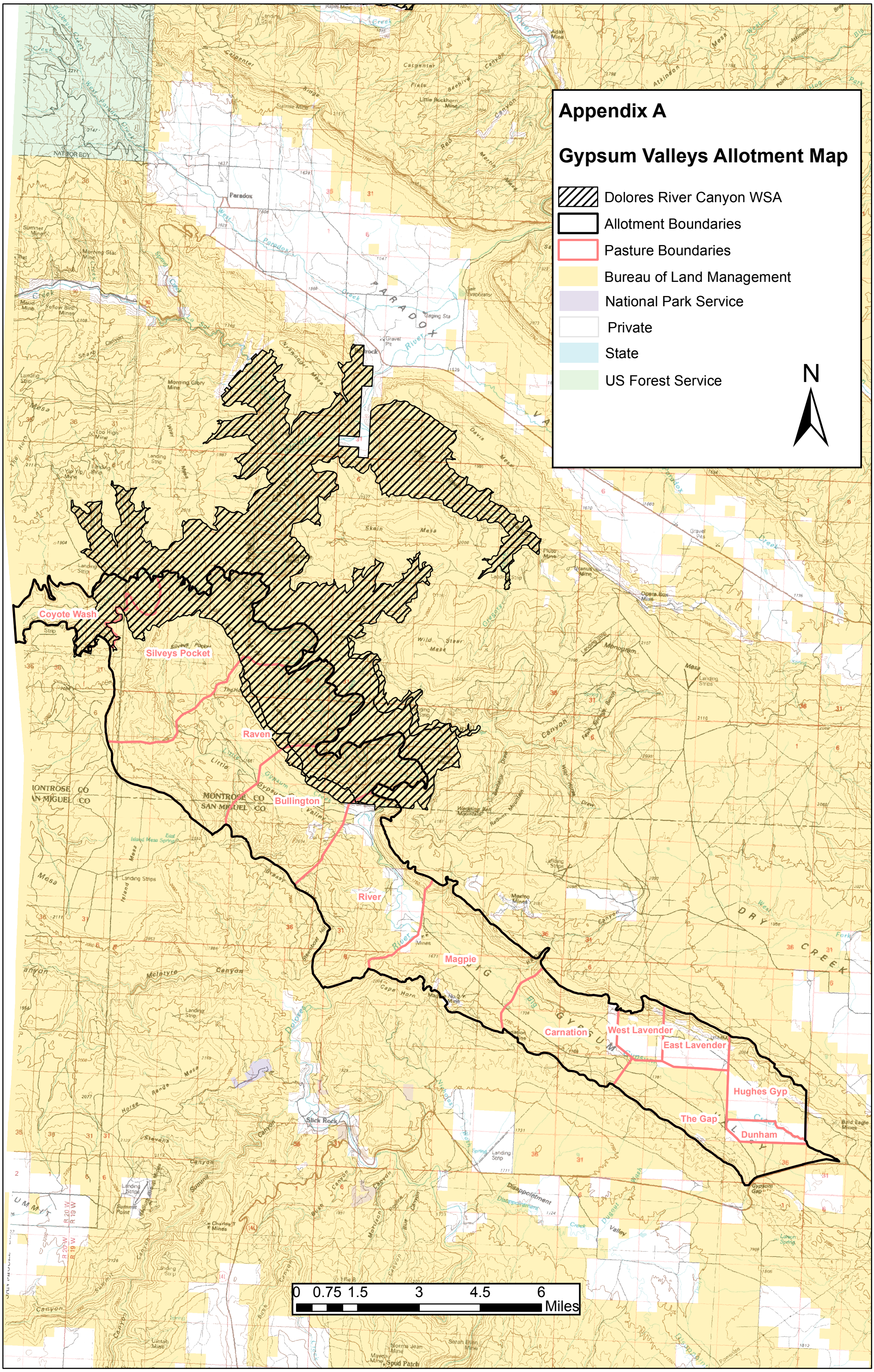

Appendix A
Gypsum Valleys Allotment Map
Dolores River Canyon WSA
Allotment Boundaries
Pasture Boundaries
Bureau of Land Management
National Park Service
Private
State
US Forest Service
N
Coyote Wash
Silveys Pocket
Raven
Bullington
River
Magpie
Carnation
West Lavender
East Lavender
Hughes Gyp
The Gap
Dunham
0 0.75 1.5 3 4.5 6
Miles

Appendix B
Summary of Land Health Assessment Process

Standards for Public Land Health

In March of 1997, all of the Resource Management Plants for the State of Colorado BLM were amended to incorporate the Public Land Health Standards developed for Colorado. Nationally, the BLM has published Handbook 4180 – Range Land Health Standards.

The Land Health Standards provide a framework for describing current land health conditions for comparison to the Land Health Standards which describe conditions needed to sustain land health. The assessment process is designed to be applied to landscapes, it is not applied on an acre by acre basis, and public land health is determined by looking at all standards and not solely upon each individual description. The assessment process includes indicators to aid in describing current conditions compared to desired land health conditions. The Land Health Standards and indicators are fully described in Appendix C of this EA.

The Gypsum Valleys grazing allotment analyzed in this EA was the subject of individual land health evaluation and determination documents (Appendix F). In 2006, BLM staff assessed conditions in these allotments using protocols outlined in Technical Reference 1734-6 – Interpreting Indicators of Rangeland Health, Version 4. The field data sheets from this assessment process are located in the project record. This assessment included evaluating each of the indicators of land health that were rated at key areas, describing the current (2006) conditions and listing factors contributing to those current conditions.

Other data sources used in the evaluation were the long-term trend of vegetation and ground cover – monitoring transects, Proper Functioning Condition Ratings for streams according to protocols in Technical Report 1737-15, Colorado Natural Heritage Program TES species database, Precipitation Records from Norwood and Uravan, San Miguel County Soils Survey (unpublished), Water Source Inventory – San Juan Resource Area, structural improvements as depicted in the rangeland improvement inventory – San Juan Public Lands GIS inventory, Status of Water Quality in Colorado (2006 report), and State of Colorado 2006 303(d) list.

During the assessment process the grazing permittees for this allotment were invited to participate.

It was noted during the land health assessments for these allotments that elements of the Land Health Standards were not being achieved at some key areas. Where one or more Standards were not met, conclusions were reached while still in the field concerning causal factors for failure to achieve. Causal factors for failure to achieve Standards included historic livestock use, current livestock use, current big game use, old prairie dog towns, historic failed land treatments, impacts from old homesteads, historic mining activity, roads, off-road vehicle use, drought and

power lines. Where current grazing management was determined to be a causal factor, it is BLM's direction contained in 43 CFR 4180 to make appropriate changes in current livestock management to improve those resource conditions.

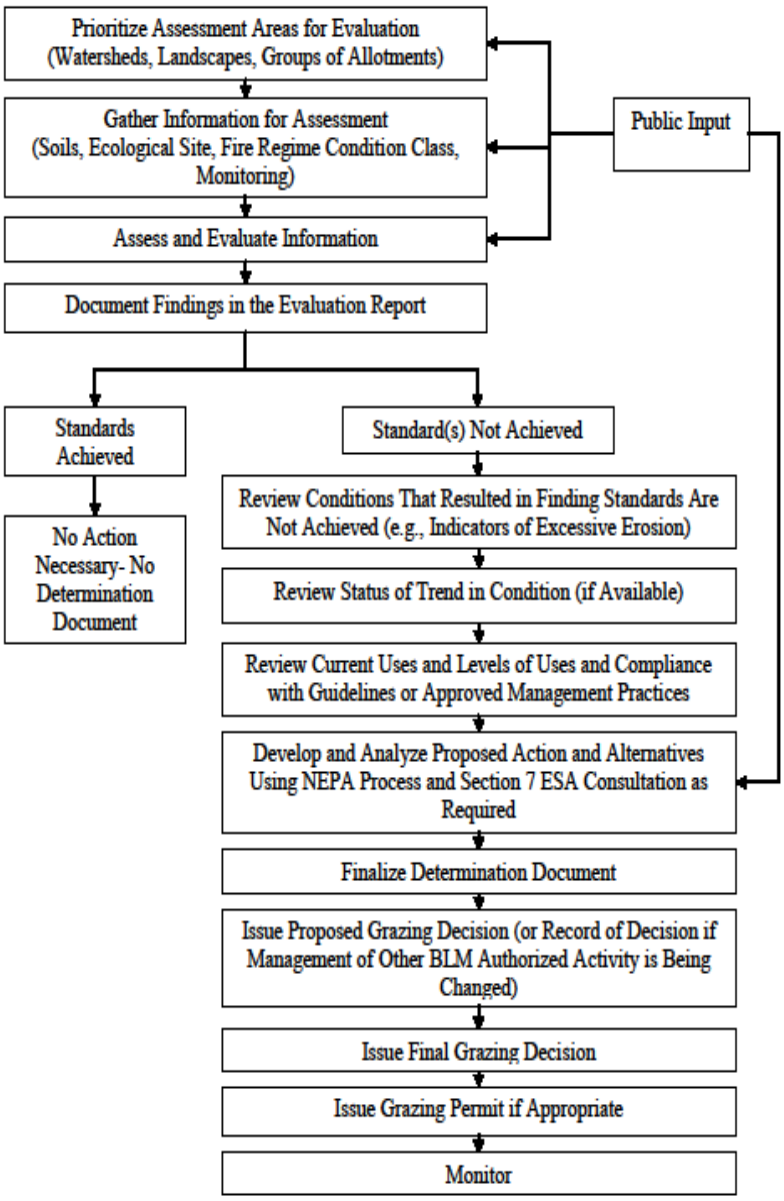
Recognizing that some existing conditions did not match desired conditions for land health, the BLM reviewed the actual livestock use records, precipitation records and compared existing use to the Colorado Livestock Grazing Management Guidelines (H-4180.2). These eight general guidelines suggest practices, methods or techniques determined to be appropriate for meeting or progressing towards land health standards. The guidelines include tools such as grazing systems, vegetative treatments, or improvement projects that can help land managers and permittees achieve standards. The Colorado Livestock Grazing Management Guidelines are shown in Appendix E.

In August of 2009, a formal determination was made for the Gypsum Valleys Allotment and can be found in Appendix F of this EA. The final determinations were made based on a preponderance of evidence including the field notes, ID team deliberations, permittee input, and data sources listed above. This 'preponderance of evidence' approach is outlined in Technical Reference 1734-6. The field data sheets and subsequent analysis processes documents that the evaluations and determinations were based on are located in the project file.

The following schematic shows the Land Health Assessment process as shown in BLM Instruction Memorandum 2009-007.

ATTACHMENT 1

FLOW CHART FOR EVALUATION AND DETERMINATION PROCESSES



The Land Health Standards are discussed further in this EA under each resource area heading. Where applicable, the findings for each Land Health Standard appear directly in front of the affected environment section for that resource (Soils, Vegetation, etc.) in this EA. In the Environmental Consequences section, elements of the Land Health Standards are discussed in terms of predicted effects, i.e. how each alternative would maintain or progress towards achievement of a Land Health Standard or relevant part of a Standard.

Briefly, the five Public Land Health Standards are as follows. They are written in the present tense, i.e. **Standards (desired conditions) are achieved if,**

> **STANDARD 1**: *Upland soils* exhibit infiltration and permeability rates that are appropriate to soil, type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.

> **STANDARD 2**: *Riparian systems* associated with both running and standing water, function properly and have the ability to recover from major disturbances such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.

> **STANDARD 3**: *Healthy productive plant and animal communities* of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plant and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.

> **STANDARD 4**: *Special status, threatened and endangered species* (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

> **STANDARD 5**: *Water quality* of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water

Quality Standards established by the State of Colorado, Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and antidegradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303© of the Clean Water Act.

APPENDIX C

STANDARDS

FOR PUBLIC LAND HEALTH

AND

GUIDELINES

FOR LIVESTOCK GRAZING MANAGEMENT

IN COLORADO

January 1997

Standards for Public Land Health

STANDARD 1: *Upland Soils* exhibit infiltration and permeability rates that are appropriate to soil, type, climate, land form, and geologic processes. Adequate soil infiltration and permeability allows for accumulation of soil moisture necessary for optimal growth and vigor, and minimizes surface runoff.

Indicators:

- Expression of rills and soil pedestals is minimal.
- Evidence of actively-eroding gullies (incised channels) is minimal.
- Canopy and ground cover are appropriate.
- There is litter accumulating in place and is not sorted by normal overland water flow.
- There is appropriate organic matter in soil.
- There is a diversity of plant species with a variety of root depths.
- Upland swales have vegetation cover or density greater than that of adjacent uplands.
- There are vigorous, desirable plants.

STANDARD 2: *Riparian systems* associated with both running and standing water, function properly and have the ability to recover from major disturbances such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.

Indicators:

- Vegetation is dominated by an appropriate mix of native or desirable introduced species.
- Vigorous, desirable plants are present.
- There is vegetation with diverse age class structure, appropriate vertical structure, and adequate composition, cover, and density.

- Streambank vegetation is present and is comprised of species and communities that have root systems capable of withstanding high streamflow events.
- Plant species present indicate maintenance of riparian moisture characteristics.
- Stream is in balance with the water and sediment being supplied by the watershed (e.g., no headcutting, no excessive erosion or deposition).
- Vegetation and free water indicate high water tables.
- Vegetation colonizes point bars with a range of age classes and successional stages.
- Active floodplain is present.
- Residual floodplain vegetation is available to capture and retain sediment and dissipate flood energies.
- Stream channels have appropriate size and meander patterns for the streams' position in the landscape, and parent materials.
- Woody debris contributes to the character of the stream channel morphology.

