GUNNISON BASIN CANDIDATE CONSERVATION AGREEMENT PROGRAMMATIC BIOLOGICAL ASSESSMENT:

GUNNISON SAGE-GROUSE

(CENTROCERCUS MINIMUS)

U.S. Department of Interior

Bureau of Land Management

National Park Service

U.S. Department of Agriculture

Forest Service

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1 INTRODUCTION

Threatened and endangered species are managed under the authority of the Endangered Species Act of 1973 (PL 93-205, as amended). This biological assessment conforms to legal requirements set forth under Section 7 of the Endangered Species Act (ESA) (19 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14). Section 7(a)(1) of the ESA requires federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) requires Federal agencies to ensure that all actions which they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of their critical habitat. Further, Section 7(a)(4) requires federal agencies to confer with USFWS for any actions likely to jeopardize a proposed species or destroy or adversely modify proposed critical habitat. Even for actions that do not reach a jeopardy threshold, federal agencies may request a formal conference opinion on proposed species, such that the federal agency may, subsequent to a final listing, request that USFWS confirm the conference opinion as a biological opinion.

1.1 PURPOSE AND NEED

Pursuant to section 7 of the ESA, this Biological Assessment (BA) analyzes the potential effects from the implementation of the *Gunnison sage-grouse Candidate Conservation Agreement for the Gunnison Basin* (CCA) on the Gunnison sage-grouse, a federally proposed endangered species. The CCA is comprised of a variety of federal actions and accompanying sage-grouse conservation measures, and was designed to be a "tool to screen activities on federal lands for coverage under a streamlined, programmatic conference opinion" (CCA, p. i). From the CCA:

> *Federal signatories will seek a conference opinion from the U.S. Fish and Wildlife Service (USFWS) in accordance with section 7 of the Endangered Species Act (ESA) regarding the CCA and its covered actions, and this process is expected to be completed by mid – 2013. With the conference opinion, so long as the federal agencies design and manage these specified activities to meet the conservation criteria outlined in the CCA, the federal agencies will have met their ESA conference requirements for those activities. If the Gunnison sage-grouse is subsequently listed under the ESA, the federal signatories will request that the USFWS confirm the conference opinion as the biological opinion, such that the federal agencies will have met their ESA consultation requirements for those covered activities (CCA, p. i)*

Therefore, the CCA BA assesses not only the effects of each of the identified federal actions, but also the effects of the identified, associated sage-grouse conservation measures. In some cases, CCA actions – such as trail decommissioning and other types of

habitat restoration – are explicitly intended to improve sage-grouse habitat. Other CCA actions –such as right-of-way authorizations and trail construction—primarily serve as "uses" on the landscape, but are designed in the CCA to avoid, minimize, or mitigate effects to the species and the habitat. Irrespective of the primary purpose of the federal action under consideration, each action is analyzed in the BA with respect to the short-term and long-term effects to the species and to proposed critical habitat.

As with other programmatic conservation agreements, such as the *NRCS Sage grouse Initiative for Greater- and Gunnison sage-grouse* and the *Candidate Conservation Agreements with Assurances for Gunnison sage-grouse*, actions implemented solely for the benefit of a species may have short-term adverse effects. And a combination of beneficial and adverse effects is still considered "likely to adversely affect" under the Endangered Species Act even if the net effect is neutral or positive to the species. Section 7 of the ESA clearly requires the CCA's federal signatories to disclose and evaluate any and all adverse effects in this BA irrespective of the long-term conservation benefit of implementing the CCA.

The CCA is signed by the Gunnison Field Office of BLM Colorado, Gunnison Ranger District of the Grand Mesa, Uncompahgre and Gunnison National Forest, and Black Canyon of the Gunnison National Park and Curecanti National Recreation Area of the National Park Service, so the BA is not only intended to ensure that all identified federal actions and accompanying conservation measures in the CCA are in compliance with the ESA, as amended, but also the BLM Manual 6840 Direction for Special Status Species Management; the Forest Service Manual 2670; and the NPS Director's Order 12, Conservation Planning, Environmental Impact Analysis and Decision Making; NPS Management Policies (2006). Forest Service policy requires that a review of programs and activities, through an effects analysis document, be conducted to determine their potential effect on proposed, threatened and endangered species (Forest Service Manual 2670).

The objectives of this BA are to:

1. Summarize the biology of the Gunnison sage-grouse, including its known distribution in the Gunnison Basin;
2. Assess the potential effects of each of the federal actions proposed in the CCA — including associated conservation measures—on the Gunnison sage-grouse and proposed critical habitat;
3. Conclude effects determinations for both the Gunnison sage-grouse and proposed critical habitat for each of the federal actions, including associated conservation measures.

Consistent with most programmatic BAs, this BA has a lifespan: it will be applied over the next 20 years, starting from the date of the signed conference opinion. If new significant information arises that would alter the content or relevance of the original BA

and associated conference opinion, the participating federal agencies would determine how to amend the BA and again fulfill Section 7 obligations with USFWS.

Although the USFS and NPS participated in the development of this BA, the BLM is designated as the lead agency.

1.2 ORGANIZATION OF REPORT

This BA is organized into ten sections, as described below:

1. ***Introduction*** – Describes the purpose of the analysis, the scope of the biological assessment, the action area, and the methods used for this BA.
2. ***Species Information*** – Summarizes the current listing status, species ecology, abundance and distribution in the Gunnison Basin, and threats to the Gunnison sage-grouse.
3. ***Analysis of Actions & Conservation Measures*** – Describes and analyzes the effects of each of the CCA's federal actions, including each action's associated conservation measures.
4. ***Adaptive Management*** – Describes how the CCA will be most effective through modification and parameters for adaptive management.
5. ***Offsite Mitigation*** – Conservation-oriented approach to the concept of no net loss.
6. ***Conservation Strategies & Best Management Practices***– Provides conservation practices that the agencies have agreed to adhere to and that may further reduce potential effects to the Gunnison sage-grouse, as well as proactive steps for any recovery efforts if the species is listed under the Endangered Species Act. These measures were prepared in coordination with the U.S. Fish and Wildlife Service (USFWS) office in Grand Junction, CO during the development of the CCA.
7. ***Monitoring Plan*** – Short and long-term habitat monitoring plan for vegetation management, offsite mitigation actions.
8. ***Reporting Requirements*** – Requirements to report compliance with the CCA.
9. ***References***
10. ***Appendix*** – Habitat Prioritization Tool.

1.3 DETERMINATION CATEGORIES

The following categories are possible effects determinations:

No effect;

May affect, not likely to adversely affect due to:

(Wholly) beneficial effects,

Discountable effects, or

Insignificant effects;

May affect, likely to adversely affect.

These determinations are further defined in the USFWS Endangered Species Consultation Handbook (USFWS 1998), as summarized in the following text:

"No effect" means there are absolutely no effects to the species and its critical habitat, either positive or negative. A no effect determination does not include small effects or effects that are unlikely to occur. If effects are insignificant (in size) or discountable (extremely unlikely), a determination of "not likely to adversely affect" is appropriate.

"Not likely to adversely affect" means that all effects to the species and its critical habitat are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without adverse effects to the species (for example, there cannot be "balancing," so that the benefits of the action would outweigh the adverse effects). Insignificant effects relate to the size of the impact and should not reach the scale where damage or destruction occurs. Discountable effects are considered extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur (USFWS 1998). In cases where determinations of "not likely to adversely affect, due to beneficial, insignificant, or discountable effects" are made, BLM must obtain written concurrence from USFWS.

"Likely to adversely affect" means that the action would have an adverse effect on the species. Any action that would result in take of an endangered or threatened species is considered an adverse effect. **A combination of beneficial and adverse effects is still considered "likely to adversely affect," even if the net effect is neutral or positive.** Adverse effects are not considered discountable because they are expected to occur. In addition, the probability of occurrence must be extremely small to qualify as discountable effects. Likewise, an effect that can be detected in any way or that can be meaningfully articulated in a discussion of the results of the analysis is not insignificant; it is an adverse effect. Determinations of "likely to adversely affect" for listed species require formal section 7 consultation under the Endangered Species Act (ESA).

