse (Winter + Summer)[1]	**985,500**	**23%**	**52%**
Est. Utilized Forage	**2,410,460**	**57%**	Total Est. Available Forage Used = 127%
Est. Remaining Forage	1,803,423	43%	Est. Remaining Available Forage =

			-27%
Grazing Intensity Level	**Heavy (57%)**		

[1] This value is the total of estimated winter and summer wild horse use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Note: Estimated HA (32,088 ac) total net forage with slope and development reductions (NFSDR) (4,213,883 lbs) use for the projected 2013 scenario of estimated seasonal excess adult wild horses (120 winter, 60 summer), permitted cattle numbers (259 cattle), and current wildlife estimates. Estimated animal use applied to HA est. available forage AF (1,896,247 lbs) to estimate AF percentage (%) used.

In the projected 2013 scenario with excess horses and permitted cattle, the utilization level reaches even farther into the heavy use category. At this point, wild horse use passes the permitted livestock use. If wildlife summer use were included in this analysis, the utilization level may begin to reach the severe level, which is certain to cause long-term plant damage, even in non-drought years. This is unacceptable range management and further demonstrates an urgent need to manage the wild horse population.

As the excess wild horses increase grazing pressure on their preferred forages, the likelihood of forage competition with deer, elk, and cattle greatly increases. A lack of forage is evident by the fact that deer and elk have "high-lined" the starvation foods of pinyon and juniper trees on the HA and sagebrush has been heavily to severely browsed. Over many area, the sagebrush may be permanently damaged or dead. Though horses prefer grass, they may eat less preferred shrubs like sagebrush when forced by lack of preferred forage particularly in winter months and therefore will be competing with wildlife in this situation if they are not already doing so. Furthermore, the non-native invasive cheatgrass has become prevalent in many areas. This grass is not included in forage analysis as it is a noxious weed, and is only palatable for a very short time when young prior to awn development. This analysis indicates a need to reduce the excess wild horse overpopulation in order to prevent any or more degradation to rangeland vegetation. The following pictures show heavy to severely utilized sagebrush and high-line browsing of the starvation foods of pinyon and juniper in the HA.

Figure 47. HA severely browsed sagebrush and high-lined pinyon and juniper trees. Note cheatgrass infestation. Area has not undergone a sagebrush reduction treatment or tree limbing projects.