STANDARD 3: *Healthy productive plant and animal communities* of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plant and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.

Indicators:

- Noxious weeds and undesirable species are minimal in the overall plant community.
- Native plant and animal communities are spatially distributed across the landscape with a density, composition, and frequency of species suitable to ensure reproductive capability and sustainability.
- Plants and animals are present in mixed age classes sufficient to sustain recruitment and mortality fluctuations.
- Landscapes exhibit connectivity of habitat or presence of corridors to prevent habitat fragmentation.
- Photosynthetic activity is evident throughout the growing season.
- Diversity and density of plant and animal species are in balance with habitat/landscape potential and exhibit resilience to human activities.
- Appropriate plant litter accumulates and is evenly distributed across the landscape.
- Landscapes are composed of several plant communities that may be in a variety of successional stages and patterns.

STANDARD 4: *Special status, threatened and endangered species* (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Indicators:

- All the indicators associated with the plant and animal communities standard apply.
- There are stable and increasing populations of endemic and protected species in suitable habitat.
- Suitable habitat is available for recovery of endemic and protected species.

STANDARD 5: *The water quality* of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado, Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and antidegradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303c of the Clean Water Act.

Indicators:

- Appropriate populations of macroinvertabrates, vertebrates, and algae are present.
- Surface and ground waters only contain substances (e.g., sediment, scum, floating debris, odor, heavy metal precipitates on channel substrate) attributable to humans within the amounts, concentrations, or combinations as directed by the Water Quality Standards established by the State of Colorado (5 CCR 1002-8).

Colorado Livestock Grazing Management Guidelines

1. Grazing management practices promote plant health by providing for one or more of the following:
    - Periodic rest or deferment from grazing during critical growth periods;
    - Adequate recovery and regrowth periods; and
    - Opportunity for seed dissemination and seedling establishment.

2. Grazing management practices address the kind, numbers, and class of livestock, season, duration, distribution, frequency and intensity of grazing use and livestock health.

3. Grazing management practices maintain sufficient residual vegetation on both upland and riparian sites to protect the soil from wind and water erosion, to assist in maintaining appropriate soil infiltration and permeability, and to buffer temperature extremes. In riparian areas, vegetation dissipates energy, captures sediment, recharges ground water, and contributes to stream stability.

4. Native plant species and natural revegetation are emphasized in the support of sustaining ecological functions and site integrity. Where reseeding is required, on land treatment efforts, emphasis will be placed on using native plant species. Seeding of non-native species will be considered based on local goals, native seed availability and cost,

persistence of non-native plants and annuals and noxious weeds on the site, and composition of non-natives in the seed mix.

5. Range improvement projects are designed consistent with overall ecological functions and processes with minimum adverse impacts to other resources or uses of riparian/wetland and upland soils.

6. Grazing management will occur in a manner that does not encourage the establishment or spread of noxious weeds. In addition to mechanical, chemical, and biological methods of weed control, livestock may be used where feasible as a tool to inhibit or stop the spread of noxious weeds.

7. Natural occurrences such as fire, drought, flooding, and prescribed land treatments should be combined with livestock management practices to move toward the sustainability of biological diversity across the landscape, including the maintenance, restoration, or enhancement of habitat to promote and assist the recovery and conservation of threatened, endangered, or other special status species, by helping to provide natural vegetation patterns, a mosaic of successional stages, and vegetation corridors, and thus minimizing habitat fragmentation.

8. Colorado Best Management Practices and other scientifically developed practices that enhance land and water quality should be used in the development of activity plans prepared for land uses.

APPENDIX D
GYPSUM VALLEYS ALLOTMENT
TYPICAL PASTURE ROTATION SCHEDULE

PERMITTEE	YEAR	PASTURE	GRAZING PERIOD	DAYS	PERMITTEE	YEAR	PASTURE	GRAZING PERIOD	DAYS
Jimmy Suckla	Year 1	Hughes Gyp	11/1 – 11/30	30	Larry Suckla	Year 1	Silvey's Pocket/Coyote Wash	11/1 – 12/10	40
		East Lavender	12/1 – 12/30	30			Magpie	12/11 – 1/31	52
		West Lavender	12/31 – 1/19	20			Raven	2/1 – 2/28	28
		Carnation	1/20 – 3/13	53			Bullington	3/1 – 3/31	31
		Gyp Gap	3/14 – 5/12	60			River	4/1 – 5/31	61
		Dunham	5/13 – 5/31	19					
	Year 2	Dunham	11/1 – 11/19	19		Year 2	Silvey's Pocket/Coyote Wash	11/1 – 12/10	40
		Gyp Gap	11/20 – 1/17	60			River	12/11 – 1/31	52
		Carnation	1/18 – 3/11	53			Bullington	2/1 – 2/28	28
		West Lavender	3/12 – 3/31	20			Raven	3/1 – 3/31	31
		East Lavender	4/1 – 4/30	30			Magpie	4/1 – 5/31	61
		Hughes Gyp	5/1 – 5/31	30					
	Year 3	Carnation	11/1 – 12/23	53		Year 3	Silvey's Pocket/Coyote Wash	11/1 – 12/10	40
		Gyp Gap	12/24 – 2/21	60			Magpie	12/11 – 1/31	52
		West Lavender	2/22 – 3/14	20			Raven	2/1 – 2/28	28
		East Lavender	3/15 – 4/14	30			Bullington	3/1 – 3/31	31
		Hughes Gyp	4/15 – 5/14	30			River	4/1 – 5/31	61
		Dunham	5/15 – 5/31	19					
	Year 4	Hughes Gyp	11/1 – 11/30	30		Year 4	Silvey's Pocket/Coyote Wash	11/1 – 12/10	40
		East Lavender	12/1 – 12/30	30			River	12/11 – 1/31	52
		West Lavender	12/31 – 1/19	20			Bullington	2/1 – 2/28	28
		Carnation	1/20 – 3/13	53			Raven	3/1 – 3/31	31
		Gyp Gap	3/14 – 5/12	60			Magpie	4/1 – 5/31	61
		Dunham	5/13 – 5/31	19					

Appendix E
Motorized Access Routes Needed for Grazing Operations Gypsum Valleys Allotment

Date: 8/04/2009 Drafted by: Tom Kochanski

Alotment Boundary
Pasture Boundaries
Private Lands
Motorized Routes Necessary for Grazing Operations

N

Utah

Coyote Wash
Silveys Pocket
Raven
Bullington
River
Magpie
Carnation
West Lavender
East Lavender
The Gap
Hughes Gyp
Dunham

0 0.5 1 2 3 4 Miles

APPENDIX F

Authorized Range Improvement List

Gypsum Valleys Allotment

Project files for all 59 of the recorded range improvements on the Gypsum Valleys Allotment were reviewed, in association with the 2014 grazing permit renewal process. The results of this record review appear in the table below:

Project Number	Project Name	Year Built*	BLM Built	Maintenance Authorization	Location T. R. Secition ¼ ¼
0001	Gypsum Diversion Ditch	1940	Y	None	44N., 18W., 11: +
0002	Gypsum Valley Erosion Dam	1940	Y	None	44N., 17W., 22: SWSE
0014	Little Gyp North Fence	1968	Y	None	45N., 19W., 11: +
0015	Little Gyp South Fence	1968	Y	None	45N., 18W., 18: S½
0027	Upper Big Gyp Check Dams	1940	Y	None	44N., 17W., 27: S½
0028	Lower Big Gyp Check Dams	1940	Y	None	44N., 18W., 11
0091	Gyp Valley 1 Reservoir	1936	Y	None	44N., 17W., 20 SENW
0128	Little Gyp Reservoir #2	?	N	Cooperative Agreement	45N., 19W., 12: SESW
0129	West Raven Reservoir	1966	N	None	45N., 19W., 09: SENE
0130	South Butte Reservoir	1966	N	Cooperative Agreement	45N., 19W., 13: SENW
0135	Little Icebox Reservoir	1965	N	None	46N., 19W., 28: SESW
0320	Bench Reservoir	1968	N	None	45N., 19W., 15: SESW
0322	Gyp View Pond	1968	N	None	45N., 18W., 31: NENE
0448	Gyp Valley Reservoir #3	1939	Y	Cooperative Agreement	44N., 17W., 27: SENE
0480	Bar Ditch Reservoir	?	?	Cooperative Agreement	44N., 17W., 19: NWNE
0512	Little Jug Reservoir	1980	N	None	44N., 17W., 16: NWSW
0514	Juniper Reservoir	1990	N	None	44N., 17W., 17: NENW
0515	Valley Reservoir	1970	N	Cooperative Agreement	44N., 17W., 18: SENW
0517	Treeline Reservoir	1970	N	None	44N., 17W., 16: SWNE
0518	Great Pond	1980	N	None	44N., 17W., 23: NENW
0519	East End Reservoir	1970	N	Cooperative Agreement	44N., 17W., 25: NENE
0530	Gyp Valley Reservoir #4	1940	Y	Cooperative Agreement	44N., 18W., 11: SE¼
0584	EXP Grass Plot	1940	Y	None	44N., 17W., 27: SWNE
0648	Guard Fence	1965	Y	Cooperative Agreement	46N., 20W., 26: NW¼
0762	Mary Jane Draw Cattleguard	1954	Y	Cooperative Agreement	45N., 18W., 33: NWNE
0849	Gyp Valley Check Dams	1956	Y	None	44N., 17W., 35: NENE
1191	Icebox Retention Dam	1964	Y	Cooperative Agreement	46N., 19W., 28: NESW
1194	Icicle Retention Dam	1964	Y	Cooperative Agreement	46N., 19W., 34: NWSW
1198	Irene Retention Dam	1964	Y	Cooperative Agreement	46N., 19W., 33: NENE
1201	Ibis Retention Dam	1964	Y	Cooperative Agreement	46N., 19W., 33: NWSW
1205	Ides Retention Dam	1964	Y	Cooperative Agreement	45N., 19W., 10: SWNW
1233	Igneus Retention Dam	1964	Y	Cooperative Agreement	44N., 17W., 28: NENE
1235	Irving Retention Dam	1965	Y	Cooperative Agreement	44N., 17W., 27: SESE
1237	Ivan Retention Dam	1965	Y	Cooperative Agreement	44N., 17W., 21: NWSW
1243	Raven Mine Reservoir	1963	N	Range Improvement Permit	45N., 19W., 03: SWSW
1291	Import Retention Dam	?	?	Cooperative Agreement	43N., 17W., 33: SESE
1298	Dunham Reservoir	1965	N	Range Improvement Permit	44N., 17W., 26: SWNW
1305	Impeach Retention Dam	?	?	Cooperative Agreement	42N., 17W., 15: NWNW
1306	Imperial Retention Dam	?	?	Cooperative Agreement	42N., 17W., 3: NESW
1398	Grassy Hills Reservoir	1966	N	Range Improvement Permit	45N., 19W., 13: NWSE
1399	Little Valley Reservoir	1966	N	Range Improvement Permit	45N., 18W., 18: SWNW
1401	Little Gyp Valley Reservoir	1966	N	Range Improvement Permit	45N., 19W., 12: NWSW

Project Number	Project Name	Year Built*	BLM Built	Maintenance Authorization	Location T. R. Secition ¼ ¼
1402	Gyp Point Reservoir	1966	N	Cooperative Agreement	45N., 19W., 11: NESW
1403	Raven Reservoir 2	1966	N	Range Improvement Permit	45N., 19W., 03: SWNE
1404	American Eagle Reservoir	1966	N	Range Improvement Permit	45N., 19W., 10: SESE
1477	Kill Check Dam/Reservoir	1967	Y	Cooperative Agreement	44N., 17W., 35: SENE
1509	Gyp Gap Cattleguards	1968	S	Cooperative Agreement	43N., 17W., 35: SESE
3502	Big Gyp Valley Contours	1969	Y	None	44N., 18W., 2
3503	San Miguel Short Fences (2)	1969	Y	Cooperative Agreement	44N., 17W., 20, 11, 12
3546	Gypsum Valley Cattleguards	1968	Y	Cooperative Agreement	44N., 18W., 11: NWSE
4031	Upper Big Gyp Detention	1971	Y	Cooperative Agreement	44N., 17W., 26: SWNW
4032	Big Gyp Headcut	1971	Y	Cooperative Agreement	44N., 17W., 27: NE¼
4402	Gyp Ridge Cattleguard	1979	Y	Cooperative Agreement	44N., 18W., 24: SWNW
4444	Upper Gyp Fence	1995	N	Cooperative Agreement	44N., 16W., 31: N½
5197	Little Gyp Revegetation	1985	Y	None	45N., 19W., 13: SESE
5457	Hamm Canyon Pond #1	1986	Y	None	44N., 18W., 10: NWNW
5464	Hamm Canyon Pond #2	1986	Y	Cooperative Agreement	44N., 17W., 19: NWNE
5466	Hamm Canyon Pond #3	1986	Y	Cooperative Agreement	44N., 18W., 01: NWNW
6251	Mary Jane Water Haul Road	?	Y	Cooperative Agreement	46N., 19W., 33: SWNE

*Y = Yes, N = No, S = Shared

Fifty-nine range improvements inventoried on the Gypsum Valleys Allotment

Grazing permittee use and maintenance of 32 projects is authorized by Cooperative Agreements located in the BLM files. Seven projects are authorized by Section 4 Range Improvement Permits. Of the remaining 20 range improvements, project files document that BLM constructed 12; BLM has no record of who built the other 8 improvements. BLM built, or authorized a grazing permittee to build 51 of the 59 range improvements.