2 SPECIES INFORMATION

2.1 LISTING STATUS

USFWS first determined Gunnison sage-grouse to be a candidate species under the ESA in 2000. On April 11, 2006, USFWS determined that listing under the ESA was not warranted. In late 2006, a lawsuit was filed alleging the 12-month finding of "not warranted" violated the ESA. A settlement agreement was reached in 2009 for the USFWS to reissue a 12-month finding. On September 28, 2010, the USFWS published the 12-month finding which determined that listing under the ESA is warranted, but precluded by higher priority actions. Most recently, in the fall of 2011 the USFWS and Wild Earth Guardians reached a settlement agreement to make listing decisions on their candidate species. Under that court-approved settlement agreement as recently amended, the USFWS was required to issue a proposed rule to list the species, or a not-warranted determination, no later than December 30, 2012. The USFWS subsequently proposed the species as endangered in December 2012, and simultaneously proposed critical habitat. The settlement agreement requires FWS to finalize its listing determination on or before September 30, 2013.

2.2 DISTRIBUTION

Gunnison sage-grouse currently occur in seven isolated populations in southwest Colorado and eastern Utah. The seven populations are; Gunnison Basin, San Miguel Basin, Monticello–Dove Creek, Pinon Mesa, Crawford, Cerro Summit–Cimarron–Sims Mesa, and Poncha Pass. This biological assessment is focused on the Gunnison Basin population. Currently, the Gunnison Basin sage-grouse population is estimated at 4,000 birds and 26 active leks (CPW 2012). Land ownership of occupied habitat within the Gunnison Basin is: Bureau of Land Management (51%); National Park Service (2%); United States Forest Service (14%); Colorado Parks and Wildlife (3%); State Land Board (less than 1%); and Private (29%).

2.3 ECOLOGY

The science and information used in the CCA was based heavily on the 2005 Gunnison Sage-Grouse Rangewide Conservation Plan (RCP) and the 2010 USFWS Determination for the Gunnison sage-grouse. The CCA is designed not to replace the RCP, but to build on the RCP conservation strategies with a plan of action and a mechanism for implementation.

2.3.1 HABITAT DESCRIPTION

There are approximately 593,000 total acres of occupied sage-grouse habitat in the Gunnison Basin. Elevation within occupied habitat ranges from 7,500 to over 9,500 feet. Precipitation levels range from 7 to 16 inches depending on geographic area and elevation. The majority of sage-grouse habitat within the Basin receives less than 12 inches of precipitation a year. Typical sagebrush types include mountain big sagebrush, Wyoming big sagebrush, and black sage. Mountain big sagebrush occurs at higher elevations and at lower elevations containing moist sites. Wyoming big sagebrush is typically found at lower elevations and on drier sites. There is a hybrid of Wyoming and mountain in transition areas between the two. Black sage is also found on the dry gravel soils in lower elevations. Aspect is also an important factor influencing soil moisture content and the distribution of big sagebrush, with mountain big sagebrush often occurring on more northerly slopes and Wyoming big sagebrush occurring on more southerly slopes. There are many perennial and ephemeral streams within the sagebrush-steppe habitat that provide important brood rearing habitat throughout the Basin. Many of these streams have sagebrush encroachment as a result of downcutting and entrenchment of the stream channel, leading to contraction of the riparian zone (RCP 2005).

2.3.2 HABITAT STRATIFICATION

A fundamental purpose of the CCA is to stratify the approximately 395,000 federal acres of grouse habitat in the Gunnison Basin and to prioritize conservation measures accordingly. Via a year-long, collaborative, multi-agency process, members of the Gunnison Basin Gunnison sage-grouse Strategic Committee developed a Habitat Prioritization Tool *(HPT; See Appendix A).* In January 2012, the Strategic Committee completed the Habitat Prioritization Tool, and the Committee defined the threshold for what constitutes high-priority grouse management areas for the purposes of the CCA. For now and throughout this document, the highest-value habitat is referred to as Tier 1 habitat, and the remainder of occupied grouse habitat is referred to as Tier 2 habitat. *(See Figure 1.)*

Adaptive Element:

The Strategic Committee will continue to refine and update the HPT, including but not limited to annual CPW updates regarding the status and high male counts of leks. The HPT will be updated if and when new, spatially explicit sage-grouse habitat models are published for the Gunnison Basin.

Although thorough review of data inputs to the HPT was conducted, the accuracy of inputs is no doubt limited, with the effect that some existing permanent infrastructure may have been omitted in the current HPT and HPT-derived maps of Tier 1 and Tier 2 habitat. In the course of CCA implementation, future land use authorizations will be

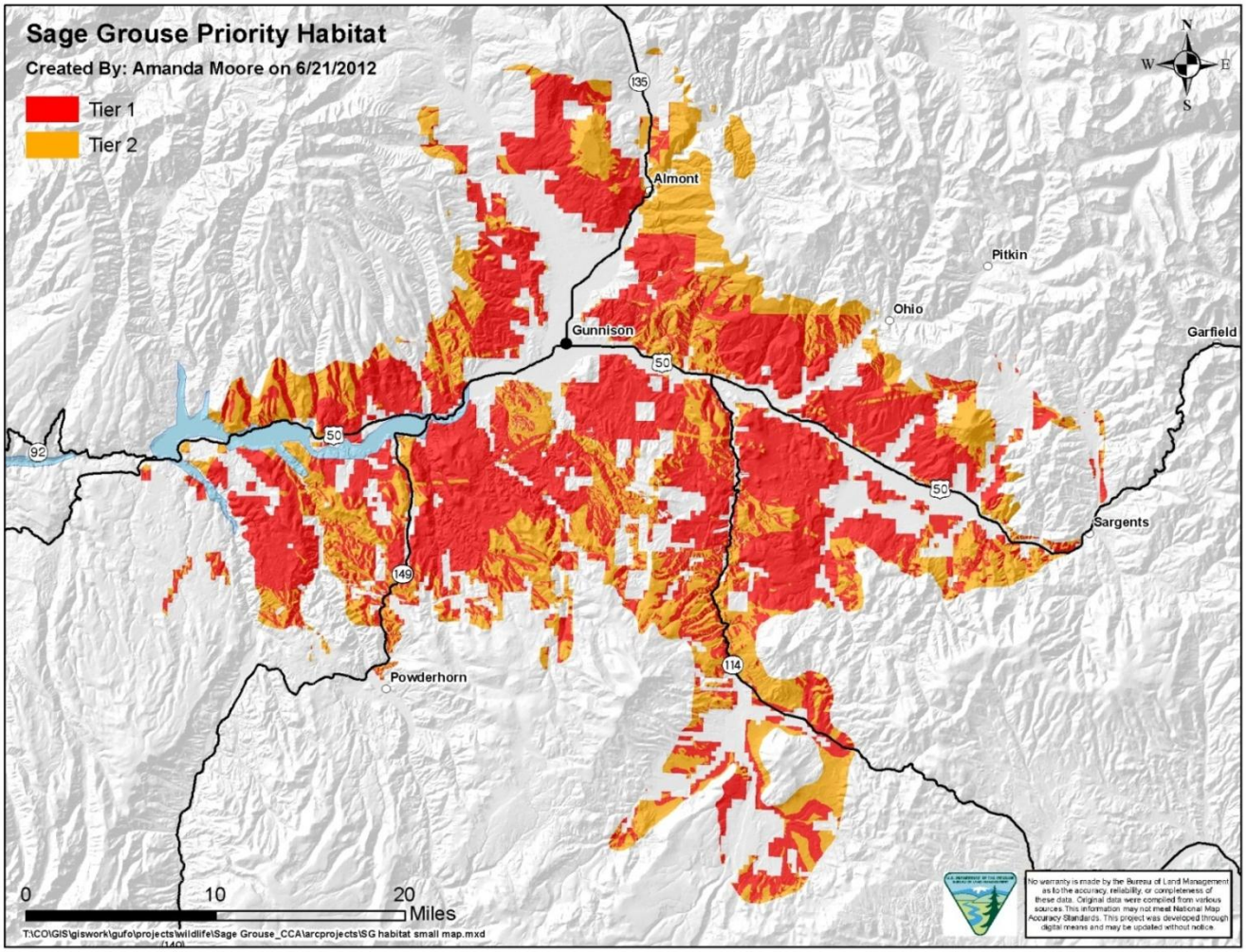


Figure 1. Tier 1 and Tier 2 Gunnison sage-grouse habitat on federal lands in the Gunnison Basin.

ground-truthed to determine presence/absence of existing permanent infrastructure. Subsequent design criteria and conservation measures should be consistent with the actual habitat status as Tier 1 or Tier 2.