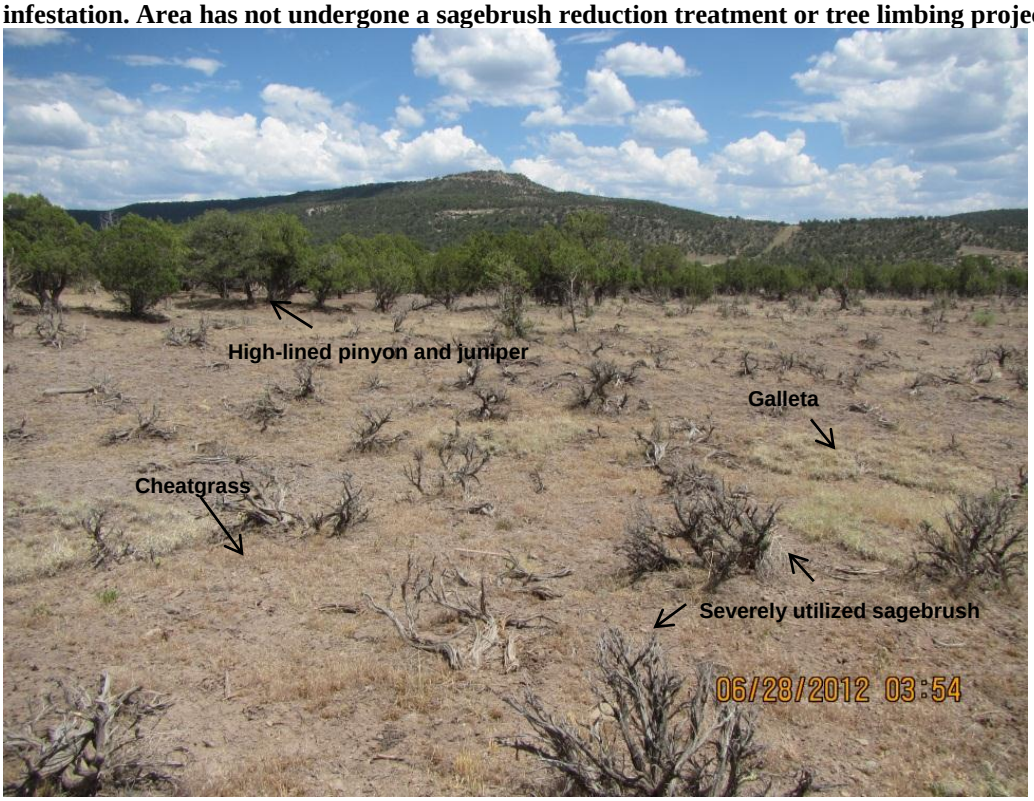
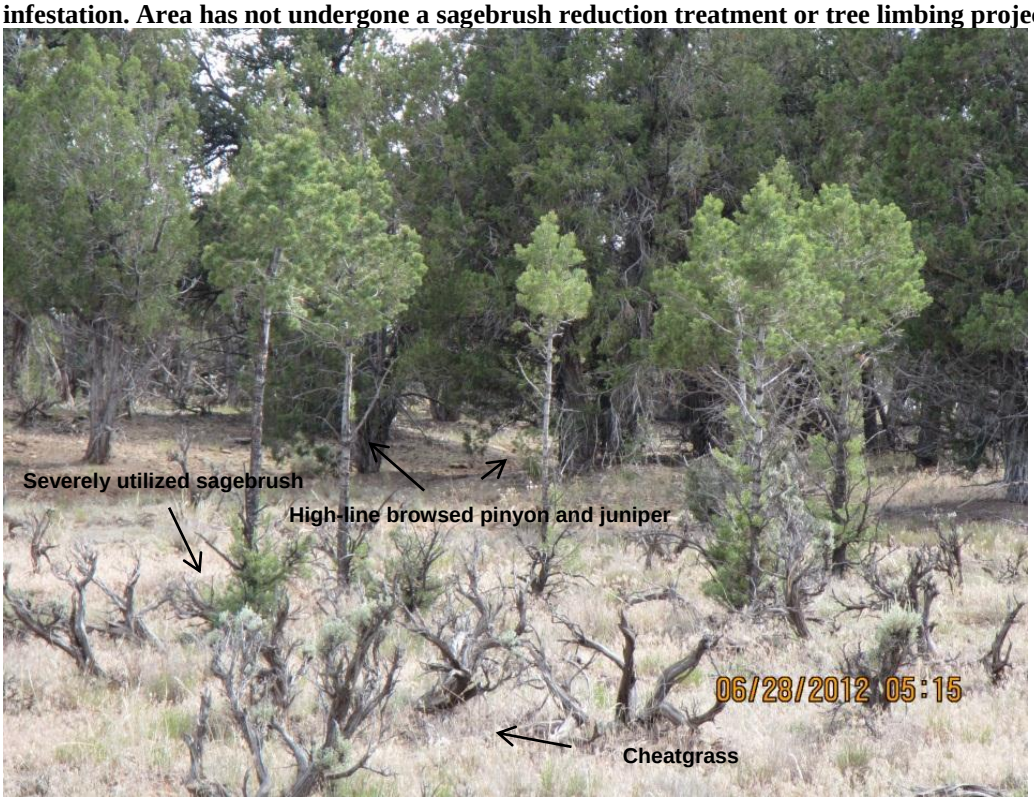


Figure 48. HA severely browsed sagebrush and high-lined pinyon and juniper trees. Note cheatgrass infestation. Area has not undergone a sagebrush reduction treatment or tree limbing projects.



4. WHT (74,392 forage ac) Estimated Gross, Net, and Available Forage

As stated earlier, an analysis to look at total available forage for all species using the Jicarilla JMA was also performed. In order to do this, net and available forage on the WHT had to be estimated. Estimated forage availability for the USFS was taken from numbers used in the preparation of the Environmental Assessment for the Management of the Jicarilla Wild Horse Territory (USFS 2004). While the numbers in the USFS Environmental Assessment analysis included distance to water reductions in forage, this deduction was excluded from this analysis as distance to water reduction were not used in the earlier BLM HA forage estimates. Because of this change, values in this analysis are different from final values listed in the Environmental Assessment for the Management of the Jicarilla Wild Horse Territory (USFS 2004).