All the fence and cattleguard projects, and most of the functioning water developments, should be included on new Cooperative Agreements that would authorize the use and maintain them. The older seeding, check dams and water spreading projects should be abandoned.

Agency constructed projects that pre-dated 1946 were constructed by the Grazing Service.

APPENDIX G
DESIRED CONDITIONS AND INDICATORS OF CHANGE

Land Health Standard	Existing Condition	Short Term (10 years or less)	Long Term (10 – 30 years)	Possible Management Actions to progress towards DFC	Remarks
Standard 1 – Upland Soils Standard 3 – Healthy, Plant and Animal Communities	In some areas of the allotment plant community composition and plant distribution is less than optimal and not effective for infiltration. Cool season perennial grasses should be dominant but in some areas are only found in trace amounts. In some areas shrubs are found in lower or higher than expected amounts.	**DFC:** Maintain or increase the amounts of native cool season grasses and palatable shrubs. **Indicator:** Stable amount or measureable increase (>20%) in frequency of these functional groups on trend transects and/or stable amount or increase in cover class on functional/structural groups worksheet.	Healthy, productive plant communities of native species are maintained at viable population levels. Plant community composition and distribution are effective for water infiltration and limiting runoff. Specifically, native cool season grasses increase and become a more dominant part of the community and palatable shrubs increase in diversity and amount. Indicator: Measurable increase in frequency of cool season grasses and palatable shrubs (≥20%) on trend and (≥10%) line-point intercept transects in areas with available seed source (record the frequency of seedlings separately to determine a measure of establishment). Same or smaller gaps between plants detected with step-gap method.	Decreasing forage utilization to light levels should improve plant vigor and seed production. Limiting grazing during critical growing period allows plants to complete life cycle. No grazing in spring and fall of the same year keeps plants from depleting root reserves. Improving distribution to take pressure off of overgrazed areas addresses all of the above.	Major changes in species composition are not expected to occur in 10 years, but a minor increase in native cool season grasses and palatable shrubs may occur so this was selected for the short term DFC. Native cool season grasses are the most under-represented native grasses in areas where these Standards were not achieved. Native palatable shrubs are an important food source for wildlife and livestock.
Standard 3 – Healthy, Plant and Animal Communities	Invasive species such as cheatgrass and weedy annual forbs are common.	Limit conditions that foster invasive species infestations. Improve soil stability, maintain or increase amounts of perennial native species,	Maintain or see measurable decrease of invasive species.	Decreasing forage utilization to light amounts improves vigor and seed production	

Land Health Standard	Existing Condition	Short Term (10 years or less)	Long Term (10 – 30 years)	Possible Management Actions to progress towards DFC	Remarks
		maintain or decrease bare ground. **Indicator:** See indicators for aforementioned DFC's.			
Standard 3 – Healthy, Plant and Animal Communities	In some areas plant mortality is higher than expected and vigor and reproductive potential of perennial plants is lower than expected.	Maintain or show some increase in the frequency of occurrence of native perennial bunch grasses. Increase seed production of existing native perennial bunch grasses. Moderate seed production on palatable shrubs. **Indicators:** Frequency of perennial bunch grasses is maintained or increases (≥20%) on trend transects. Cover from perennial bunch grasses is maintained or increases (≥10%) on Line-Point Intercept transects. Observations of seed production noted.	Plants are productive, resilient, diverse, vigorous and able to reproduce and sustain natural fluctuations and ecological processes.	Decreasing forage utilization to light amounts improves vigor and seed production.	Plant vigor and seed productivity is not readily quantified in an objective repeatable monitoring method. Consequently, these areas of concern were not chosen as short term DFC indicators.
Standard 1 – Upland Soils Standard 3 – Healthy, Plant and Animal Communities	In some areas litter amounts are lower than expected and/or are composed mostly of annual plants not effective for infiltration. In some areas bare ground is higher than expected.	In areas where this Standard was not met, increase current litter amounts and improve litter quality (i.e. litter shows higher percentage of perennial plants and lower percentage of annuals). **Indicator:** Maintain or achieve measurable increase in litter cover and improve litter composition.	Litter amount and quality are sufficient for infiltration and to limit runoff.	Limit grazing during critical growing periods allows plants to complete life cycle and allows residual plant material to stay on the ground. Limiting utilization levels to light allows for accumulation of litter.	

Land Health Standard	Existing Condition	Short Term (10 years or less)	Long Term (10 – 30 years)	Possible Management Actions to progress towards DFC	Remarks
		Maintain or decrease bare ground as measured on trend and line-point intercept transects.			
Standard 1 – Upland Soils Standard 3 – Healthy, Plant and Animal Communities	In some areas biological crusts are reduced relative to potential. Bare ground is higher than expected.	The presence of early colonizers (i.e. large filamentous cyanobacteria) are noted through ocular estimates.	Ground cover limits soil erosion, facilitates water infiltration, and biological soil crusts supply plant available nutrients to soil. Biological crusts make up a greater portion of the overall ground cover and include early, mid and late successional morphological groups.	Decreasing forage utilization levels to light amounts, decrease trampling.	In the first 10 years newly established biological crusts will be in early morphological stages and not consistently and easily detectable. Historical or even potential levels of biological crust are not expected because of historical changes to landscape and current ungulate use (wildlife and livestock). So the amounts that might have been present pre-European settlement is not part of DFC.
Standard 1 – Upland Soils Standard 3 – Healthy Plant and Animal Communities	In some areas soil surface is not resistant to erosion and soil surface loss and degradation is evident.	Soil stability is increasing compared to baseline measurements from the 2006 Land Health Assessment **Indicator:** Soil aggregate stability is increased by at least one stability class under plant canopies and/or in plant interspaces at least at half of the Land Health Assessment points.	Maintain or continue to increase resistance of soil to erosion and biotic integrity of soil. See water flow DFCs below.	Decreasing forage utilization to light amounts may also decrease trampling. Limit grazing during critical growing period allows residual plant material to stay on the ground and become incorporated into the soil as organic matter.	In 2006, soil aggregate stability at each Land Health Assessment point was measured at levels less than those needed to detect a minimum detectable difference. Therefore, for analysis purposes, data from similar sites will be lumped.
Standard 1 – Upland Soils Standard 3 – Healthy, Plant and Animal Communities	Compaction	Maintain or see a slight to moderate decrease in compaction in key areas (not roadbeds or around water sources).	Maintain or continue to decrease soil density and increase pore space. Absence of platy, blocky, dense or massive appearance of soils;	Improving distribution to take pressure off of heavily grazed areas. Limit spring grazing when soils are wet.	Bulk density measurement was not taken during previous inventories so there is not a baseline to compare in 10 years. However, compaction is a

Land Health Standard	Existing Condition	Short Term (10 years or less)	Long Term (10 – 30 years)	Possible Management Actions to progress towards DFC	Remarks
		Bulk densities are less than those densities that would restrict root growth for certain soil textures. **Indicator:** Compare ocular observations to the notes in the previous Land Health Assessment. Take buck density measurements to see if they are showing less than those densities that restrict root growth for that particular soil texture (See USDA Soil Quality Information Sheet: Rangeland Soil Quality Compaction).	absence of restricted, flattened, turned, horizontal, or stubby plant roots.		good indicator of recovery and is easily measured so was selected for a short term DFC. Roadbeds and areas around stock reservoirs are not a part of this DFC.
Standard 1 – Upland Soils	In some areas water flow patterns are larger and more connected than expected. In some areas Pedestals (and very rarely Terracettes) are more common and active than expected.	No short term DFC for water flow patterns – see soil aggregate DFC and indicator above.	Water flow patterns have blunted or muted features and show no active erosion or deposition. Erosional features are limited or absent.		Changes in water flow patterns are not expected in 10 years so there is no short term DFC for this element. However, short term increases in soil aggregate stability coupled with increase in desirable plant litter and crust elements described above should lead to improved water flow patterns in the long term. This is added here so future management decisions will take into account flow patterns and erosional features and compare those previous Land Health Assessments (around year 20 – 30).
Standard 2 – Lotic and Lentic Riparian Systems	Upland watershed contributing to riparian wetland degradation at	No 10 year DFC	See DFCs /indicators for plant composition, invasive species, plant mortality and	All described previously	This DFC is listed so future management decisions will take special note of the

Land Health Standard	Existing Condition	Short Term (10 years or less)	Long Term (10 – 30 years)	Possible Management Actions to progress towards DFC	Remarks
	Silvey's Pocket Spring.		vigor, litter, biological crusts, and resistance of soil to erosion listed above. When these DFCs are met, the upland watershed would no longer contribute to riparian/wetland degradation.		upland watershed surrounding Silvey's Pocket Spring.
Standard 2 – Lentic Riparian Systems	Natural surface flow patterns are altered by disturbance.	Natural surface flow patterns are being restored. **Indicator:** Reduction in active erosion. Flow patterns becoming blunted or muted and stabilized with vegetation through PFC monitoring.	Natural surface flow patterns are no longer altered by disturbance. **Indicator:** There is no concentration of overland flow resulting in headward erosion.	Fence to remove use by livestock and/or wildlife. Reduce the number of grazing days in pasture. Provide alternate water sources.	

APPENDIX H

Dolores Public Lands Office
Lower Disappointment Landscape
Evaluation of Land Health Assessment
Status of the Resource Conditions
Rangeland Health Standards H-4180-1

Grazing Allotment Name ____Gypsum Valleys_____ Number ___8068_
Acres: Federal __41,131__ Private Owned__4,111__
Date of Evaluation and Determination ____June 2015__

Indicators used in Health Assessment (Interpreting Indicators of Rangeland Health version 3, Technical reference 1734-6, 2000)

Attributes > / Indicators	Soil/Site Stability	Hydrologic Function	Biotic Integrity
Rills	X	X	
Water flow patterns	X	X	
Pedestals and/or terracettes	X	X	
Bare Ground	X	X	
Gullies	X	X	
Wind-scoured blowouts and/or deposition areas	X		
Litter movement		X	
Soil surface resistance to erosion	X	X	X
Soil surface loss or degradation	X	X	X
Plant community composition and distribution relative to infiltration and runoff		X	
Compaction layer	X	X	X
Functional/structural groups			X
Plant mortality/decadence			X
Litter amount		X	X
Annual production			X
Invasive plants			X
Reproductive capability of perennial plants			X
Biological soil crusts	X	X	X

Data sources used in evaluation:

- 2006 Lower Disappointment Rangeland Health Assessment - TR1734-6
- Long-term compositional trend of vegetation and ground cover – monitoring transects
- Actual livestock use records
- Proper Functioning Condition Ratings for streams TR1737-15
- Noxious weed inventory
- Colorado Natural Heritage Program – TES species database
- Precipitation records Norwood, Uravan.
- San Miguel County Soil Survey, unpublished
- Standards for Public Land Health and Guidelines for Livestock Grazing Management in Colorado, Environmental Assessment, June 1996
- Water source inventory – San Juan Resource Area
- Range Land Improvement inventory – San Juan Public Lands GIS inventory
- Status of Water Quality in Colorado – 2006 report
- State of Colorado 2006 303(d) list

Dolores Public Lands Office
Determination Record – Gypsum Valleys Allotment

Statement of Achievement or Non-Achievement for each Standard:

1) Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, landform, and geologic processes. Adequate soil infiltration and permeability allows for the accumulation of soil moisture necessary for optimal plant growth and vigor, and minimizes surface runoff.

Sylvie's Pocket, River and Magpie pasture (4,755 acres, 37% of usable allotment acres)
Standard achieved ___X___ Making significant progress towards achieving _____ Not achieved _____.

Coyote wash, Raven, Bullington, Carnation, The Gap, West Lavender, East Lavender, Hughes Gyp and Dunham pastures (7,957 acres, 63% of usable allotment acres)
Standard achieved _____ Making significant progress towards achieving _____ Not achieved ___X___.

2) Riparian systems associated with both running and standing water, function properly and have the ability to recover from major disturbance such as fire, severe grazing, or 100-year floods. Riparian vegetation captures sediment, and provides forage, habitat and bio-diversity. Water quality is improved or maintained. Stable soils store and release water slowly.

Standard achieved _____ Making significant progress towards achieving ___X___ Not achieved _____.

3) Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species and habitat's potential. Plants and animals at both the community and population level are productive, resilient, diverse, vigorous, and able to reproduce and sustain natural fluctuations, and ecological processes.

River and West Lavender pastures (1,237 acres, 10% of usable allotment acres)
Standard achieved ___X___ Making significant progress towards achieving _____ Not achieved _____.

Coyote wash, Sylvie's pocket, Raven, Bullington, Magpie, Carnation, The Gap, East Lavender, Hughes Gyp and Dunham pastures (11,475 acres, 90% of usable allotment acres)
Standard achieved _____ Making significant progress towards achieving _____ Not achieved ___X___.

4) Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Standard achieved ___X___ Making significant progress towards achieving _____ Not achieved _____.
See Note on page 7 regarding rare plants associated with Gypsum soils in Magpie pasture

5) The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado. Water Quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, narrative criteria, and anti-degradation requirements set forth under State law as found in (5 CCR 1002-8), as required by Section 303 (c) of the Clean Water Act.

Standard achieved ___X___ Making significant progress towards achieving _____ Not achieved _____.