2.4 AFFECTED AREA

The CCA applies to approximately 395,000 acres, the entirety of occupied sage-grouse habitat on federal lands in the Gunnison Basin. Table 1 details acreage breakdown per agency.

Table 1. Federal Gunnison sage-grouse occupied habitat acreage.

	Tier 1	***Tier 2***	***Tier 1 & Tier 2***
BLM	212,554	89,300	301,854
USFS	33,033	50,993	84,026
NPS	4959	4619	9,578
Totals (acres)	250,546	144,912	395,458

Within this affected area, one existing and two conceptual Urban Interface Recreation Areas are located within Gunnison sage-grouse occupied habitat that would be managed for recreation use, including Hartman Rocks, Signal Peak, and Van Tuyl. ***See Figure 2.***

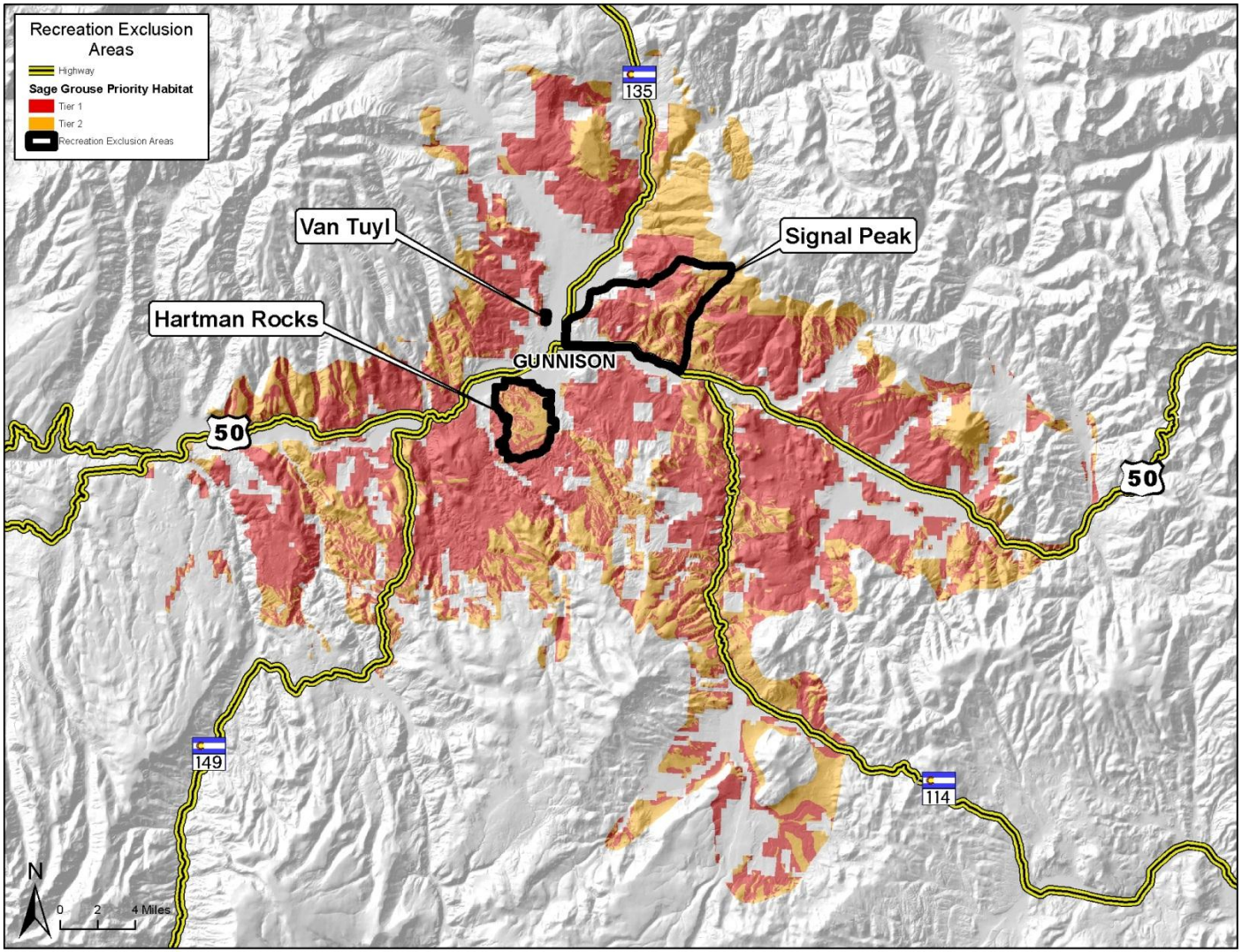


Figure 2. Proposed Urban Interface Recreation Areas

2.4.1 HARTMAN ROCKS

Hartman Rocks Recreation Area (6,019 acres) is a popular urban interface recreation area about 2 to 6 miles southwest of Gunnison. Its proximity to Gunnison and large network of trails makes it the most heavily recreated location on federal lands within the Gunnison Basin.