In the USFS analysis, the WHT forage data was estimated by soil survey acreages and their descriptions found in the Terrestrial Ecosystems Survey of the Carson National Forest (USFS 1987). The USFS estimated 10,538,810 lbs of annual production for a favorable moisture year in improving range conditions with oil and gas and pipeline reductions and noted this in the Environmental Assessment for the Management of the Jicarilla Wild Horse Territory (USFS 2004). By using the USFS project record, estimated slope reductions could be applied by essentially "working backwards" to find net production instead of only available forage.

Because this is a BLM analysis and the BLM does not currently monitor conditions on the WHT and cannot "make the call" to determine overall range conditions for the USFS in this analysis, no condition reductions were applied to the estimated net forage. However, the USFS has indicated poor and declining current conditions on the WHT. Therefore, WHT estimated net and available forage estimates are greater in this analysis than the values used in the Environmental Assessment for the Management of the Jicarilla

Wild Horse Territory (USFS 2004), do not consider drought, and are likely much higher than actual current forage production on the WHT.

Table 22. USFS WHT (74,392 ac) estimated total net forage with slope and development reduction estimations (NFSDR) and available forage (AF).

Terrestrial Ecosystem Survey Unit	Net Production with Oil/Gas/Pipeline reduction (lbs)	Slope Reduction	Net Production with Slope Reduction (lbs)
70	9,100	0%	9,100
71	1,966,088	0%	1,966,088
119	1,327,725	0%	1,327,725
119	50,000	0%	50,000
156	615,400	0%	615,400
162	1,008,875	0%	1,008,875
174	732,500	0%	732,500
176	82,425	↓60%	32,970
626	4,320	↓60%	1,728
721	849,915	↓30%	594,941
731	777,150	↓60%	310,860
765	174,213	0%	174,213
769	2,609,200	↓60%	1,043,680
		Total NFSDR (lbs)	**7,868,080**
		AF (lbs) at 30% Proper Use	**2,360,424**

WHT estimated total available forage was then calculated with a 30% proper use factor through the formula Est. Net Production (lbs) x 30% = Est. Available Forage (lbs). The USFS implements this utilization level as their standard in planning forage allocation. Therefore, WHT estimated net available forage is **7,868,080 lbs** and total available forage is **2,360,424 lbs**

5. JMA (106,480 ac) Forage Analysis – Planned Allocation, Current 2012 Situation and Scenario, and Projected 2013 Situation

To evaluate the overall JMA forage planning allocation for wild horses at the low and high AML, permitted cattle numbers, and current wildlife population estimates in comparison to the current and projected future situations, estimated net total forage from the HA and WHT were summed. The HA value used was that for fair (50%) condition low estimated total net forage of 4,213,883 lbs and available forage of1,896,247 lbs values from Table 15 and Table 16in the Section 3 HA forage analysis. This estimated HA value was added to the WHT estimated net forage value of 7,868,080 lbs Thus, the total JMA forage values are the following:

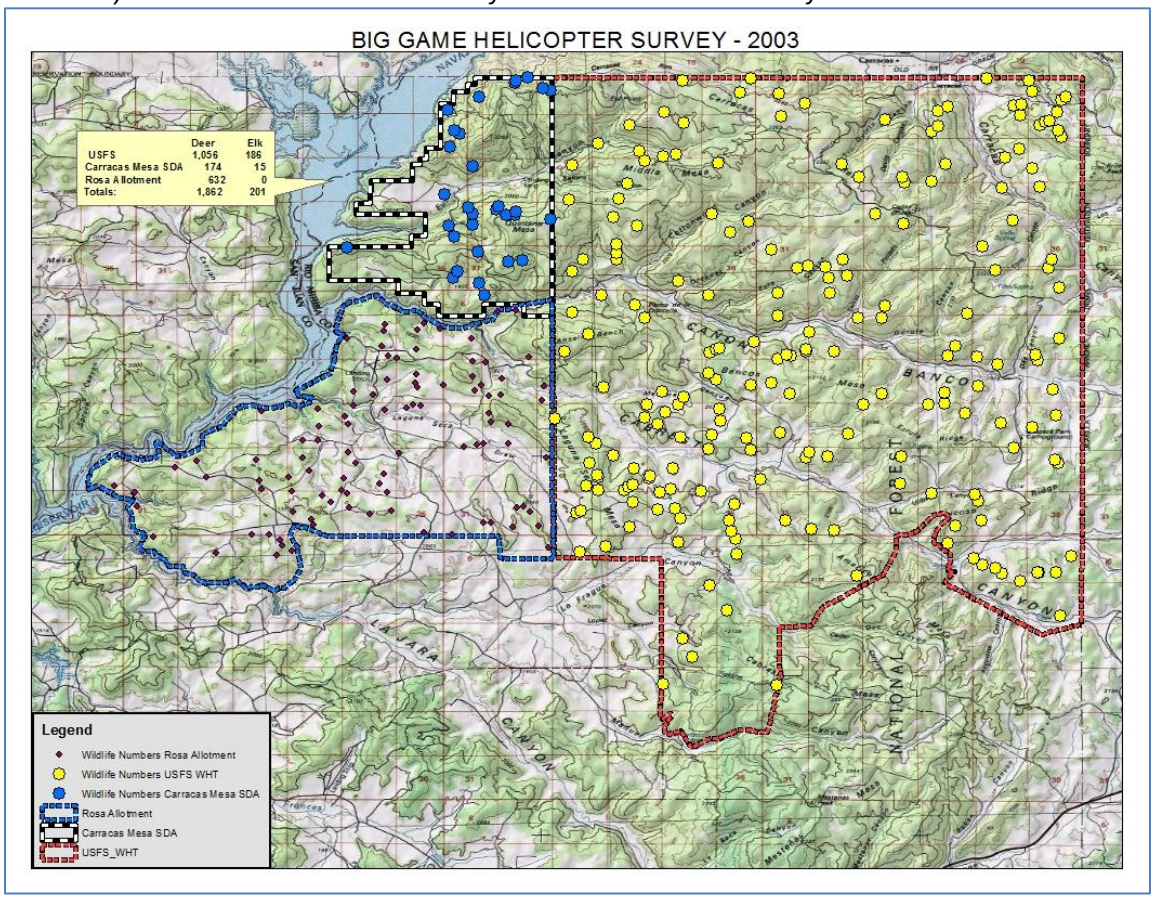
- JMA estimated net forage is 12,081,963 lbs
- JMA estimated available forage is 4,256,671 lbs

The estimated net forage value was then used as the value from which to subtract estimated use from varying foraging animals on the JMA. Because of the high and low ends of the wild horse AML range, planning allocation analysis was conducted separately for 73 horses and 128 horses and maximum permitted WHT cattle numbers. The current wild horse situation was then analyzed with approximately 337 wild horses over 1 year old from the 2011 population survey. Because the current population projection is estimated to be at least 405 wild horses with the 2012 foal crop, this same analysis was performed to anticipate estimated forage use when these foals are over 1 year old in 2013 and consuming forage as adults. The same estimated 913 lbs/month intake for wild horse adults was used as was done in the Section 3 HA forage analysis.

For cattle, the same Section 3 Rosa allotment cattle were used. On the WHT, maximum permitted cattle numbers cannot exceed 145 cattle for 5.5 months. Because of deteriorating rangeland conditions, the

permittees that are authorized to graze in the WHT and USFS reduced 2012 livestock authorized grazing to about 26% of the permit at 37 cattle.

Wildlife numbers were increased to total JMA populations, as shown in Figure 46. HA (SDA and Rosa Allotment) and WHT mule deer and Rocky Mountain elk aerial survey results for 2003.



For the JMA, these numbers were 1,862 mule deer and 201 elk. Wildlife numbers were held constant through all the following tables and therefore did not change in any of the analyses.

Table 23. JMA Planning Allocation – Low AML, Permitted Cattle.

JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)		Percent of JMA Est. NFSDR Used (%)	Percent of JMA Est. AF (4,256,671 lbs) Used (%)
WHT Permitted Livestock Use (145 cows x 5.5 mo. x 608 lbs /mo.)	485,146	4%	11%
Rosa Permitted Livestock (259 cows x 608 lbs/mo. x 6 mo.)	945,350	8%	22%
Total JMA Livestock Use (Rosa + WHT)[1]	**1,430,496**	**12%**	**34%**
Elk (201 elk x 6 mo. X 426 lbs/mo.)	513,555	4%	12%
Deer (1,230 deer x 6 mo. X 91 lbs/mo.)	1,019,445	8%	24%
Wild Horses (73 horses x 913 lbs /mo. x 12 mos.)	799,350	7%	19%
Est. Utilized Forage	**3,762,846**	**31%**	Total Est. Available Forage Used = 88%
Est. Remaining Forage	8,319,117	69%	Est. Remaining Available Forage = 12%
Grazing Intensity Level	**Conservative (31%)**		

[1] This value is the total of Rosa Community Allotment and WHT estimated cattle use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Note: Estimated JMA(106,480 ac) total net forage with slope and development reductions (NFSDR) (12,081,963 lbs) use for planning allocation at low wild horse AML (73 horses), permitted Rosa and WHT cattle numbers, and current wildlife estimates. Estimated animal use applied to JMA est. available forage (AF) (4,256,671 lbs) to estimate available forage percentage (%) used.

At this estimated conservative grazing intensity level, the rangeland vegetation health should be maintained in drought years. There is a proportionate allocation of forage by estimated species populations and their estimated forage requirements. This level is also appropriate as it leaves room for unaccounted for summer wildlife to likely keep the use within conservative ratings. However, it must be mentioned again that the WHT estimated forage was not adjusted for a drought year. This indicates that there may be less forage and the grazing intensity level may be higher. Therefore, targeting wild horse low AML helps keep the potential forage use under moderate levels.

Table 24. JMA Planning Allocation – High AML, Permitted Cattle.

JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)		Percent of JMA Est. AF (4,256,671 lbs) Used (%)	JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)
WHT Permitted Livestock Use (145 cows x 5.5 mo. x 608 lbs /mo.)	485,146	4%	11%
Rosa Permitted Livestock (259 cows x 608 lbs/mo. x 6 mo.)	945,350	8%	22%
Total JMA Livestock Use (Rosa + WHT)[1]	**1,430,496**	**12%**	**34%**
Elk (201 elk x 6 mo. X 426 lbs/mo.)	513,555	8%	24%
Deer (1,230 deer x 6 mo. X 91 lbs/mo.)	1,019,445	12%	33%
Wild Horses (128 horses x 913 lbs /mo. x 12 mos.)	1,401,600	12%	33%
Est. Utilized Forage	**4,365,096**	**36%**	Total Est. Available Forage Used = 103%
Est. Remaining Forage	7,716,867	64%	Est. Remaining Available Forage = -3%
Grazing Intensity Rating	**Conservative (36%)**		

[1] This value is the total of Rosa Community Allotment and WHT estimated cattle use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Note: Estimated JMA (106,480 ac) total net forage with slope and development reductions (NFSDR) (12,081,963 lbs) use for planning allocation at high wild horse AML (128 horses), permitted Rosa and WHT cattle numbers, and current wildlife estimates. Estimated animal use applied to JMA est. available forage (AF) (4,256,671 lbs) to estimate available forage percentage (%) used.

Rangeland vegetation health should also be maintained in this scenario at conservative grazing. In this case, wild horse forage allocation is almost the same as that for cattle. Like the low AML planning, there is a proportionate allocation of forage by estimated species populations and their estimated forage requirements. However, it must be considered as aforementioned that the WHT forage is not adjusted for a drought year, and this combined with summer wildlife use would make utilization levels higher. Managing wild horses at high AML may be safe for rangeland vegetation, but also runs a risk of causing utilization levels to be too high.

Table 25. JMA Current 2012 Situation – Excess Wild Horses, Reduced Cattle.

JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)		Percent of JMA Est. AF (4,256,671 lbs) Used (%)	JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)
WHT Livestock (37 cows x 608 lbs/mo. x 5.5 mo.)	123,796	1%	3%
Rosa Livestock (180 cows x 608 lbs/mo. x 6	657,000	5%	15%

mo.)			
Total JMA Livestock Use (Rosa + WHT)[1]	**780,796**	**6%**	**18%**
Total Elk (201 elk x 426 lbs/mo. x 6 mo.)	513,555	4%	12%
Total Deer (1,862 deer x 91 lbs/mo. x 6 mo.)	1,019,445	8%	24%
Wild Horses - (337 horses x 913 lbs/mo. x 12 mo.)	3,690,150	31%	87%
Est. Utilized Forage	**6,003,946**	**50%**	Total Est. Available Forage Used = 141%
Est. Remaining Forage	6,078,017	50%	Est. Remaining Available Forage = -41%
Grazing Intensity Rating	**Moderate (50%)**		

[1] This value is the total of Rosa Community Allotment and WHT estimated cattle use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Note: Estimated JMA(106,480 ac) total net forage with slope and development reductions (NFSDR) (12,081,963 lbs) use for current 2012 situation excess adult wild horses over 1 year old (337), reduced Rosa and WHT cattle numbers, and current wildlife estimates. Estimated animal use applied to JMA est. available forage (AF) (4,256,671 lbs) to estimate available forage percentage (%) used.

In 2012, utilization levels were estimated to be at the very end of the moderate category and bordering on the very dangerous heavy category, even with voluntary cattle reductions. Wild horses were estimated to be the greatest users of rangeland forage and far out of proportion to other users as they were estimated to consume most of the available forage. This utilization level is above both proper use levels permitted by the BLM (45%) and the USFS (30%). As stated earlier, the utilization level effects may be even more intense in the heavy category. This level is beginning to exceed the carrying capacity of the range to maintain itself. This scenario demonstrates the urgent need to manage the excess Jicarilla wild horse population across the JMA before range conditions deteriorate.

Table 26. JMA 2012 Scenario– Excess Wild Horses, Permitted Cattle.

JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)		**JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)**	**JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)**
WHT Livestock (145 cows x 608 lbs/mo. x 5.5 mo.)	485,146	4%	11%
Rosa Livestock (259 cows x 608 lbs/mo. x 6 mo.)	945,350	8%	22%
Total JMA Livestock Use (Rosa + WHT)[1]	**1,430,496**	**12%**	**34%**
Total Elk (201 elk x 426 lbs/mo. x 6 mo.)	513,555	4%	12%
Total Deer (1,862 deer x 91 lbs/mo. x 6 mo.)	1,019,445	8%	24%
Wild Horses - (337 horses x 913 lbs/mo. x 12 mo.)	3,690,150	31%	87%
Est. Utilized Forage	**6,653,646**	**55%**	Total Est. Available Forage Used = 156%
Est. Remaining Forage	5,428,317	45%	Est. Remaining Available Forage = -56%
Grazing Intensity Rating	**Heavy (55%)**		

[1] This value is the total of Rosa Community Allotment and WHT estimated cattle use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Note: Estimated JMA(106,480 ac) total net forage with slope and development reductions (NFSDR) (12,081,963 lbs) use for current 2012 situation of 337 adult wild horses over 1 year old, scenario of permitted Rosa and WHT cattle numbers, and current wildlife estimates. Estimated animal use applied to JMA est. available forage (AF) (4,256,671 lbs) to estimate available forage percentage (%) used.

Had the full permitted cattle numbers been run in 2012 in addition to the current 2012 estimated wild horse adult overpopulation, utilization levels would have likely been even farther into the heavy category and even more detrimental to rangeland vegetation. Estimated wild horse use still would have disproportionately taken the majority of available forage. This is unacceptable range management.

Table 27. JMA Projected 2013 Scenario– Excess Wild Horses, Reduced Cattle.

JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)		JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)	JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)
WHT Livestock (37 cows x 608 lbs/mo. x 5.5 mo.)	123,796	1%	3%
Rosa Livestock (180 cows x 608 lbs/mo. x 6 mo.)	657,000	5%	15%
Total JMA Livestock Use (Rosa + WHT)[1]	**780,796**	**6%**	**18%**
Total Elk (201 elk x 426 lbs/mo. x 6 mo.)	513,555	4%	12%
Total Deer (1,862 deer x 91 lbs/mo. x 6 mo.)	1,019,445	8%	24%
Wild Horses - (405 horses x 913 lbs/mo. x 12 mo.)	4,434,750	37%	104%
Est. Utilized Forage	**6,748,546**	**56%**	Total Est. Available Forage Used = 159%
Est. Remaining Forage	5,333,417	44%	Est. Remaining Available Forage = -59%
Grazing Intensity Rating	**Heavy (56%)**		

[1] This value is the total of Rosa Community Allotment and WHT estimated cattle use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Estimated JMA(106,480 ac) total net forage with slope and development reductions (NFSDR) (12,081,963 lbs) use for projected 2013 situation of 405 adult wild horses over 1 year old, reduced Rosa and WHT cattle numbers, and current wildlife estimates. Estimated animal use applied to JMA est. available forage (AF) (4,256,671 lbs) to estimate available forage percentage (%) used.

In this case, if cattle grazing were reduced to 2012 levels, the projected utilization level with the projected number of wild horse adults would still remain nearly the same as the case in Table H-25 as the wild horse growth rate would negate lighter utilization levels from decreased livestock grazing. Furthermore, an excess population of 405 adult wild horses is estimated to consume all available forage. This scenario demonstrates an unacceptable disproportionate estimated use of available forage by wild horses and shows that the healthy carrying capacity of the range would be exceeded even with reducing cattle grazing to 2012 numbers. This is unacceptable range management and further shows the urgent need to manage the wild horse population.

Table 28. JMA Projected 2013 Scenario– Excess Wild Horses, Permitted Cattle.

JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)		JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)	JMA Est. NFSDR (12,081,963 lbs) Animal Use (lbs)
WHT Livestock (145 cows x 608 lbs/mo. x 5.5 mo.)	485,146	4%	11%
Rosa Livestock (259 cows x 608 lbs/mo. x 6 mo.)	945,350	8%	22%
Total JMA Livestock Use (Rosa + WHT)[1]	**1,430,496**	**12%**	**34%**
Total Elk (201 elk x 426 lbs/mo. x 6 mo.)	513,555	4%	12%
Total Deer (1,862 deer x 91 lbs/mo. x 6 mo.)	1,019,445	8%	24%
Wild Horses - (405 horses x 913 lbs/mo. x 12 mo.)	4,434,750	37%	104%
Est. Utilized Forage	**7,398,246**	**61%**	Total Est. Available Forage Used = 174%
Est. Remaining Forage	4,683,717	39%	Est. Remaining Available Forage = -74%
Grazing Intensity Rating	**Severe (61%)**		

*This value is the total of Rosa Community Allotment and WHT estimated cattle use and was not factored into the calculations a second time. It exists to show the sum of the seasonal use.

Estimated JMA(106,480 ac) total net forage with slope and development reductions (NFSDR) (12,081,963 lbs) use for projected 2013 situation of 405 adult wild horses over 1 year old, permitted Rosa and WHT cattle numbers, and current wildlife estimates. Estimated animal use applied to JMA est. available forage (AF) (4,256,671 lbs) to estimate available forage percentage (%) used.

If full permitted cattle numbers are run with the projected 2013 excess wild horse population, rangeland plants would undergo long-term damage if they have not already been compromised with 337 adult horses in 2012. This scenario is unacceptable management.

From these tables, it can be concluded that the set AML range of 73 to 128 wild horses in the planning allocation is appropriate for the current rangeland conditions across the JMA in comparison to the current excess wild horse situation and projected future projections. At estimated conservative forage use in Table 23 and Table 24, both wild horse AMLs are safe for rangeland vegetation. Low AML is more appropriate in the event of severe drought and decreased estimated net and available forage on the WHT. In the event of a non-drought year, conservative grazing with both the high and low AML will enhance forage productivity and plant health for all JMA foraging animals.