If one or more Land Health Standards are not being achieved list reasons for not meeting and indicators used, list causal factor and list evidence used to support listed causal factors:

Standard 1 – Upland Soils

1) List reasons for not meeting and indicators used

- For the Gypsum Valleys Allotment as a whole, more than half of the rated acres fell within the "Moderate" or "Moderate to Extreme" rangeland health ratings for the Soil and Site Stability and Hydrologic Function Attributes. This places the majority of the acres in the "at risk" or "beyond at risk" level, with recovery questionable without some changes to current management. The Sylvie's Pocket, River and Magpie pastures were exceptions with less than half of the pasture acres rating "Moderate" or above.
- The Soil and Site Stability attribute rated "Moderate" for 54% of rated acres and "Moderate to Extreme" for 21% of rated acres. The Hydrologic Function attribute rated "Moderate" for 50% of rated acres and "Moderate to Extreme" for 23% of rated acres. The Gap, Carnation, Bullington and Coyote Wash had a high proportion of rated acres in the "Moderate to Extreme" category (see table 1).

Table 1

Proportion of acres within each health rating category, by pasture, for the health attributes Soil and Site Stability and Hydrologic Function

2006 Rangeland Health	Soil and Site Stability					Hydrologic Function				
Gypsum Valleys Allotment Pasture	None to Slight	Slight to Moderate	Moderate	Moderate to Extreme	Extreme to Total	None to Slight	Slight to Moderate	Moderate	Moderate to Extreme	Extreme to Total
Coyote Wash		64%		36%				64%	36%	
Sylvies Pocket		100%					57%	43%		
Raven			100%					100%		
Bullington			73%	27%			73%	27%		
River	73%		27%				73%	10%	17%	
Magpie		52%	48%				52%	48%		
Carnation			62%	38%				62%	38%	
Dunham			100%					100%		
West Lavender			100%					100%		
East Lavender			100%					100%		
Hughes Gyp			93%	7%				93%	7%	
The Gap			44%	56%				22%	78%	
Gypsum Valleys Total	5%	20%	54%	21%			26%	50%	23%	

- Indicators contributing to the ratings follow: (see attached table A for details on each indicator and rating by pasture, field sheets with photos are filed)
  - Presence of waterflow patterns: For most visited sites, waterflow patterns were more numerous and extensive than expected with deposition and cut areas common. Connectivity between flow patterns occurred in most sites, parts of West Lavender and Sylvie's Pocket were exceptions. In parts of the The Gap pasture extensive overland flow was more apparent than waterflow patterns.
  - Number and height of erosional pedestals and/or terracettes: For most pastures pedestals were evident, especially in waterflow patterns, terracettes were occasional. For the East Lavender and Bullington pastures and parts of The Gap, Carnation, River and Coyote Wash pastures, pedestaled plants and shrubs were numerous with common terracettes.

- Bare ground: Ratings varied from "Moderate" to "Moderate to Extreme" with one "Extreme to Total" in these Gypsum Valleys pastures. Pastures with the highest bare ground values and more extreme ratings were The Gap (50 to 80% bare ground), Bullington (60 to 70% bare ground) and parts of the River and Coyote Wash pastures (60 to 70% bare ground).
- Amount of litter movement: Most litter movement was smaller size classes in scattered concentrations around obstructions and in depressions. A few pastures (East Lavender, and parts of The Gap, River and Coyote Wash) had moderate to small size classes concentrated near obstructions. The Bullington pasture had the most extreme movement, with most size classes displaced and concentrated around obstructions.
- Soil surface resistance to erosion and surface structure and organic matter content: This indicator was apparent mostly in The Gap pasture. Slake test results there were 2 to 3 in interspaces and 4 under canopy cover. Soils with a stability index of 3 or less are highly susceptible to erosion, index values of 4 to 5 have a low erodibility and 5 to 6 are non-erodible. Several pastures showed evidence that the surface horizons were shallower than expected (Bullington pasture and parts of River, Raven, and Coyote Wash pastures) and received a "Moderate" rating
- Effect of plant community composition and spatial distribution on infiltration and runoff: For most sites, perennial bunchgrasses particularly cool season species were lacking, sites had more bare ground and less shrub cover than expected. Bare areas were often covered with ephemeral annual forbs or grasses that did not appear to be effective in aiding infiltration. In a few sites dominated by shrubs, one species became dominant with little herbaceous ground cover. In almost all cases, biological crust cover was absent or extremely limited. For this allotment, infiltration is greatly decreased due to adverse changes in plant community composition and distribution, detrimental plant cover changes have occurred.
- Litter cover and depth: Most sites had moderately less litter cover than expected. Litter was usually from weedy annual plants.
- Biological crust cover: In all pastures biological crust cover was greatly reduced from expected with a limited suite of lifeforms and species, occurring only in protected areas at the base of shrubs or in rocks. The Raven, Sylvie's Pocket and Coyote Wash pastures had some areas with healthy crust cover.

2) List suspected causal factors

Within control of agency:

- Livestock grazing
- Unauthorized livestock grazing in Coyote Wash form neighboring permittee
- Drought management, actions taken during drought

Outside of control of agency:

- Historic livestock grazing
- Prairie dog towns, mostly inactive
- Effects of previous failed land treatments
- Weeds from abandoned agricultural lands
- Impacts from old homesteads, mining, roads, power lines, seismic surveys, historic landing strips

3) Evidence used to reach conclusions for each causal factor:

- Livestock use documented as mostly moderate during the health assessment visit.
- Observations made and documented during 2006 land health assessment
- Precipitation records for Norwood and Uravan Colorado, the two closest active NOAA weather stations show precipitation in the area to be very close to average.

Station	Station average	10 year average 2004 - 2013	5 year average 2009 - 2013
Norwood	16.05	16.38	Not Available
Uravan	12.10	12.52	11.42

- Management during drought period: no use following most severe period of drought - fall winter 2002 – 2003, return to permitted levels in fall of 2003.

Standard 3 - Healthy, productive plant and animal communities

1) List reasons for not meeting and indicators used

- For the Gypsum Valleys Allotment more than half of the rated acres fell within the "Moderate", Moderate to Extreme" or "Extreme to Total" rangeland health ratings for the Biotic Integrity Attribute. This places the majority of the acres in the "at risk" or "beyond at risk" level, with recovery questionable without some changes to current management. The River and West Lavender pastures were the exceptions with less than half of the pasture acres rating "Moderate" or higher.
- The Biotic Integrity attribute in the Gypsum Valleys allotment rated "Moderate" for 50% of rated acres and "Moderate to Extreme" for 41% of rated acres (see table 2).

Table 2

Proportion of acres within each health rating category by pasture for the health attribute Biotic Integrity

2006 Rangeland Health	Biotic Integrity				
Gypsum Valleys Allotment Pasture	None to Slight	Slight to Moderate	Moderate	Moderate to Extreme	Extreme to Total
Coyote Wash			36%	64%	
Sylvies Pocket			57%	43%	
Raven			100%		
Bullington			73%	27%	
River		73%	27%	10%	
Magpie			52%	48%	
Carnation		15%	47%	38%	
Dunham				100%	
West Lavender		55%		45%	
East Lavender			9%	91%	
Hughes Gyp				100%	
The Gap			44%	56%	
Gypsum Valleys Total		10%	50%	41%	

- Indicators contributing to the rating: (see attached table A for details about each indicator and rating by pasture, field sheets with photos are filed)
  - Soil surface resistance to erosion and surface structure and organic matter content: This indicator was a factor mostly in The Gap pasture. Slake test results there were 2 to 3 in interspaces and 4 under canopy cover resulting in an "Moderate to Extreme" rating. Soils with a stability index of 3 or less are highly susceptible to erosion, index values of 4 to 5 have a low erodibility and 5 to 6 are non-erodible. Several pastures showed evidence that the surface horizons were shallower than expected, Bullington pasture and parts of River, Raven, and Coyote Wash pastures, and received a "Moderate" rating.
  - Functional / structural groups: Ratings ranged from " Moderate" to "Moderate to Extreme" to "Extreme to Total" with the majority being in "Moderate to Extreme". Cool season grass species were typically only in trace amounts to minor, warm season grasses were usually present but species diversity was limited, annual grasses and weedy annual forbs tended to dominate in places and many shrubs were dead or decadent with limited reproduction.
  - Plant mortality and decadence: Ratings ranged from " Moderate" to "Moderate to Extreme" to "Extreme to Total" with the majority split between "Moderate" and "Moderate to

Extreme". It was common to see dead perennial bunchgrass bases; both warm and cool season species. It was also common to see shrubs in a decadent condition with some dead.

- Litter cover and depth: Most sites had moderately less litter cover than expected. Litter was usually from weedy annual plants.
- Annual production: This indicator was a factor for about half of the pastures, The Gap, Hughes Gyp, East Lavender, Bullington and Coyote Wash. Production was 20 to 40% of potential on the pastures in the south end and 40 to 60% for Bullington and Coyote Wash. Very often most of the production was made up of annual species.
- Invasive plants: This indicator was a factor for all pastures except Sylvie's pocket and West Lavender. Ratings ranged from " Moderate" to "Moderate to Extreme" to "Extreme to Total". Weedy annual forbs such as Russian thistle, purslane and filaree and the annual grasses cheatgrass and six weeks fescue were predominant.
- Reproductive capability: The capability to produce seed was somewhat limited to greatly reduced particularly in the southern pastures and Bullington.
- Biological crust cover: In all pastures biological crust cover was greatly reduced from expected with a limited suite of lifeforms and species, occurring only in protected areas at the base of shrubs or in rocks. The Raven, Sylvie's Pocket and Coyote Wash pastures had some areas with healthy crust cover.

- Trend: There are eleven trend studies on this allotment that monitor species composition, number of plants present and ground cover amounts, all have been recently updated. Two transects show a stable or stable to upward trend, one is stable but in such a degraded condition change is unlikely and seven show a downward or stable to downward trend. A downward trend indicates a loss in the number of species or a significant change in the number of plants on the transect (see table 3). Complete detailed summaries of all trend transects are attached.

Table 3

Gypsum Valleys Allotment Trend		
Direction of Trend	Number of Studies	Pasture
Downward	3	Bullington 2, Carnation & Raven
Stable to downward	4	Bullington 1, East Lavender, Gap 1, Gap 2
Stable degraded	1	Coyote Wash
Stable	3	Magpie, River & Silvey's Pocket

2) List suspected causal factors

Within control of agency:

- Livestock grazing
- Unauthorized livestock grazing in Coyote Wash from a neighboring permittee.
- Drought management, actions taken during drought

Outside of control of agency:

- Historic livestock grazing
- Prairie dog towns, most currently inactive
- Effects of previous failed land treatments
- Weeds from abandoned agricultural lands
- Impacts from old homesteads, mining, roads, power lines, seismic surveys, historic landing strips

3) Evidence used to reach conclusions for each causal factor:

- Livestock use documented as mostly moderate during the health assessment visit.
- Observations made and documented during 2006 land health assessment
- Precipitation records for Norwood and Uravan Colorado, the two closest active NOAA weather stations show precipitation in the area to be very close to average.

Station	Station average	10 year average 2004 - 2013	5 year average 2009 - 2013
Norwood	16.05	16.38	Not Available
Uravan	12.10	12.52	11.42

- Management during drought period: no use following most severe period of drought - fall winter 2002 – 2003, return to permitted levels in fall of 2003.

Standard 4 - Special status, threatened and endangered species

While the allotment as a whole met the Standard, there were significant issues involving rare plants and lichens on gypsum soils in the Magpie pastures. The lichen species *Lecanora gypsicola* (G1S1) and *Acarospora nodulosa* var. *nodulosa* (G5S1), the grass *Sporobolus nealleyi* (G5S1) and the forb *Cryptantha gypsophila* (G1G2 S1S2) are restricted to gypsum soils and are placed at risk by the recreational off-road use of the gypsum hills in this pasture. Evidence used to reach this conclusion includes obvious OHV tracks traversing gypsum hills and an increase in the number of those tracks every year.

Statement of Conformance or Non-Conformance with Guidelines:

1) Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform with the Guidelines
Yes __X__ No _____

Also significant factors are the lingering effects of failed land treatment projects, historic grazing practices; and likely the re-initiation of livestock grazing too quickly after the drought of 2002-2003, when, in retrospect, high levels of natural mortality amongst native perennial forage and browse plants, coupled with low vigor in surviving plants, left plant communities vulnerable to invasion from increaser and invader classes of annual plant species. County roads, mining-related roads and motorized recreation routes are also factors contributing to the failure of some areas to achieve Standards.

2) Is it more likely than not that existing grazing management needs to be modified to ensure that the fundamentals of rangeland health are met, or making significant progress toward being met
Yes __X__ No _____

It appears that current grazing management has negatively impacted land health. Contributing factors appear to include poor distribution, lack of variety in the dates certain pastures are grazed from year-to-year; and unreliable livestock water in some pastures, leading to excessive grazing pressure in other pastures.