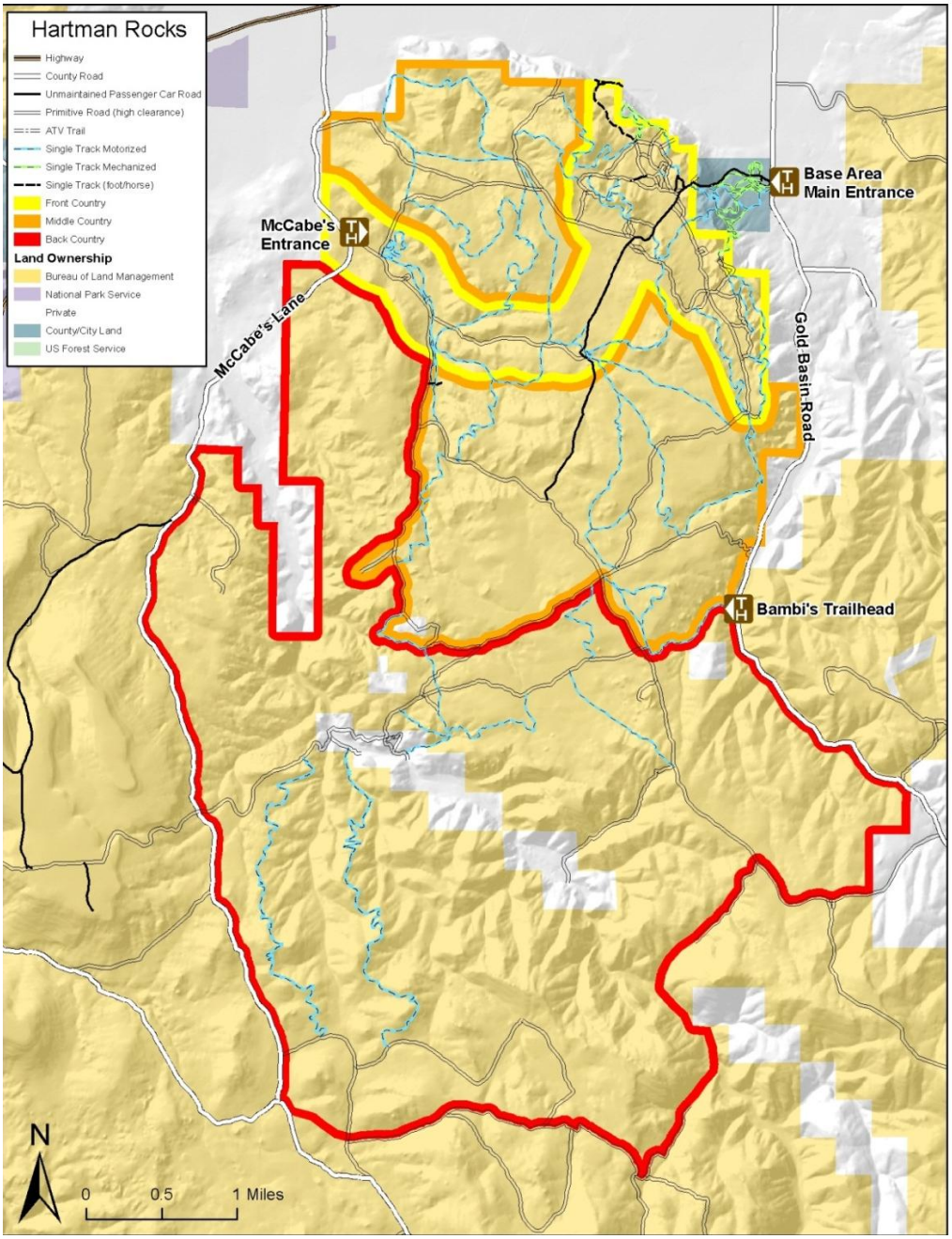


Figure 3. Hartman Rocks Recreation Area (BLM)

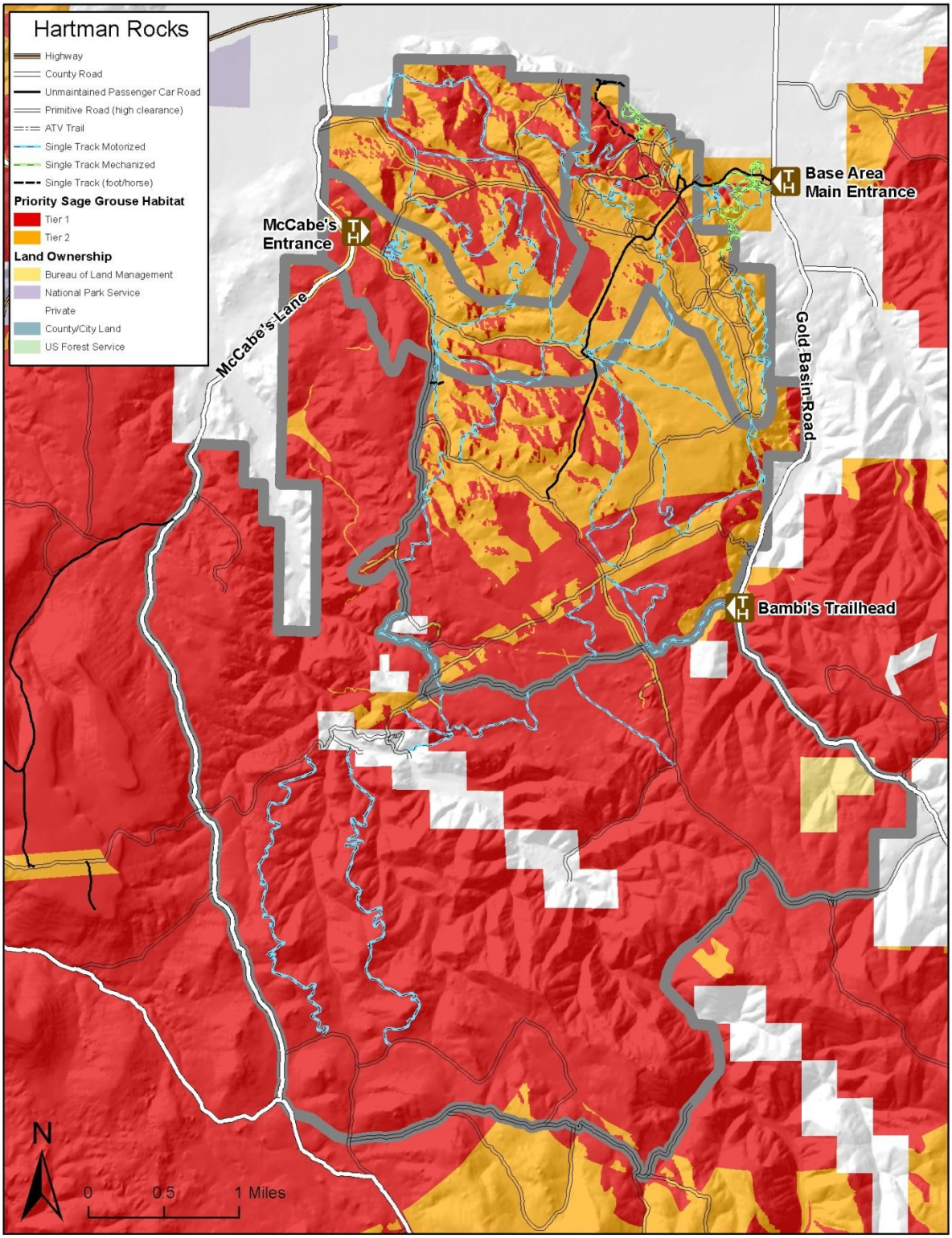


Figure 4. Hartman Rocks Recreation Area with Tier 1, Tier 2 GUSG habitat (BLM)

2.4.2 SIGNAL PEAK

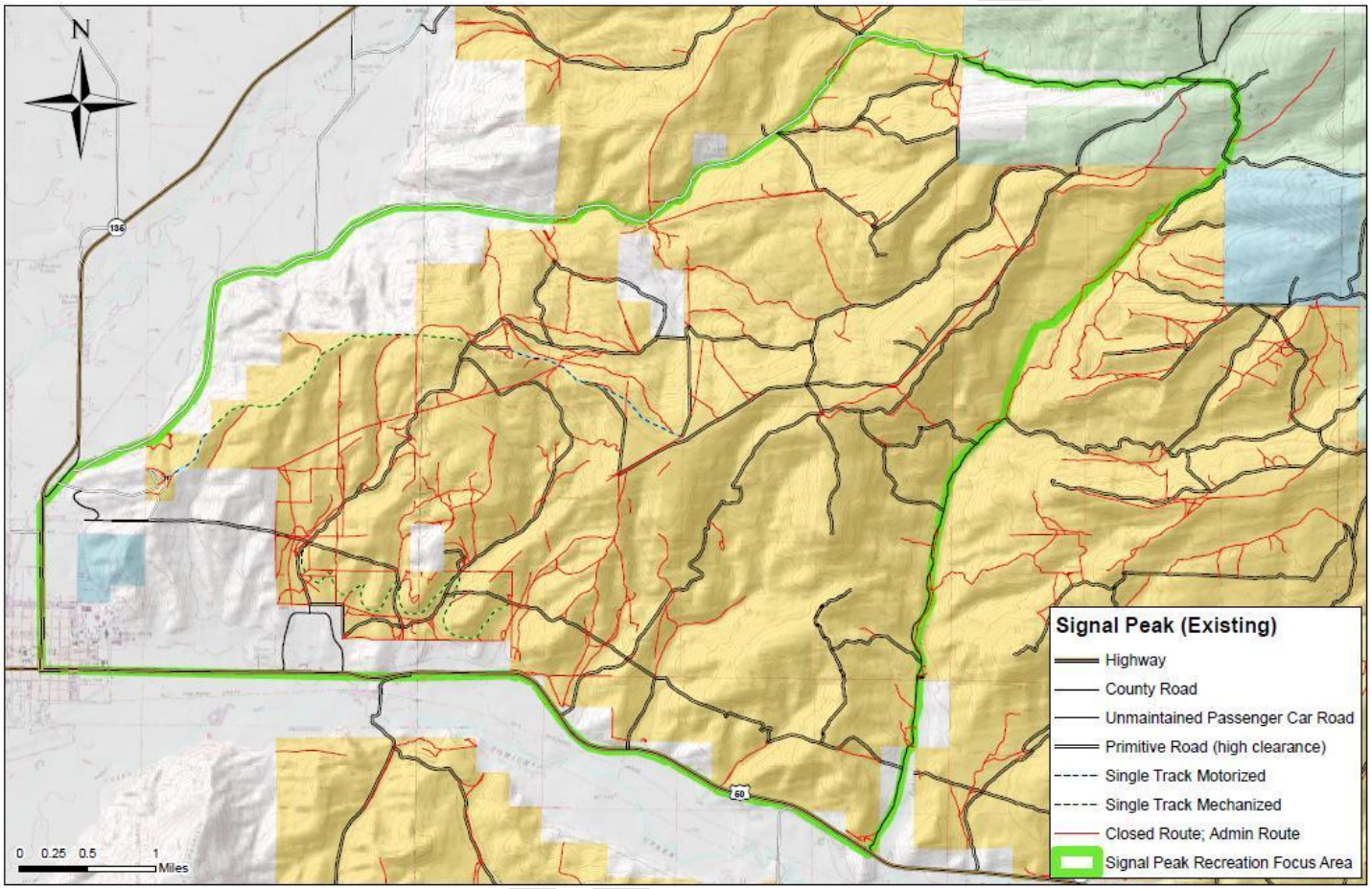


Figure 5. Signal Peak. The Signal Peak Trail System (13,771 acres) is just outside and northeast of the city of Gunnison, east of Western State College.