In the current excess wild horse population situation and projected 2013 situation, grazing utilization levels fall into the heavy use category. This is a major and urgent concern for both the BLM and USFS. This indicates that current animal foraging use is exceeding the appropriate available forage and rangeland carrying capacity and is causing damage to rangeland vegetation. Furthermore, the estimated projected future forage use with 405 wild horses over 1 year old borders on or may be in the severe utilization rating, which is very dangerous since this level of grazing and browsing leads to long-term plant damage and eventual plant mortality.

By evaluating the estimated amount and percentages of forage used, forage is appropriately balanced at both JMA AMLs. With all of the wild horse overpopulation scenarios on the JMA, there is a disproportionate allocation of forage to the horses. In all of these cases, wild horses would be estimated to consume 87% to 104% of available forage it can also be concluded that the primary cause of heavy forage utilization levels and use exceeding available forage is the excess wild horse population. This also demonstrates that permitted cattle and wildlife together would consume approximately 25% of estimated net forage and 70% of available forage, and 2012 reduced cattle and wildlife together would consume 19% of estimated net forage and 54% of available forage.

For 337 wild horses, estimated forage use is 2.6 times over the 128 horse high AML (3,690,150 lbs / 1,401,600 lbs) and 4.6 times over the 73 horse AML (3,690,150 lbs / 799,350 lbs). In the 2013 projected situation, estimated wild horse forage use values would be 3.2 times over 128 horse high AML (4,434,750lbs / 1,401,600 lbs) and 5.5 times over 73 horse low AML (4,434,750lbs/ 799,350 lbs).

6. Conclusions

In summary, the main conclusion that can be drawn from this forage allocation analysis is that the wild horse AMLs for both the Carracas Mesa HA (23 wild horses) and the total Jicarilla JMA (50-105 wild horses) are appropriate and in balance with the current condition of forage and other foraging animals. Reaching and maintaining these AMLs helps reach and ensure TNEB, protect rangeland forage, and in turn protect the health of all of the foraging animals. If the wild horse population is not brought to AML, the lbs of forage used and level of utilization will continue to be detrimental to the range and other forage users and will become more pronounced as the wild horse population continues to increase. This is of major concern as the forage estimates are likely lower and the animal utilization on them greater because this analysis did **not** consider the following:

- For the HA net forage reductions in Section 1, slope reduction values at 60% grazing reductions were not used, even though much of the terrain may fall into this category .
- Current range condition in many areas of the HA are in a worse state than fair and actually have lower forage production estimates than a 50% reduction. This can be exemplified by areas with severe browse utilization and high amounts of cheatgrass and bare ground.

- The WHT estimated net forage used in Section 3 was that listed for favorable moisture and improving conditions. Actual forage estimates are very likely much lower as the USFS has indicated poor conditions in many areas and 2012 has been a drought year.
- Section 4 did not consider any summer resident wildlife use in calculations. These numbers are much lower than those in the winter, but are still a factor in actual utilization levels.
- Current wild horse estimates in Section 4 are likely greater because the wild horse direct count survey very likely underestimated the actual wild horse population.
- On the BLM HA, there is no livestock grazing on the Carracas Mesa SDA. Over the past 5 years, cattle grazing use of the Rosa allotment has averaged 71% of the permitted AUMs.
- Since 2007, cattle numbers on the WHT have averaged to 32 cattle and 22% of the permitted numbers. Therefore, cattle grazing as the primary cause of inappropriate forage use and any declining range conditions is highly unlikely.

The BLM therefore concludes that this analysis indicates a need to respond to the BLM's obligations under FLPMA to prevent unnecessary or undue degradation of the public lands (P.L. 94-579, Sec. 302(f)) through the protection of rangeland resources and riparian habitat. The need for the Proposed Action is also to maintain a healthy wild horse population and restore a thriving natural ecological balance and multiple-use relationship on the public lands consistent with the Wild Free-Roaming Horses and Burros Act of 1971 (P.L. 92-195, Sec. 1333(a)). Excess wild horses need to be removed before an overpopulation compounded with other escalating problems such as drought severely degrade resources, induce suffering in wild horses and wildlife, and lead to an emergency situation.