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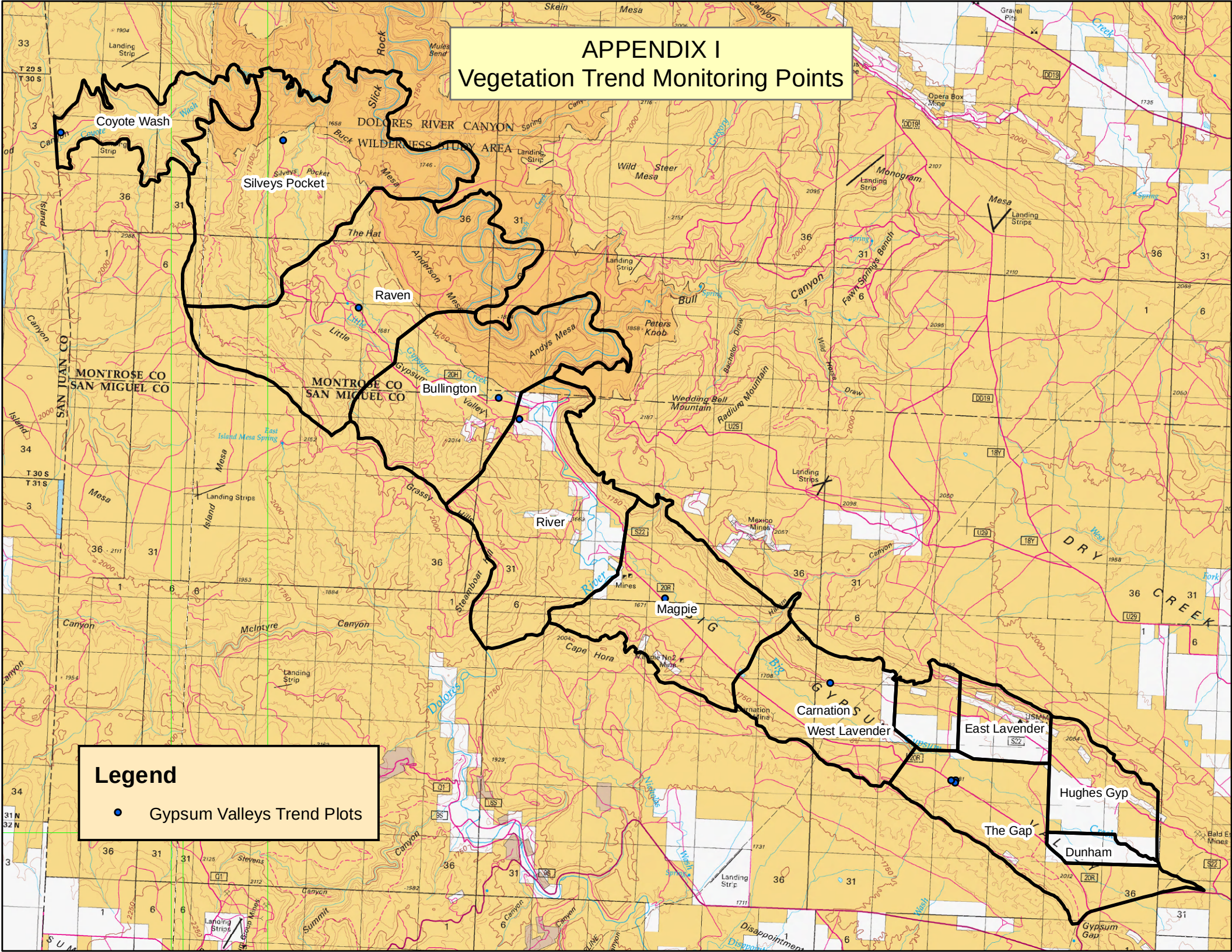
6·26·15
Date

APPENDIX I
Vegetation Trend Monitoring Points



Appendix J

Federally Listed T&E, Candidate Species
&
BLM Sensitive Species

Species	Status	Habitat Present in Project Area	Species Affected
Mammals			
New Mexico jumping mouse	Endangered	No	No
Canada lynx	Threatened	No	No
Allen's big-eared bat	BLM Sensitive	Yes	No
Fringed myotis	BLM Sensitive	Yes	No
Spotted bat	BLM Sensitive	Yes	No
Townsend's big-eared bat	BLM Sensitive	Yes	No
Desert bighorn Sheep	BLM Sensitive	Yes	Potential
Gunnison's Prairie Dog	BLM Sensitive	No	No
Birds			
Southwestern willow flycatcher	Endangered	No	No
Western yellow-billed cuckoo	Threatened	No	No
Mexican spotted owl	Threatened	Yes	No
Gunnison sage grouse	Threatened	No	No
American Bald Eagle	BLM Sensitive	Yes	No
Golden Eagle	BLM Sensitive	Yes	No
American Peregrine Falcon	BLM Sensitive	Yes	No
Ferruginous hawk	BLM Sensitive	Winter Foraging	No
Western Burrowing Owl	BLM Sensitive	Possible	No
Colombian sharp-tailed grouse	BLM Sensitive	No	No
Northern goshawk	BLM Sensitive	No	No
White-faced ibis	BLM Sensitive	No	No
Brewer's sparrow	BLM Sensitive	Yes	Yes
Black Swift	BLM Sensitive	No	No
Fish			
Bonytail	Endangered	No	No
Colorado pikeminnow	Endangered	No	No
Razorback sucker	Endangered	No	No
Greenback cutthroat trout	Threatened	No	No
Humpback chub	Endangered	No	No
Bluehead sucker	BLM Sensitive	No	No
Colorado River cutthroat trout	BLM Sensitive	No	No
Flannelmouth sucker	BLM Sensitive	No	No
Roundtail chub	BLM Sensitive	No	No
Reptiles & Amphibians			
Longnose leopard lizard	BLM Sensitive	Yes	No
Canyon treefrog	BLM Sensitive	Yes	No
Northern leopard frog	BLM Sensitive	Yes	No
Midget Faded Rattlesnake	BLM Sensitive	Yes	No
Boreal Toad	BLM Sensitive	No	No
Insects			
Great basin silverspot butterfly	BLM Sensitive	No	No

APPENDIX K

Monitoring Methods

The following is a description of the monitoring methodology that may be implemented on the Gypsum Valleys Allotment for assessing the impacts of livestock grazing on the health of the rangelands and for determining progress towards meeting the Rangeland Health Standards.

Trend Studies

Long-term trend studies within the Gypsum Valleys Allotment are composed of transects along a baseline where nested frequency of plant species are measured in quadrats. This method is highly objective and repeatable, and unlike plant canopy cover measurements, does not fluctuate within a growing season as plants grow (Elzinga, 1998) or year to year as plant canopy cover fluctuates due to climatic conditions. The following indicators will be monitored with this method: frequency of occurrence of plant species, ground cover and litter by category, bare ground and biological soils crusts. Trend studies are read at a minimum of 5 year intervals and the data are analyzed at the 80% confidence level.

Utilization Studies

Utilization data and residual measurements are important in evaluating the effects of grazing and browsing on rangeland. Utilization measures the percentage of annual herbage production that has been removed. It is generally the percentage of available forage (weight or numbers of plants, twigs, etc.) that has been consumed or destroyed. Utilization is expressed in terms of current year's production removed. Residual measurements and utilization data can be used: (1) to identify use patterns; (2) to help establish cause-and-effect interpretations of range trend data, and (3) to aid in adjusting stocking rates when combined with other monitoring data.

Use Pattern Mapping

Rangelands include various combinations of range sites and vegetation types on which utilization is seldom uniform. Utilization patterns (use zones) may result from a number of factors that either alone or in combination cause foraging animals to concentrate in specific areas or to spread out over large areas.

Vegetation Composition

Composition is the proportion of various plant species in relation to the total of a given area. It may be expressed in terms of relative cover, relative density, relative weight, etc. Composition is used to describe ecological sites and to evaluate rangeland conditions.

Forage Production

Forage production is the total herbaceous and woody palatable plant biomass available to herbivores.

Riparian Proper Functioning Conditions Assessments

Proper functioning condition (PFC) is a qualitative method for assessing the condition of riparian wetlands. This assessment is a consistent approach for considering hydrology, vegetation, and erosion/deposition (soils) attributes and processes to assess the condition of riparian wetland areas.

APPENDIX L
RESPONSES TO COMMENTS
Term Grazing Permit Renewal on the Gypsum Valleys Allotment
DOI-BLM-CO-S010-2012-0034

<u>Western Watersheds Project</u>

1. Comment: *"Clearly the pathetic changes proposed will not result in "significant progress" towards meeting Rangeland Health Standards which "must also be as expeditious and effective as practical". Unless you are mis-defining "practical" as only that which the welfare ranchers in question like"*

Response: 43 CFR 4180 of the grazing regulations requires the authorized officer to take appropriate action under subparts 4110, 4120, 4130 and 4160 of the grazing regulations that will result in significant progress towards fulfillment of the Standards for Rangeland Health. Furthermore, the BLM's Rangeland Health Standards Manual (H-4180-1) defines **significant progress** as "Movement toward meeting standards and conforming to guidelines that is acceptable in terms of rate and magnitude. Acceptable levels of rate and magnitude must be realistic in terms of the capability of the resource, but must also be as expeditious and effective as practical"

The Environmental Assessment contained three alternatives that proposed a reduction in permitted AUMs in accordance with 43 CFR 4110.3-2, as well as other proposed actions in accordance with 43 CFR 4120 and 4130. These alternatives included Alternative A (Permittee Proposed Action), Alternative C (Adaptive Management Alternative), Alternative C (Reduced Grazing Alternative) and Alternative E (No Grazing Alternative).

The Adaptive Management Alternative which is the BLM's preferred alternative proposes reductions in grazing levels from those that are currently authorized from 1,807 to 1,761 AUMs. The 2006 Rangeland Health Assessment estimated that there were approximately a total of 1,955 AUMs available for livestock grazing. In addition, the available forage production estimate from the 2006 Rangeland Health Assessment of 1,955 AUMs did not include **1)** portions of the allotment with slopes greater than 40%; **2)** only 70% of the potential production was used for estimating carrying capacity on portions of the allotment identified as having a slight to moderate departure from biotic integrity; **3)** only 50% of potential production was used for estimating carrying capacity on portions of the allotment identified as having a moderate departure from biotic integrity; **4)** only 30% of potential production was used for estimating carrying capacity on portions of the allotment identified as having a moderate to extreme departure from biotic integrity; and **5)** only 10% of potential production was used for estimating carrying capacity on portions of the allotment identified as having an extreme to total departure

from biotic integrity allocated. Therefore, the proposed stocking level of 1,761 AUMs is significantly lower than what the allotment actually provides for based on the 2006 Rangeland Health Assessment.

More importantly, this alternative also proposes to incorporate several changes to current grazing management as per 43 CFR 4120 and 43 CFR 4130 and in accordance with the Colorado Livestock Grazing Management Guidelines developed as part of the Public Land Health Standards for Colorado. Specifically, the adaptive management alternative **1)** implements an intensive 3-year deferred rotational grazing system that will defer livestock grazing during the critical spring growing season on a consistent basis for all pastures. Within the Big Gypsum Valley portion of the allotment there are six pastures. The proposed grazing rotation defers grazing use during the critical growing season in 2-3 of the 6 pastures every year. At the end of the 3-year rotation all pastures will have receive at least one year rest from livestock grazing during the critical spring growing season and at least 3 years rest out of the 10-year term of the grazing permit. Within the Little Gypsum Valley portion of the allotment there are six pastures also. The proposed grazing rotation will defer grazing during the critical spring growing season every year for two of the pastures and every other year for the remaining 4 pastures and at least 5 years rest out of the 10-year term of the grazing permit.

By providing existing plant communities regular rest during the critical growing season, plant communities will have the opportunity to regularly complete their lifecycles, set seed, and rebuild root reserves without the pressures from livestock grazing. In addition, the amount of litter accumulation should improve and the amount of bare ground should decrease to what is expected based on site potential; **2)** the adaptive management portion of this alternative establishes utilization limits on both herbaceous and shrub forage species of either 30% on those pastures that are not meeting rangeland health standards or 40% on those pastures currently meeting rangeland health standards. Based on comments received to the draft analysis, the utilization thresholds for the Adaptive Management Alternative have been revised as follows. If monitoring indicates that the established utilization levels have been exceeded two or more years (not necessarily consecutive years) in the same pasture over a five year period, the amount of grazing time in that pasture would be reduced proportionally to the amount in which utilization levels were exceeded. For example if the actual use indicated that a pasture was used for 30 days and utilization monitoring indicated that average use levels were exceeded by 20% over two years, the amount of grazing time allowed in that pasture would be reduced from 30 days to 24 days for the remaining life of the 10-year term grazing permit. If the number of days are reduced in a pasture, then the day cattle leave the allotment in the spring would be reduced by that number of days, unless utilization studies with at least two years of data show that actual grazing use in other pastures have resulted in utilization levels far below the 30% or 40% allowable limit. If this proves to be the case then some of the time reduced may be made up in these pastures. The intent of this adaptive management is to allow for additional adjustments to grazing levels if

they are determined needed through utilization monitoring over a five year period during the life of the 10-year term grazing permit; **3)** drought management actions have been included as part of this alternative which allows for immediate actions such as temporary or partial closure of the allotment to grazing, temporary reductions in livestock numbers or grazing duration, temporary change in season of use outside critical growth periods of plant communities and temporary water hauling to improve livestock distribution to areas of the allotment where adequate forage exists; and **4)** additional design criteria have been included as part of this alternative to further mitigate impacts of livestock to vegetation communities, riparian resources, cultural resources, spread of noxious weeds and wildlife species.

Therefore, the combination of these grazing management actions meet the requirements contained in 43 CFR 4180 and should result in making significant progress towards conforming to the Public Land Health Standards developed for Colorado.

2. Comment: *"All the degradation of the allotment discussed in the EA are merely obvious symptoms of long term and severe overstocking, yet the EA is silent regarding what a rational stocking rate and season of use is."*

Response: The rangeland health assessment and subsequent determination document identified other activities other than current livestock grazing management that has also contributed to degraded resource conditions resulting in non-attainment of rangeland health standards. These activities included **1)** long term effects of historical grazing practices, **2)** historical prairie dog towns, **3)** previous failed land treatment activities which disturbed existing vegetation resources and soils, **4)** weed infestations from abandoned agricultural lands; and **5)** impacts from old homesteads, mining, roads, power lines, seismic surveys and historic landing strips.