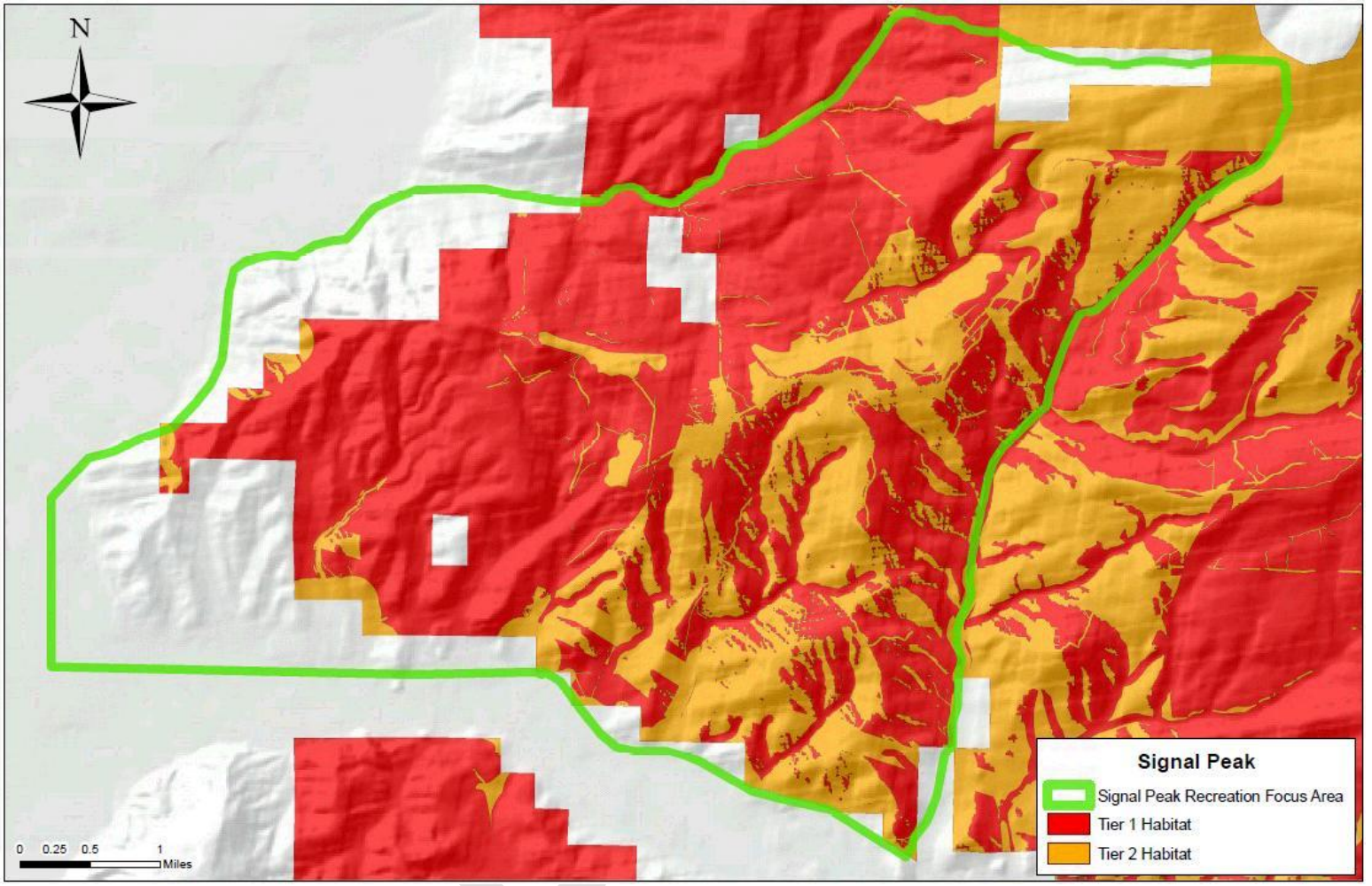


Figure 6. Signal Peak with Tier 1, Tier 2 GUSG habitat. (BLM lands shown in color).

2.4.3 VAN TUYL

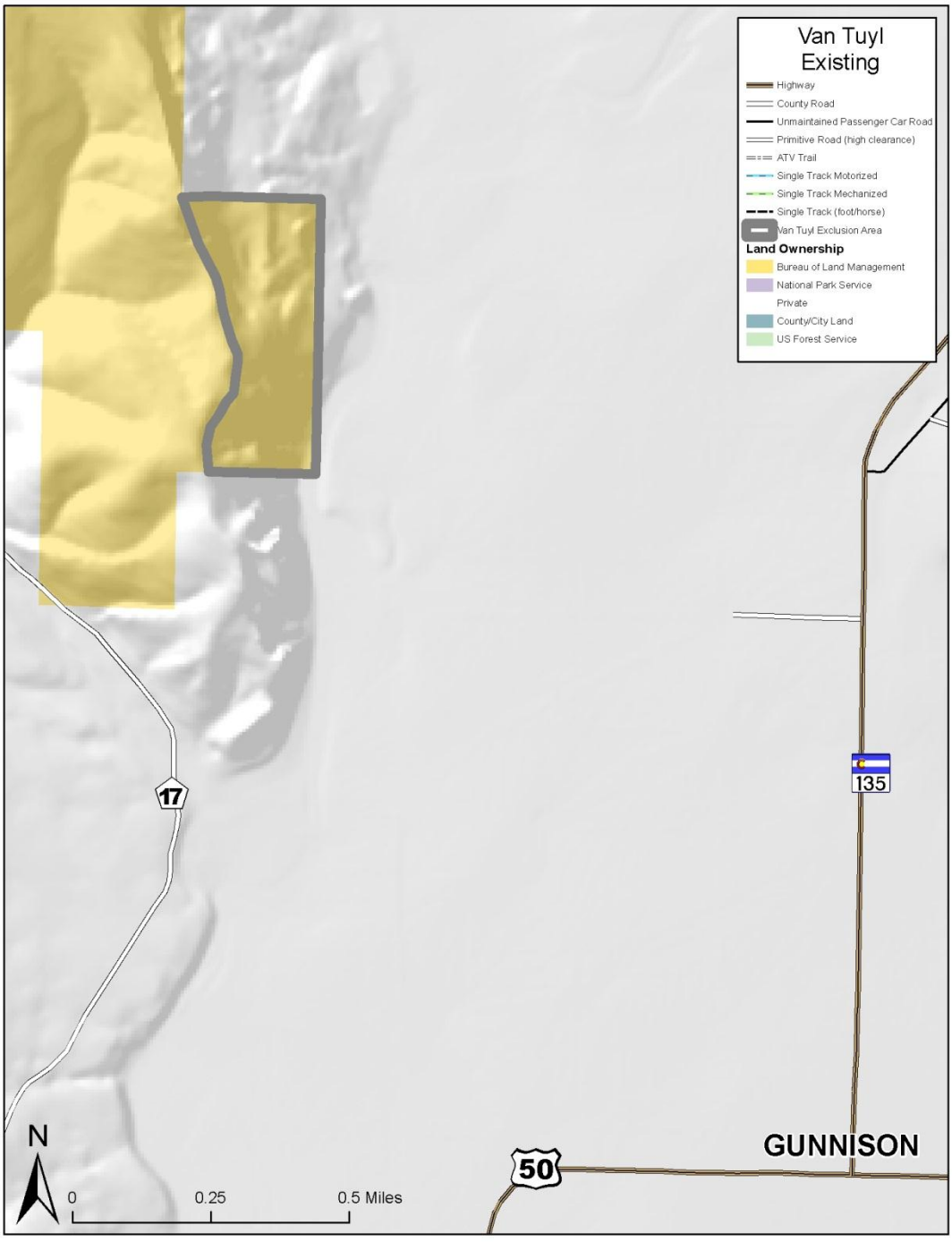


Figure 7. Van Tuyl, just northwest of the city of Gunnison.

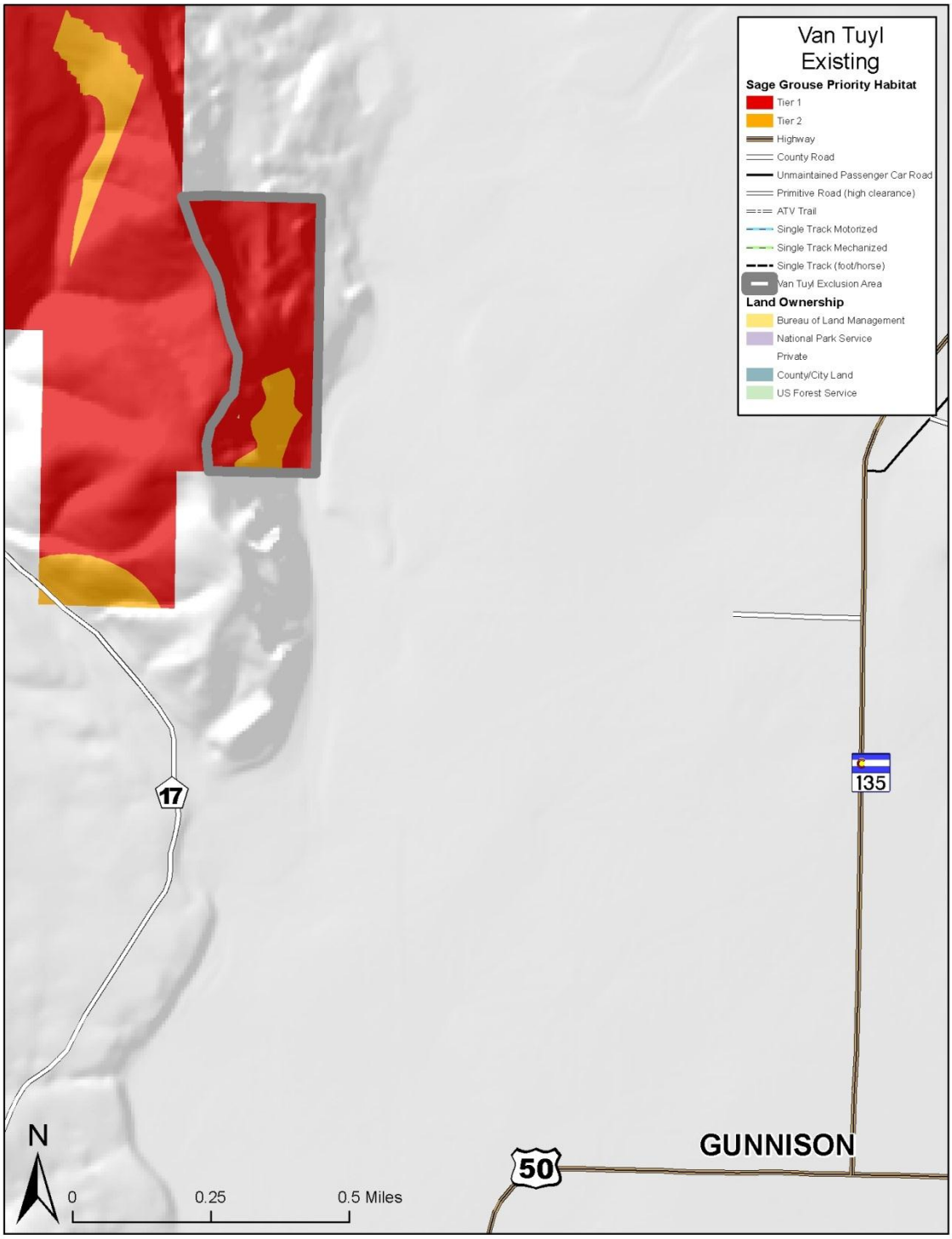


Figure 8. Van Tuyl with Tier 1, Tier 2 GUSG habitat.

2.5 CRITICAL HABITAT

As proposed by the USFWS in its proposed rule, published Jan 11, 2013, the occupied portion of Gunnison sage-grouse proposed critical habitat includes those areas within the species' occupied habitat that possess the physical or biological features—Primary Constituent Elements, or PCEs— essential to the conservation of the species and that may require special management considerations or protection (78 FR 8). USFWS is proposing seven critical habitat units across the range of the species corresponding to the seven Gunnison sage-grouse populations. Within unit 6 (Gunnison Basin), the CCA applies to 395,458 acres, comprising all occupied habitat on federal lands in the Gunnison Basin. Therefore, each of the landscape- and site-scale elements occur within the action area. A summary of the PCEs, as identified by the FWS proposed rule, are included below.

Landscape-Scale Primary Constituent Element

- PCE1: These areas:
    - include vegetation composed primarily of sagebrush plant communities (at least 25% primarily sagebrush land cover within .9 mi radius of any given location);
    - are of sufficient size and configuration to encompass all seasonal habitats for a given population;
    - are of sufficient size and configuration to facilitate movements within and among populations.

"If an area meets the landscape scale requirement, then a particular site is considered critical habitat if it contains one or more of the site-scale primary constituent elements (PCEs 2-5)" (78 FR 8; 2546).

Site-Scale Primary Constituent Elements

- PCE2: Breeding habitat
    - Composed of sagebrush plant communities with structural characteristics within ranges described in Table 1, below. Values are drawn from the 2005 Rangewide Conservation Plan. An area is considered critical habitat if its average vegetation values are within the ranges identified for the majority of structural categories.

Table 2. Breeding habitat vegetation guidelines

Vegetation Variable	Amount of Occurrence in the Habitat
Sagebrush Canopy Cover	10 – 25%
Non-sagebrush Canopy Cover	5 – 15%
Total Shrub Canopy Cover	15 – 40%
Sagebrush Height	25 – 50 cm (9.8 – 19.7 in)
Grass Cover	10 – 40%
Forb Cover	5 – 40%
Grass Height	10 – 15 cm (3.9 – 5.9 in)
Forb Height	5 – 15 cm (2.0 – 5.9 in)

- PCE3: Summer-late fall habitat
    - Composed of sagebrush plant communities with structural characteristics within ranges described in Table 2, below. Values are drawn from the 2005 Rangewide Conservation Plan. An area is considered critical habitat if its average vegetation values are within the ranges identified for the majority of structural categories.

Table 3. Summer-late fall habitat vegetation guidelines

Vegetation Variable	Amount of Occurrencein the Habitat
Sagebrush Canopy Cover	5 – 20%
Non-sagebrush Canopy Cover	5 – 15%
Total Shrub Canopy Cover	10 – 35%
Sagebrush Height	25 – 50 cm (9.8 – 19.7 in)

Grass Cover	10 – 35%
Forb Cover	5 – 35%
Grass Height	10 – 15 cm (3.9 – 5.9 in)
Forb Height	3 – 10 cm (1.2 – 3.9 in)

- PCE4: Winter habitat
    - Composed of sagebrush plant communities with sagebrush canopy cover between 30-40% and sagebrush height 40-55cm.

- PCE5: Alternative, mesic habitats used primarily in the summer/late fall season.