The environmental assessment contained several alternatives that analyzed different stocking levels and seasons of use for this allotment. The Adaptive Management Alternative which is the BLM's preferred alternative proposes reductions in grazing levels from those that are currently authorized from 1,807 to 1,761 AUMs. Furthermore the 2006 Rangeland Health Assessment estimated that there were approximately a total of 1,955 AUMs available for livestock grazing. In addition, the available forage production estimate from the 2006 Rangeland Health Assessment of 1,955 AUMs did not include **1)** portions of the allotment with slopes greater than 40%; **2)** only 70% of the potential production was used for estimating carrying capacity (available AUMs) on portions of the allotment identified as having a slight to moderate departure from biotic integrity; **3)** only 50% of potential production was used for estimating carrying capacity on portions of the allotment identified as having a moderate departure from biotic integrity; **4)** only 30% of potential production was used for estimating portions of the allotment identified as having a moderate to extreme departure from biotic integrity; and **5)** only 10% of potential production was used for estimating carrying capacity on portions of the

allotment identified as having an extreme to total departure from biotic integrity allocated. Therefore, the proposed stocking level of 1,761 AUMs is significantly lower than what the allotment actually provides for based on the 2006 Rangeland Health Assessment.

In addition, BLM's preferred Adaptive Management Alternative (Alternative C) also establishes utilization standards and an adaptive management approach which requires appropriate adjustments to grazing levels if utilization monitoring as described in the adaptive management alternative indicates a need. The intent of this adaptive management alternative is to allow for adjustments of the stocking levels and season of use through monitoring of utilization levels for the life of the 10-year term grazing permit. This actions is consistent with 43 CFR 4110.3 Changes in permitted uses which states in part *"The authorized officer shall periodically review the permitted use specified in a grazing permit or lease and shall make changes in the permitted use as needed to manage, maintain or improve rangeland productivity, to assist in restoring ecosystems to properly functioning condition…"*

3. Comment: *"Just because livestock grazing may occur within the Gypsum Valleys ACEC, does not obviate the need to examine impacts to ACEC protected resources and to provide actions to protect those resources."*

Response: An Area of Critical Environmental Concern (ACEC) are areas unique to the BLM, where special management attention is required to protect and prevent irreparable damage to public land and/or related waters containing resources, values, systems, processes, or hazards identified, designated, and protected through the land-use planning process. Potential areas for ACEC designation must meet the following criteria:

<u>Relevance</u> – presence of a significant historic, cultural, or scenic value; fish or wildlife resource or other natural process or system; or natural hazard; and

<u>Importance</u> – the above described value, resource, process, system, or hazard shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property.

The Gypsum Valleys Area of Critical Environmental Concern (ACEC) was established to protect known occurrences and abundant habitat for two BLM sensitive species, Gypsum Valley cat-eye *(Cryptantha gypsophila)* and Naturita milkvetch *(Astragalus naturitensis)* and five other plant species that has a NatureServe Plant Community status ranking as imperiled either globally or in Colorado. The analysis in the environmental assessment determined that effects of current livestock grazing management practices on these plants and plant communities was minimal to none. Although, the rangeland health assessment identified potential impacts to these

communities from off road vehicle travel. The potential impacts resulting from off road vehicle travel within the ACEC and protection measures will be addressed through the travel management planning process.

4. Comment: *"Maintaining the status quo (with the worthless and unmeasurable 2.5% AUM decrease) and putting off changes to some distant 'adaptive management' future does not comply with the obvious required under 43 CFR 4180. Appropriate Actions must be taken now under the regulations (actually nearly a decade ago)."*

Response: 43 CFR 4180 of the grazing regulations requires the authorized officer to take appropriate action under subparts 4110, 4120, 4130 and 4160 of the grazing regulations that will result in significant progress towards fulfillment of the Standards for Rangeland Health. Furthermore, the BLM's Rangeland Health Standards Manual (H-4180-1) defines **significant progress** as "Movement toward meeting standards and conforming to guidelines that is acceptable in terms of rate and magnitude. Acceptable levels of rate and magnitude must be realistic in terms of the capability of the resource, but must also be as expeditious and effective as practical"

The Adaptive Management Alternative which is the BLM's preferred alternative proposes reductions in grazing levels from those that are currently authorized from 1,807 to 1,761 AUMs. Furthermore the 2006 Rangeland Health Assessment estimated that there were approximately a total of 1,955 AUMs available for livestock grazing. In addition, the available forage production estimate from the 2006 Rangeland Health Assessment of 1,955 AUMs did not include **1)** portions of the allotment with slopes greater than 40%; **2)** only 70% of the potential production was used for estimating carrying capacity on portions of the allotment identified as having a slight to moderate departure from biotic integrity; **3)** only 50% of potential production was used for estimating carrying capacity on portions of the allotment identified as having a moderate departure from biotic integrity; **4)** only 30% of potential production was used for estimating carrying capacity on portions of the allotment identified as having a moderate to extreme departure from biotic integrity; and **5)** only 10% of potential production was used for estimating carrying capacity on portions of the allotment identified as having an extreme to total departure from biotic integrity allocated. Therefore, the proposed stocking level of 1,761 AUMs is significantly lower than what the allotment actually provides for based on the 2006 Rangeland Health Assessment.

More importantly, this alternative also proposes to incorporate several changes to current grazing management as per 43 CFR 4120 and 43 CFR 4130 and in accordance with the Colorado Livestock Grazing Management Guidelines developed as part of the Public Land Health Standards for Colorado. Specifically, the adaptive management alternative **1)** implements an intensive 3-year deferred rotational grazing system that will defer livestock grazing during the

critical spring growing season on a consistent basis for all pastures. Within the Big Gypsum Valley portion of the allotment there are six pastures. The proposed grazing rotation defers grazing use during the critical growing season in 2-3 of the 6 pastures every year. At the end of the 3-year rotation all pastures will have receive at least one year rest from grazing during the critical spring growing season and at least 3 years rest out of the 10-year term of the grazing permit. Within the Little Gypsum Valley portion of the allotment there are six pastures. The proposed grazing rotation will defer grazing during the critical spring growing season every year for two of the pastures and every other year for the remaining 4 pastures and at least 5 years rest out of the 10-year term of the grazing permit. By providing existing plant communities regular rest during the critical growing season, plant communities will have the opportunity to regularly complete their lifecycles, set seed, and rebuild root reserves without the pressures from livestock grazing. In addition, the amount of litter accumulation should improve and the amount of bare ground should decrease to what is expected based on site potential; **2)** the adaptive management portion of this alternative establishes utilization limits on both herbaceous and shrub forage species of either 30% on those pastures that are not meeting rangeland health standards or 40% on those pastures currently meeting rangeland health standards. Based on comments received to the analysis the utilization thresholds for the Adaptive Management Alternative have been revised as follows. If monitoring indicates that the established utilization levels have been exceeded two or more years (not necessarily consecutive years) in the same pasture over a five year period, the amount of grazing time in that pasture would be reduced proportionally to the amount in which utilization levels were exceeded. For example if the actual use indicated that a pasture was used for 30 days and utilization monitoring indicated that average use levels were exceeded by 20% over two years, the amount of grazing time allowed in that pasture would be reduced from 30 days to 24 days for the remaining life of the 10-year term grazing permit. If the number of days are reduced in a pasture, then the day cattle leave the allotment in the spring would be reduced by that number of days, unless utilization studies with at least two years of data show that actual grazing use in other pastures have resulted in utilization levels far below the 30% or 40% allowable limit. If this proves to be the case then some of the time reduced may be made up in these pastures. The intent of this adaptive management is to allow for additional adjustments to grazing levels if they are determined needed through utilization monitoring over a five year period during the life of the 10-year term grazing permit; **3)** drought management actions have been included as part of this alternative which allows for immediate actions such as temporary or partial closure of the allotment to grazing, temporary reductions in livestock numbers or grazing duration, temporary change in season of use outside critical growth periods of plant communities and temporary water hauling to improve livestock distribution to areas of the allotment where adequate forage exists; and **4)** additional design criteria have been included as part of this alternative to further mitigate impacts of livestock to vegetation communities, riparian resources, cultural resources, spread of noxious weeds and wildlife species.

Therefore, the combination of these grazing management actions meet the requirements contained in 43 CFR 4180 and should result in making significant progress towards conforming to the Public Land Health Standards developed for Colorado.

5. Comment: *"The Holechek textbook as well as the NRCR Range and Pasture Handbook summarize current range science and find that a maximum of 25% harvest coefficient is the maximum that can be sustain in the arid west: "use of a harvest coefficient higher than 25% leads to land degradation' Holecheck et al. Fifth Edition. Beyond that merely reducing a theoretical utilization rate without adjusting stocking rate so that utilization rate can be met is a recipe for failure."*

Response: Range Management, Principles and Practices (Holechek et al. Third Edition) finds that "35% to 45% use of grazable forage will generally maintain forage production on semiarid (shortgrass) grassland ranges where brush encroachment is not a problem. In the more arid regions (under 300 mm of mean annual precipitation) of the Southwest and intermountain areas, utilization levels between 25% and 40% are recommended." Therefore, the 25% utilization level represents the low end of the acceptable range of utilization, not the maximum accepted level recommended for maintaining forage production.

In addition, the Tres Rios Field Office, Resource Management Plan (RMP) identifies a maximum allowable use guideline of 50% utilization for those grazing management systems that implement a deferred rotation system.

The Adaptive Management Alternative establishes a deferred rotation grazing system but establishes a maximum utilization level of 30% within pastures where applicable rangeland health standards have not been met, and 40% in pastures where rangeland health standards have been met. The established utilization standards are far below the allowable use standards identified in the RMP for the proposed grazing system.

In regards to the stocking rate, the adaptive management alternative establishes 1) measurable utilization objectives for each pasture, 2) defines decision thresholds, in this case documentation of two years (not necessarily consecutive) over a five year period in utilization above the maximum acceptable levels identified by pasture; and 3) specific actions that will be taken in regards to grazing management if utilization thresholds have been exceeded.

The specific action identified in the adaptive management alternative is a reduction in grazing time proportional to the amount of excess utilization documented to have occurred. Utilization monitoring outlined in the adaptive management alternative will be used as an indicator to determine if the stocking rate is too high. Adjustments in the current grazing levels will be

reduced accordingly as described in this alternative if utilization monitoring indicates a need. This will help refine the appropriate livestock stocking levels for this allotment.

6. Comment: *"The so-called 'adaptive management plan' does not conform with the foundational principles of adaptive management."*

Response: The Adaptive Management Alternative beginning on page 15 of the Final Environmental Assessment has been modified for consistency with the requirements of the Rangeland Health Standards Handbook (H-4180-1) and clearly defines 1) the desired future conditions for the allotment; 2) allotment specific monitoring objectives that are sensitive enough and established at the appropriate locations for detection of changes in range conditions; and 3) identifies appropriate time frames for data collection and evaluation. Furthermore, included in the Adaptive Management Alternative are grazing management actions that may be implemented if it is determined through the identified monitoring that the allotment specific monitoring objectives have not been met.

7. Comment: *"Again, the EA fails to provide, or even discuss, whether the general upland monitoring of the revised EA, provides for determining whether standards are being met, or whether it is sensitive enough to detect deteriorating "achieving" areas or improving "non-achieving" areas."*

Response: Please refer to the BLM's response to comment number 6 above.

8. Comment: *"The TR at 33, for instance instructs the BLM on how to write management objectives: In order for management actions to be monitored and progress evaluated, the objectives must address <u>measurable attributes</u> of vegetation. The objective to "increase ground cover" does not tell the manager specifically what is expected to be accomplished. Nor does it tell the attribute that needs to be monitored. Compare that objective with "to increase basal cover of bluebunch wheatgrass from 2 percent to at least 5 percent by 1990. The so-called 'objectives' provided in the EA have exactly the flaws which the BLM instructs itself not to make in the policy provided in the TR."*

Response: A grazing management action that would require combining the two herds into one herd may be implemented if it is determined through monitoring that allotment specific monitoring objectives have not been met. Please refer to the Adaptive Management Alternative for a description of these added requirements.

9. Comment: *"One of the most obvious actions in addition to significantly reduced AUM's is a one herd rotation. Permittee wishes cannot drive management."*

Response:

10. Comment: *"The AUM forage consumption section is stick in the 1970's. We again provide the review of the inconvenient truth livestock sizes have increased significantly over the last 50 years since the AUM was defined."*

Response: In calculating Animal Unit Months (AUMs) for the Gypsum Valleys Allotment a daily intake requirement of 29 lbs. dry weight per day for a 1,000 lb. cow was used for determining the required forge needs. The typical forage intake requirement currently recognized in the literature and accepted for a cow weighing 1000 lbs. ranges from 26 to 34 lbs. dry weight per day.

11. Comment: *"Further undercutting the ridiculous 2.5% AUM reduction is the fact that average actual use over the last 15 years has been below the level the BLM is proposing."*

Response: This comment is based solely on a comparison of average AUMs grazed with the maximum number of cattle and AUMs contained in the proposed adaptive management alternative. The approached suggested in your comment would retroactively penalize the grazing permittees for being responsible managers and voluntarily reducing livestock numbers to match resource conditions in poor production years resulting from either drought or drier than normal conditions. The availability of livestock water in earthen reservoirs is also a major factor in what areas within the allotment may be grazed from year to year. Authorizing grazing permittees to graze the permitted (maximum) number of cattle when resource conditions can support this, and to adjust numbers downward in years when livestock water and or forage are less abundant reflects responsible livestock grazing management.