Across the entire action area of the CCA, both the landscape-scale element and at least one site-scale element occur, and therefore the action area meets the criteria for proposed critical habitat. Some areas within the action area may include only one site-scale PCE; others may include multiple elements. Consistent with the proposed rule and the CCA, developed infrastructure within the proposed critical habitat map and CCA action area is excluded by text from proposed critical habitat, and therefore, the effects analysis for proposed critical habitat (78 FR 8; 2548).

2.6 SPECIES DESCRIPTION

The Gunnison sage-grouse (*Centrocercus minimus*) is a species of sage-grouse found south of the Colorado River in Colorado and Utah. They are about one-third smaller than the greater sage-grouse, and males have more distinct, white barring on their tail feathers, longer and more dense filoplumes on their necks. Female Gunnison and greater sage-grouse have nearly the same plumage, but the female Gunnison is again about one-third smaller than the greater sage-grouse. Male Gunnison sage-grouse conduct an elaborate display when trying to attract females on breeding grounds, or leks in the spring. They will strut, flap their wings against their white pouches and utter a distinct series of sounds by vocalizing and popping two air sacs within their pouches. Nesting begins in mid-April and continues into July.

2.7 THREATS & BASELINE DATA

Section 4 of the Endangered Species Act sets forth procedures for adding species to the Threatened or Endangered list based on information for five listing factors. The five listing factors are:

> A. The present or threatened destruction, modification, or curtailment of its habitat or range;
>
> B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes
>
> C. Disease or Predation
>
> D. Inadequacy of Existing Regulatory Mechanisms
>
> E. Other Natural or Manmade Factors Affecting Its Continued Existence

The USFWS looks at not only the direct exposure of these threats to the species, but the way the grouse responds to a factor that may cause actual impacts to the species. If the threat drives or contributes to the risk of extinction leading to the need for protection, it is deemed a significant threat.

During the 2010 Status Review, USFWS identified several threats to the grouse within the Gunnison Basin. The CCA focuses on the threats to federal occupied habitat in the following categories: development, recreation, and grazing.

This analysis also represents the initial baseline data in which the agencies will use to determine how future actions affect the species and its habitat across the Gunnison Basin. The following is a summary of USFWS findings relating to these threats and baseline conditions within the Gunnison Basin:

2.7.1 FACTOR A: The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Historic Modification of Habitat

Current occupied habitat in the Gunnison Basin totals 593,000 acres (GSRSC, 2005). Although USFWS notes that approximately 7% of the species potential historic range is currently occupied throughout the range of the species, they cite Boyle and Reeder (2005) to note that the rate of loss of sagebrush in the Basin was lower than other areas of sagebrush distribution in Colorado (75 FR 187, 59813). It appears that 60-70% of potential historic habitat remains occupied in the Gunnison Basin, considerably more the

USFWS' estimated 7% of potential historic habitat currently occupied rangewide (59813).

Roads

Currently, there are 1,274 miles of unpaved roads within 4 miles of grouse leks on BLM and Forest Service lands in the Gunnison Basin. With the 2010 travel management decision for federal lands in the Gunnison Basin, designated open roads within 4 miles of leks were reduced by 39%, to approximately 800 miles, although a significant portion of closed routes remain on-the-ground and to be reclaimed within the Basin. One USFWS analysis finds that all occupied habitat in the Basin is indirectly affected by roads, whether those roads are open or closed, with the conclusion that "increased road use and increased road construction associated with residential development will continue at least through 2050, and likely longer. The resulting habitat loss, degradation, and fragmentation from roads are a significant threat to Gunnison sage-grouse now and in the foreseeable future" (75 FR 187, 59817-8).

Aldridge et al (2012) found that Gunnison sage-grouse select less fragmented areas at the landscape scale (6.4 km radius), avoiding high densities of 2-wheel drive accessible roads. Within those less fragmented landscapes, at the patch scale, grouse show clear avoidance of high-volume paved roads. Hen's predicted probability of nest occurrence remains relatively stable (between approximately 0.2 and 0.4) for areas 0 to 8 km from high volume roads and steadily increases to 0.9 in areas 8 to 10 km from high volume roads. Hens may avoid regular disturbance and avian predators commonly associated with paved roads.

The following table shows the miles of roads within occupied habitat in the Gunnison Basin broken down by ownership, open or closed routes, and habitat priority.

Overall threat: High

Table 4. Road miles within occupied Gunnison sage-grouse habitat.

	TIER 1				TIER 2			
	tier 1: open TOTAL	**tier 1: open MOTORIZED**	**tier 1: open NON-MOTORIZED**	**tier 1:closed**	**tier 2: open TOTAL**	**tier 2: open MOTORIZED**	**tier 2: open NON-MOTORIZED**	**tier 2: closed**
BLM	480	477	3	759	273	271	2	361
NPS	3	3	0	1	6	6	0	0
USFS	63	61	2	47	106	96	10	61
State/City	11	11	0	0	9	9	0	0
Hartman's	10	10	0	2	60	56	4	14
Van Tuyl	0	0	0	0	0	0	0	0
Signal Peak (BLM)	22	17	5	42	32	31	1	33
Signal Peak (USFS)	0	0	0	0	2	2	0	1

Powerlines

USFWS analysis indicates that "68 percent of the Gunnison Basin population area is within 4.3 miles of an electrical transmission line and is potentially influenced by avian predators utilizing the additional perches…These results suggest that potential increased predation resulting from transmission lines have the potential to affect a substantial

portion of the Gunnison Basin population" (75 FR 187, p. 59819). Citing current demographic and economic trends, USFWS expects that impacts from existing powerlines and distribution of new powerlines associated with residential development will continue at least through 2050, and likely longer (59819).

Table 5. Powerline infrastructure within occupied habitat.

		LENGTH	(APPROX) WIDTH	(APPROX) ACRES
USFS	*Aboveground GCEA*	3 mi	50 ft	18
	Aboveground WAPA	3.69 mi	70 ft (125 ft ROW)	31
	Aboveground Tri-State	4.51 mi	70 ft	38
NPS	*Aboveground GCEA*	22.5 mi	50 ft	136
	Belowground GCEA	6.3 mi	~10 ft	7.6
BLM	*Aboveground WAPA*	92 mi	70 ft (125 ft ROW)	869
	Aboveground Tri-State	2.5 mi	70 ft	21.5
	Aboveground GCEA/REA	124 mi	50 ft	1007
	Belowground GCEA/REA	124 mi	17 ft	265
TOTALS		382.5 mi	N/A	2393 acres

Overall threat: Moderate +

Waterlines

Over 240 water lines to livestock developments currently exist within BLM Gunnison sage-grouse habitat. The installation of these pipelines may cause a temporary fragmentation of sage-grouse habitat by removing vegetation and creating ground disturbance. By design, these range modifications have largely been put in place to divert livestock grazing use away from natural springs and riparian area water sources. The diversion of these impacts largely allows for these wetland brood-rearing habitats to remain intact.

Invasive Plants

USFWS anticipates cheatgrass (*Bromus tectorum*) and other noxious/invasive weeds will increase in the Gunnison Basin in the future because of potential exacerbation from climate change and the limited success of broad-scale control efforts. Impacts will likely be in the form of habitat degradation via loss of native plants and an altered fire regime (75 FR 187, 59821-2). The National Invasive Species Management System identifies an independent weed population as one or more noxious or invasive weed plants in an area 40 feet or more from another population (NISMS). Currently it is estimated that greater than 2,300 weed populations exist on public lands within Gunnison sage-grouse habitat. Since 2009, 723 of those populations have been recorded as treated. Of those treatments, 648 involved cheatgrass as the primary pest species at various rates of infestation. BLM monitoring records indicates that these treatments are 95-99% effective for the control of cheatgrass (BLMc).