12. Comment: *"The EA states there are 13,278 grazable acres (used 40% slope and no distance to water factor, instead of 30% slope as provided in Holechek) to supply 1,761 AUMs or 7.5 acres per AUM."*

Response: The slope guidelines recommended for grazing-capacity adjustments by Holechek (J. L. Holecheck, 1988), are shown below:

PERCENT SLOPE	PERCENT REDUCTION IN GRAZING CAPACITY
0 – 10	None
11 – 30	30
31 – 60	60
Over 60	100 (consider these slopes ungrazable)

The guidelines established by Holechek did not preclude allocating forage for slopes over 30% as the guidelines indicate in the above table. To the contrary, a percentage of forage was allocated for slopes up to 60%.

In calculating the areas of the allotment suitable for grazing, the Tres Rios Field Office (TRFO) did not allocate any forage for areas of the allotment that had slopes greater than 40%. Therefore, the criteria used by TRFO, is a more conservative allocation of forage based on existing slopes than that contained in the above guidelines.

Furthermore, in addition to existing stock reservoirs within the allotment the permittee is encourage to temporarily provide additional water sources within the allotment in order to improve distribution and reduce livestock utilization levels within likely concentration areas for cattle.

13. Comment: *"At 30% utilization, each and every acre would need to provide 400 lbs of forage. To not have arbitrary and capricious decision, the BLM provide facts that average forage production is equal to or greater than 400 lbs. per acre in order for its proposed decision authorizing 1,761 AUM's. Much of the allotment is producing far below 400 lbs."*

Response: The following factors were used in determining estimated carrying capacities for this allotment.

1) Acreages of the allotment with slopes greater than 40% were determined not suitable for grazing and were not used in allocating forage capacity for livestock.

2) Acreages with slopes less than 40% that were considered not productive such as large areas of isolated rock outcrops were not used in allocating forage capacity for livestock.

3) Acres with productive soils and less than 40% slopes were used in capacity estimates.

4) The average production in pounds per acre identified by the Natural Resource Conservations Service (NRCS) soil survey for each soil type was used in calculating potential AUMs.

5) (Average Production) X (50% utilization factor) ÷ (30.416667 days/month) X (29 lbs. per day dry forage requirement) = (Potential AUMs.)

6) The potential AUMs were then modified by the findings of the land health assessment rating for biotic integrity. For areas that were rated as having none to slight departure 100% of the potential AUMs were used; areas having slight to moderate departure 70% of the potential AUMs were used; areas having a moderate departure 50% of the potential AUMs were used; areas having a moderate to extreme departure 30% of the potential

AUMs were used; and areas having an extreme departure only 10% of the potential AUMs were used in calculating the estimated carrying capacity.

As a result of this analysis the potential AUMs as calculated from considering only the average production identified by the NRCS and using a 50% utilization factor for public lands within the allotment was 5,167 AUMs. The potential AUMs were further adjusted by the findings of the rangeland health assessment for biotic integrity as explained above. As a result the estimated carrying capacity was determined to be 1,955 AUMs for public lands.

Furthermore, the maximum carrying capacity (AUMs) analyzed in the BLM's preferred Adaptive Management Alternative is 1,761 AUMs which is 194 AUMs lower than the estimated capacity determined in the rangeland health assessment and 3,406 AUMs lower than the potential identified by the NRCS in the soil survey.

A summary of the estimated carrying capacity describing the analysis used for establishing the carrying capacity on this allotment has been incorporated into the final environmental assessment under the heading Capable Acres and Estimated Carrying Capacity within the Allotment.

14. Comment: *"The desired conditions are unmeasurable. They need to be made site specific and specifically related to the factors for the RHS failures."*

Response: Please refer to the BLM's response to comment number 6 above.

15. Comment: *"Please provide quantitative production and condition data (Similarity Index calculated for each of the three classes, grasses, forbs and shrubs)."*

Response: Please refer to BLM's response to Comment #13 above in production estimates used in calculating carrying capacity. In addition, the collection of production data within the Gypsum Valleys Allotment was initiated in 2011 within The Gap and Bullington Pastures. The production data collection occurred at the established permanent long-term trend monitoring sites. Production data will continue to be collected on all pastures within the allotment as part of the identified monitoring needs. This information will help to refine the appropriate carrying capacity for the allotment in the future.

16. Comment: *"Given the severely degraded conditions on these allotments we request that the BLM temporarily close the allotments to domestic livestock until a suite of science-based land health objectives are met. These objectives must include, at a minimum":*

1) *Restoration of the vegetative component to one dominated by native cool season bunch grasses. As a minimum, objectives should be put in place to restore one of the reference states for these ecological sites.*
2) *Restoration of wildlife habitat potential and recovery of sagebrush to support sage brush obligates.*
3) *Restoration of riparian systems and recovery of hydrologic function.*

Response: The environmental assessment contains a no grazing alternative for consideration which analyzes the impacts of not authorizing livestock grazing in this allotment. Furthermore, the BLM's preferred alternative has been modified for consistency with the requirements of the Rangeland Health Standards Handbook (H-4180-1) and clearly defines 1) the desired future conditions for the allotment; 2) allotment specific monitoring objectives that are sensitive enough and established at the appropriate locations for detection of changes in range conditions; and 3) identifies appropriate time frames for data collection and evaluation.

The desired future conditions and allotment specific objectives are designed to 1) improve overall conditions of all desirable existing vegetation communities to include native cool season bunchgrasses; 2) improve existing wildlife habitat conditions; and 3) improve existing riparian conditions and hydrologic function. The grazing management actions, resource goals and objectives outlined in the Adaptive Management Alternative are in compliance with 43 CFR 4180, the Tres Rios Field Office 2015 Resource Management Plan and Record of Decision and comply with FLPMA.

17 Comment: *"The BLM failed to adequately consider the status or needs of Sensitive Species on the allotments. Such consideration is mandated by 43 C.F.R. § 4180.1(d), as well as BLM's own Sensitive Species Policy."*

Response: Please refer to section 3.3.8 (Special Status Species – Terrestrial & Aquatic) and section 3.3.9 (Special Status Species – Plants) of the environmental assessment which addresses the current status or needs of sensitive species on the allotment. In addition, please refer to section 4.0 (Environmental Effects) for the effects analysis on special status species for both animals and plants from the alternatives.

18. Comment: *"…we were stunned at the description of the severely degraded conditions described within the EA, but far more disturbed by the business as usual approach the BLM is taking. It's as if the BLM is saying "well we nuked it, so now there is nothing we can do, let's just keep doing what we have been doing". Not only does this attitude violate a wide range of laws and regulations, it is morally and ethically repugnant."*

Response: In our analysis we attempt to differentiate between damage caused by historical land uses that have long been discontinued, and damage caused by contemporary land uses. Please refer to the Evaluation of Land Health Assessment and Status of the Resource Conditions for the Gypsum Valleys Allotment contained in Appendix H of the environmental assessment. This document identifies the causal factors for not meeting or not making significant progress towards the standard(s) for this allotment. The document further identifies the causal factors that are within control or outside control of the agency.

Where existing resource conditions have been impacted and the potential degraded by historical uses such as historical levels of grazing, abandoned agricultural practices, historic homesteads, historical mining activities, etc. we believe it appropriate to disclose these effects on current resource conditions. In addition, it would not be appropriate to attribute resource degradation caused by historical, discontinued land uses to current livestock grazing management practices.

19. Comment: *"The EA fails to analyze why supplemental feed is needed on these allotments, why it is appropriate to allow supplemental feeding instead of stocking within current capacity or the effectiveness of adding water to the few areas not completely degraded."*

Response: The use of protein supplements to improve livestock distribution and provide missing dietary requirements for livestock is an accepted rangeland management practice. The impacts of this practice can be beneficial on rangeland resources if managed properly. The placement locations, and the type and amount of supplements provided must be managed. The grazing regulations contained in 43 CFR 4100.0-5 defines supplemental feed as "… a feed which supplements the forage available from the public lands and is provided to improve livestock nutrition or rangeland management." Furthermore, the grazing regulations at 43 CFR 4130.3-2 allows the authorized officer to specify other terms and conditions needed to achieve management objectives such as that contained in 43 CFR 4130.3-2 (c) which states "Authorization to use, and directions for placement of supplemental feed, including salt, for improved livestock and rangeland management on public lands." Therefore, a term and condition for grazing was added to both the Adaptive Management Alternative and the Reduced Grazing Alternative requiring prior approval by the authorized officer for the placement of salt blocks and/or supplemental feed on public lands within the allotment.

The need to provide a maintenance ration, something like hay for energy, which is not proposed for any of the alternatives, would indicate that the rangeland could not support the permitted livestock numbers or season of use. Protein is often deficient in cattle diets in the winter and early spring, when cured dry grass is the primary forage available. The dietary requirement for cows increases after they calve and start lactating. The placement of supplemental feed, like hauling livestock drinking water and the development of new water sources, can serve to lessen the concentration of cattle in just a few areas and improve their distribution across the landscape.

Holochek (1998) found that: "Feeding salt-meal [a protein supplement with salt added to limit animal intake] away from water reduced the overgrazed area by about 30%, the light unused area by about 30%, and nearly doubled the zone of proper grazing over the unit."

20. Comment: *"The EA fails to delineate number of capable acres per pasture or provide any information regarding current productivity (minus alien invasives) or species composition which are critical to understanding the proposed rotations or current conditions."*

Response:
As part of the analysis for determining carrying capacity for this allotment, the number of capable grazing acres was determined. In determining capable acres, those portions of the allotment with 1) slopes ≥ 40%; and 2) non-productive acres with slopes ≤ 40% such as large rock outcrops were not included as capable acres. Furthermore, this information has been incorporated into the Final Environmental Assessment. Please refer to the Tables below for a summary of the capable acres by pasture for both public and private lands used in calculating carrying capacity:

Table (X). Summry of Capable Acres for Public Lands.

Pasture	Total Public Acres	Public Acres ≥ 40% Slopes	Non-Productive Acres ≤ 40% Slopes	Productive Acres (Capable)
Coyote Wash	2,370	686	1,167	517
Sylvies Pocket	7,909	1,643	4,194	2,072
Raven	7,776	1,406	5,202	1,168
Bullington	5,481	1,488	3,096	897
River	4,545	806	2,834	905
Magpie	4,456	731	1,947	1,778
Carnation	3,111	318	873	1,920
Dunham	5	0	0	5
West Lavender	575	117	126	332
East Lavender	526	250	78	198
Hughes Gyp	1,098	157	521	420
The Gap	3,381	167	718	2,496
Total	41,233	7,769	20,756	12,708

Table (Y). Summary of Capable Acres for Private Lands.

Pasture	Total Private Acres	Private Acres ≥ 40% Slopes	Non-Productive Acres ≤ 40% Slopes	Productive Acres (Capable)
Coyote Wash	0	0	0	0
Sylvies Pocket	0	0	0	0
Raven	0	0	0	0
Bullington	90	13	61	16
River	1,065	32	194	839
Magpie	140	7	36	97
Carnation	237	17	26	194
Dunham	485	0	17	468
West Lavender	335	11	13	311
East Lavender	713	50	114	549
Hughes Gyp	874	25	123	726
The Gap	170	14	3	153
Total	4,109	169	587	3,353

The following factors were used in determining estimated carrying capacities for the allotment:

1) Acreages of the allotment with slopes greater than 40% were determined not suitable for grazing and were not used in allocating forage capacity for livestock.

2) Acreages with slopes less than 40% that were considered not productive such as large areas of isolated rock outcrops were not used in allocating forage capacity for livestock.

3) Acres with productive soils and less than 40% slopes were used in capacity estimates.

4) The average production in pounds per acre identified by the Natural Resource Conservation Service (NRCS) soil survey for each soil type was used in calculating potential AUMs.
5) (average production) X (50% utilization factor) ÷ (30.416667 days/month) X (29 lbs. per day dry forage requirement) = (potential aums).

6) The potential AUMs were then modified by the findings of the land health assessment rating for biotic integrity. For areas that were rated as having none to slight departure 100% of the potential AUMs were used; areas having slight to moderate departure 70% of the potential AUMs were used; areas having moderate departure 50% of the potential AUMs were used; areas having a moderate to extreme departure 30% of the potential AUMs were used; and areas having an extreme departure only 10% of the potential AUMs were used in calculating the estimated carrying capacity.

As a result of this analysis the potential AUMs as calculated from considering only the average production identified by the NRCS and using a 50% utilization factor for public lands within the allotment was 5,167 AUMs. The potential AUMs were further adjusted by the findings of the rangeland health assessment for biotic integrity as explained above. As a result the estimated carrying capacity was determined to be 1,955 AUMs for public lands.

Furthermore, the maximum carrying capacity (AUMs) analyzed in the Alternative A (Permittee Proposed Action) and Alternative C (Adaptive Management) is 1,761 AUMs which is 194 AUMs lower that the estimated capacity determined in the rangeland health assessment and 3,406 AUMs lower than the potential identified by the NRCS in the soil survey.

21. Comment: *"Mere unsupported statements that the proposals conform to the RMP are insufficient to allow review of RMP compliance."*

Response: Conformance with the Tres Rios Resource Management Plan (RMP) in the environmental assessment beginning on page 8 identifies the applicable RMP guidelines for both livestock and rangeland vegetation management to the proposed action.

22. Comment: *"The section on invasive species is inadequate and misleading. The EA states invasive species are inventoried and treated on an annual basis but there is no discussion of the effectiveness of these efforts. Other sections of the EA state that most of the annual production on the allotments is made up of invasives."*

Response: Noxious weed treatment and inventory activities are mapped using GIS mapping software. Effectiveness of treatments are determined based on the increase or decrease in population densities being mapped. Priority species to be treated are determined based on the State of Colorado Noxious Weed Act (35-5.5-101 through 119, C.R.S. (2003)). Priority areas to be treated within this this allotment include tamarisk, Russian knapweed and musk thistle. Overall, tamarisk and Russian knapweed species in the allotment have been decreased through herbicide treatments. Populations of halogeton have remained the same or increased slightly along existing roads in the allotment. Halogeton is an annual species that fluctuates greatly from year to year depending on precipitation. In addition, halogeton has a short window during its growing season for herbicide treatments to be effective. The spread of halogeton appears to occur mainly from road maintenance activities such as grading in which the seed is spread along existing County maintained roads. Please refer to section 3.3.5 Noxious and Invasive (non-native) Species section of the environmental assessment.

23. Comment: *"We are stunned to see the BLM wants to permit 50% more AUM's than the AUM's used over the last nearly quarter of a century which caused the current conditions. The BLM provides no rational basis for this absurdity."*

Response: This comment is based solely on a comparison of average AUMs grazed with the maximum number of cattle and AUMs in the proposed grazing permit. The approach suggested here would retroactively penalize the grazing permittees for being responsible managers and voluntarily reducing livestock numbers to match resource conditions in poor production years. The availability of livestock water in earthen reservoirs is also a major factor in what areas

within the allotment may be grazed from year to year. Authorizing permittees to graze the maximum permitted number of cattle when resource conditions can support this, and to adjust numbers downward in years when livestock water and/or forage are less abundant is responsible grazing management.

24. Comment: *"The migratory bird section likewise has no information about current conditions and its conclusions are unsupported and unsupportable."*

Response: Please refer to Section 1.8 of the environmental assessment regarding potential effects to migratory birds. In summary, the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712 as supplemented) prohibits the unregulated "take" of most native bird species except gallinaceous birds. It covers direct harm to birds rather than including harm to habitat. These are non-game migratory avian species that the U.S. Fish and Wildlife Service have targeted as conservation priorities but are not currently federally listed as threatened or endangered. Therefore it was determined that grazing is not considered to be an action where "take" is expected and was not carried through for further analysis in the environmental assessment.

25. Comment: *"The soils section fails to provide any information on the soils, of the allotments, current conditions, sheet, rill and gully erosion or soil properties."*

Response: Current soil conditions, including information on sheet, rill and gully erosion were rated at land health assessment points in the dominant soil types for the Gypsum Valleys Allotment. Evaluation of the land health data, including soils can be found in Appendix H of the environmental assessment. Soil and site stability were rated by pasture for this allotment. Western Watersheds Project received soil mapping data for this allotment in response to a FOIA request (CO-09-53) in 2009.

26. Comment: *"The BLM here, as is often the case fails to consider sensitive species based on potential habitat not known occurrences. This along with the failure to provide any information regarding current populations and trends vitiates the analysis."*

Response: Sensitive species are identified and described in section 3.3.8 in the environmental analysis. Potential habitat is described and consideration given to the likelihood of each species being within the analysis area. There is no requirement for BLM to provide or collect information regarding current populations and/or population trends.

27. Comment: *"The Assessment and Determination rate all of the allotments as meeting the TE&S Species standard yet the allotment no longer support Gunnison Sage Grouse and other species."*

Response: Refer to section 3.3.8 of the environmental assessment regarding Gunnison sage grouse.

28. Comment: *"The BLM in its Standards Assessment rated pastures with <50% of the acres in "moderate" or as the authors of TR 1734-6 stated that "moderate" is "significant" (Herrick, pers conversation, 2009) departure from reference conditions as meeting Standards without providing any rationale to support this supposition. In addition, the BLM inappropriately rated a pasture with an supposed "upward" trend as meeting Standards without providing any information that would support such a claim. Further, the BLM used FAR UP as meeting riparian function standard despite BLM directives stating PFC is the minimum level that would meet Standards.*

Response: For the Gypsum Valleys Allotment as a whole more than half of the rated acres fell within the "Moderate" or "Moderate to Extreme" rangeland health ratings for Soil and Site Stability, Hydrologic Function. In addition, Biotic Integrity more than half the rated acres fell within "Moderate", "Moderate to Extreme" or "Extreme to Total. These ratings indicates that the majority of the acres in the allotment are "at risk" or "beyond at risk" level, with recovery questionable without some changes to current management. Therefore, because a ≥50% of the acres within the allotment were rated as moderate and above in departure, it was determined that the Standards for upland soils and healthy, productive plant communities were not being met. Conversely, in situations where ≥50% of the acres within an allotment was rated as "None to Slight" or "Slight to Moderate" it was determined to be meeting standards. Furthermore, the rangeland health assessment determined that there was significant progress being made towards the achievement of the riparian standard as opposed to meeting the riparian standard.

Please refer to the Evaluation of Land Health Assessment (Appendix H) of the environmental assessment for the rangeland health determinations.

29. Comment: *"The environmental assessment indicates that the allotment would continue to achieve the Colorado State water quality standards but provides no data to indicate they are currently meeting water quality standards. As we have said before absence of evidence is NOT evidence of absence. Just because these streams are not listed on the 303d list means absolutely nothing as to their water quality".*

Response: BLM uses the best available data to assess the attainment of water quality standards. In this case best available data came from the State's 303(d) list. Refer to section 1.8 of the environmental assessment for a discussion of water quality.

30. Comment: *"The EA provides no information regarding the current conditions of all springs and wetlands within these allotments."*

Response: Refer to Section 3.3.3 of the environmental assessment regarding the current conditions of existing springs and wetlands within the allotment.

31. Comment: *"The EA fails to discuss the impacts of oil and gas development."*

Response: The Council of Environmental Quality (CEQ) regulations direct that: "Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail." At present there are no oil/gas well locations in the analysis area for this allotment.

<u>Colorado Parks and Wildlife</u>

32. Comment: *"As stated in the EA (pg. 60) cattle grazing affects forage availability for big game species, and big game animals can be displaced from preferred habitats. Improving cattle distribution within the allotments through mineral placement and water placement could lead to more competition with wildlife. We recommend a careful evaluation during the implementation of mineral and water placement to avoid areas of high big game use during critical time periods."*

Response: The intent of authorizing the potential use of supplements for this allotment is to help improve overall livestock distribution on the allotment. The placement of supplemental feed, hauling livestock drinking water and the development of new water sources, can serve to lessen the concentration of cattle in just a few areas and improve their distribution across the landscape. Holochek (1998) found that: "Feeding salt-meal [a protein supplement with salt added to limit animal intake] away from water reduced the overgrazed area by about 30%, the light unused area by about 30%, and nearly doubled the zone of proper grazing over the unit."

The grazing regulations contained in 43 CFR 4100.0-5 defines supplemental feed as "… a feed which supplements the forage available from the public lands and is provided to improve livestock nutrition or rangeland management." Furthermore, the grazing regulations at 43 CFR 4130.3-2 allows the authorized officer to specify other terms and conditions needed to achieve management objectives such as that contained in 43 CFR 4130.3-2 (c) which states "Authorization to use, and directions for placement of supplemental feed, including salt, for improved livestock and rangeland management on public lands."

Therefore, a term and condition for grazing was added to both the Adaptive Management Alternative and the Reduced Grazing Alternative requiring prior approval by the authorized officer for the placement of salt blocks and/or supplemental feed on public lands within the allotment. The intent of this term and condition is to ensure that locations approved for

supplement placement does not impact other rangeland resources such as critical wildlife habitat, cultural resources, riparian areas etc. within the allotment.

33. Comment: *"Unless there have been substantive changes to grazing management since the 2006 LHA, we assume that the pastures have continued on the downward trend to date."*

Response: The current grazing permittees have voluntarily implemented several changes in grazing management for the past several years on this allotment such as implementing 1) an intensive rotational grazing system that provides for regular rest and deferment from grazing for all pastures during the critical spring growing period and 2) a voluntary reduction in livestock numbers from that which is currently permitted.

In addition to these changes, the preferred alternative (adaptive management) contained in the analysis proposes additional livestock management actions for affecting positive change and identified specific desired conditions and monitoring objectives for measuring improvement of ecological conditions on the allotment. Although some changes in grazing management have been implemented on the allotment it is not possible at this time to determine whether or not conditions have started to improved or have continued to decline. Monitoring information will continue to be collected in the allotment and will be used for further assessing whether or not conditions are improving or continuing to decline.

34. Comment: *"We are concerned that even under the proposed rotational system these pastures will experience heavy spring grazing pressure to the detriment of the recovery of native vegetation and achievement of Land Health Standards for plant communities. We believe that as currently proposed that the pastures will not experience the appropriate combination of favorable moisture conditions and rest from spring grazing that are necessary for cool season species to persist long term. Additionally, active restoration (seeding) may be necessary to reestablish portions of the native plant community."*

Response: The Adaptive Management Alternative proposes to incorporate several changes to current grazing management as per 43 CFR 4120 and 43 CFR 4130 and in accordance with the Colorado Livestock Grazing Management Guidelines developed as part of the Public Land Health Standards for Colorado. Specifically, the adaptive management alternative **1)** implements an intensive 3-year deferred rotational grazing system that will defer livestock grazing during the critical spring growing season on a consistent basis for all pastures. Within the Big Gypsum Valley portion of the allotment there are six pastures. The proposed grazing rotation defers grazing use during the critical growing season in 2-3 of the 6 pastures every year. At the end of the 3-year rotation all pastures will have receive at least one year rest from livestock grazing during the critical spring growing season and at least 3 years rest out of the 10-year term of the grazing permit. Within the Little Gypsum Valley portion of the allotment there are six pastures

also. The proposed grazing rotation will defer grazing during the critical spring growing season every year for two of the pastures and every other year for the remaining 4 pastures and at least 5 years rest out of the 10-year term of the grazing permit.

By providing existing plant communities regular rest during the critical growing season, plant communities will have the opportunity to regularly complete their lifecycles, set seed, and rebuild root reserves without the pressures from livestock grazing. In addition, the amount of litter accumulation should improve and the amount of bare ground should decrease to what is expected based on site potential; **2)** the adaptive management portion of this alternative establishes utilization limits on both herbaceous and shrub forage species of either 30% on those pastures that are not meeting rangeland health standards or 40% on those pastures currently meeting rangeland health standards. Based on comments received to the draft analysis, the utilization thresholds for the Adaptive Management Alternative have been revised as follows. If monitoring indicates that the established utilization levels have been exceeded two or more years (not necessarily consecutive years) in the same pasture over a five year period, the amount of grazing time in that pasture would be reduced proportionally to the amount in which utilization levels were exceeded. For example if the actual use indicated that a pasture was used for 30 days and utilization monitoring indicated that average use levels were exceeded by 20% over two years, the amount of grazing time allowed in that pasture would be reduced from 30 days to 24 days for the remaining life of the 10-year term grazing permit. If the number of days are reduced in a pasture, then the day cattle leave the allotment in the spring would be reduced by that number of days, unless utilization studies with at least two years of data show that actual grazing use in other pastures have resulted in utilization levels far below the 30% or 40% allowable limit. If this proves to be the case then some of the time reduced may be made up in these pastures. The intent of this adaptive management is to allow for additional adjustments to grazing levels if they are determined needed through utilization monitoring over a five year period during the life of the 10-year term grazing permit; **3)** drought management actions have been included as part of this alternative which allows for immediate actions such as temporary or partial closure of the allotment to grazing, temporary reductions in livestock numbers or grazing duration, temporary change in season of use outside critical growth periods of plant communities and temporary water hauling to improve livestock distribution to areas of the allotment where adequate forage exists; and **4)** additional design criteria have been included as part of this alternative to further mitigate impacts of livestock to vegetation communities, riparian resources, cultural resources, spread of noxious weeds and wildlife species.

Therefore, the combination of these grazing management actions meet the requirements contained in 43 CFR 4180 and should result in making significant progress towards conforming to the Public Land Health Standards developed for Colorado. At this time there were no areas within the allotment specifically identified for restoration such as re-seeding efforts. If it is determined through our monitoring program that restoration activities such as re-seeding are

needed then these proposed activities as well as any livestock grazing mitigations would be analyzed in an a future environmental assessment.

35. Comment: *"According to the EA, the allotment is not meeting its Public Land Health Standards for Plant Communities and we believe achieving LHS with the preferred alternative is not possible. With that in mind, the CPW would support a reduced grazing alternative that avoids spring grazing until the LHS are achieved. By combining the two cattle herds, a higher intensity, lower duration approach could be appropriate. In our review of the EA we could not locate the proposed rotation schedules by alternatives in the document or in its Appendices."*

Response: Please refer to the response contained in Comment #36 above regarding the preferred alternative. In addition, please refer to section 2.5 of the EA describing Alternative D (Reduced Grazing Alternative) for a clarified description of the proposed grazing rotation related to this alternative.

Larry Suckla & Jimmy G. Suckla

36. Comment: *"As permittees over the last 50 years, we have seen a great deal of improvement on this range and here is the proof in some pictures. So we see no need for any changes."*

Response: As per the land health assessment and existing quantitative monitoring data included in the environmental analysis it was determined that several of the Public Land Health Standards developed for Colorado were not being met and that current grazing management was a causal factor in some instances. Although, photographs can be useful for detecting changes over time, they do not capture all of the indicators for determining current land health conditions. Please refer to Section 3.3 of the environmental assessment for a description of existing land health conditions and Appendix H.