Overall threat: Moderate +

Fences

Approximately 1160 miles of fence are located on BLM and NPS lands (for BLM grazing allotments) and 159 miles are located on USFS lands in GUSG occupied habitat in the Gunnison Basin. Thus, fences are widely distributed throughout GUSG habitat. Fence posts create perches for avian predators; USFWS anticipates the effect on sage-grouse populations by such facilitated predation is comparable to the effect of powerlines (75 FR 187, 59816-7). Although fences pose a collision hazard that has resulted in a notable level of direct strike mortality rates in the Greater sage-grouse population, mortality risk is dependent in part upon topography. In more rugged terrain, researchers have documented a markedly lesser risk, hypothesized to be a product of consequent higher flying patterns by the grouse (Stevens 2011). The varied terrain of the Gunnison Basin, and anecdotally reported higher-flying patterns of Gunnison sage-grouse, may limit population-level effects of any direct collisions.

Overall threat: Moderate +

Domestic Grazing & Wild Ungulate Herbivory

Domestic livestock grazing occurs throughout most of the occupied habitat in the Gunnison Basin and is expected to continue in the future. USFWS acknowledges that not all livestock grazing results in habitat degradation, and noted that "no studies have documented (positively or negatively) the actual impacts of grazing at the population level" (75 FR 187, 59823). They conclude that "habitat degradation that can result from improper grazing is a significant threat to GUSG now and in the foreseeable future" (59827).

Currently, 65% of occupied habitat in the Gunnison Basin is actively grazed with federal grazing permits. All public land agencies manage for sage-grouse habitat and conservation, yet these efforts are monitored inconsistently across jurisdictional boundaries. Although the BLM maintains Land health data for its allotments, most Land Health data in the Gunnison Basin is several years old and therefore doesn't represent current habitat condition, and this older data did not capture information specific to sage-grouse habitat guidelines. Therefore, little data is available that characterizes the overall current condition of the habitat in specific relation to sage-grouse habitat guidelines in the RCP.

Where recent and specific data does exist, the majority of this habitat assessment work has focused on treatment areas, which make up a small percentage of occupied habitat. For example, although representing less than 1% of habitat in the Basin, in 2010 the USFS initiated a long-term GUSG habitat monitoring study by establishing permanent transect locations covering 2,200 acres on Flat Top Mountain, a study size which constitutes approximately 25% of USFS-managed GUSG habitat. The purpose of the study is to monitor long-term habitat trends as influenced from past prescribed fire management, and to obtain baseline habitat data to determine if habitat conditions are consistent with the guidelines established in the RCP. The USFS determined that most of the study area met or exceeded RCP structural habitat guidelines for breeding and summer-fall habitat. The USFS will re-read the permanent transect sites from June – August of 2013.

Yet some landscape-scale, quantitative information related to the structural habitat guidelines is forthcoming. Multiple agencies, including BLM, USFS, NRCS, CPW, NPS and Gunnison County have partnered together to investigate the feasibility of processing high resolution stereo imagery with remote sensing techniques, validated with existing on-the-ground vegetation structural measurements, to assist with mapping and quantifying GUSG habitat Basin-wide. This study is currently ongoing by the USFS Remote Sensing Application Center, with completion expected by September 2013. If remote sensing method development is successful, this study will aid future long-term, Basin-wide monitoring efforts to obtain more quantitative and descriptive vegetation data to inform ungulate grazing management.

Although sage-grouse guidelines from the RCP, BLM RMP, and Forest Service Forest Plan have been incorporated into grazing permits within occupied habitat, existing monitoring plans produce insufficient quantitative data to document habitat status relative to the sage-grouse guidelines.

Overall threat: Moderate (when considered with wild ungulate herbivory)

Wild Ungulate Herbivory

Any negative effects of livestock grazing are furthermore "likely being exacerbated by intense browsing of woody species by wild ungulates in portions of the Gunnison Basin" (75 FR 187, 59826-7).

Overall threat: Moderate (when considered with domestic livestock grazing)

2.7.2 FACTOR E: Other Natural or Man-Made Factors Affecting Its Continued Existence

Recreation

USFWS notes that recreational activities, a significant use on federal lands, can result in direct and indirect effects on sage-grouse and habitat. Citing the RCP, the USFWS notes that direct disturbance during critical biological periods, including lekking, nesting, and early brood-rearing grouse, "can result in abandonment of lekking activities and nest sites, energy expenditure reducing survival, and greater exposure to predators" (75 FR 187, 59846). Early studies of the indirect effects of widespread motorized recreational access on wildlife habitat indicates that high-frequency human activity along established corridors can affect wildlife through habitat loss and fragmentation, including facilitating the spread of predators and invasive plants (Knick et al 2011). Furthermore, domestic dogs on recreation trails are anticipated to be an additional stressor when within vicinity of sage-grouse, although dogs alone are not currently identified as a population-level threat. In general, USFWS notes that recreational activities do not pose a singular threat to GUSG now or in the foreseeable future, although localized impacts may occur (59846-7).

Most recreation use is not spread evenly across the federal lands in the Gunnison Basin. Several areas see concentrated use such as Hartman Rocks Recreation Area. Visitation at Hartman Rocks averages 40,000 visits each year. NPS does see a substantial number of visitors each season (approximately 924,468 estimated visitors to CURE in 2011). Many of these visitors exclusively recreate on Blue Mesa Reservoir and its shores or within the Morrow Point and Crystal Reservoir canyons. However, visitors do use the two trails and ten recreation facilities located in sage-grouse habitat (approximately 142,147 estimated

visitors to sage-grouse habitat in 2011). Recreationalists using facilities in trails in sage-grouse habitat often bring their dogs. While NPS enforces a leash law for all dogs, many visitors allow dogs to run off-leash. To minimize physical disturbance during critical biological periods, NPS closes a campground located near a historic lek site to all use seasonally from October 1 to May 15.

Yet the recreation use over the majority of occupied habitat is largely dispersed and infrequent. FWS notes in the 2010 status review, "the act of recreating does not singularly pose a significant threat to Gunnison sage-grouse, especially in areas where habitat is already fragmented".

Overall threat: Low

3 ANALYSIS OF ACTIONS & CONSERVATION MEASURES

3.1 ORGANIZATION

For this Biological Assessment, actions and their associated conservation measures will be separated as follows:

- Motorized Roads & Trails, Nonmotorized Trails, & Closure Implementation
- Permitted Recreation Events & Outfitters
- Urban Interface Recreation Areas
- Grazing Management

  Includes 5 major measures that will be incorporated into annual operating plans, grazing permit renewals and transfers to ensure sage-grouse habitat is maintained and improved.
- Small-Scale Infrastructure

  Includes maintenance of stock ponds and small-scale administrative installments, i.e., signs and kiosks.
- Fences

  Includes new fence and exclosure construction.
- Medium-Scale Infrastructure

Includes new utility lines and pipelines, existing overhead utility lines, communication sites, meteorological (MET) towers, and comparable infrastructure.

The effects analysis a) discloses general impacts from the federal action, and b) discloses the justification of the associated conservation measures. A determination is made for each category of actions, and the determination assumes that the specified conservation measures are applied. In other words, the determination is made based upon the combination of the action *and* associated conservation measures.

3.2 ROADS & TRAILS

3.2.1 ACTIONS & CONSERVATION MEASURES

Motorized Roads and Trails

A. Tier 1 Habitat:

- Realignments for agency purposes that require new road or motorized trail construction and/or reopenings will be covered by the CCA if:
    - Realignment or reopening conserves or enhances sage-grouse habitat[1]; and
    - Decommissioned road/trail segments that result from realignment or reopening will be reclaimed[2]; and
    - Standard minimization measures are applied (*Section 6.1*).
- ROW/easement access for private applicants that requires road construction and/or reopenings will be covered by the CCA if :

[1] An example of a realignment that may conserve or enhance sage-grouse habitat is the realignment of existing routes out of brood-rearing habitat into other seasonal habitat types, given the relative scarcity of brood-rearing habitat in the Basin. Such net benefit to grouse habitat should be documented in the NEPA planning process and reported to USFWS in the annual CCA reports.

[2] The reclamation standard will be determined and documented in site-specific NEPA.

- Demonstration that the proposed access route is the only reasonable, feasible option, and no sufficient alternative access is available; and
- Accompanied by offsite/compensatory mitigation at a ratio of 2 acre reclaimed: 1 acre disturbed; and
- Standard minimization measures are applied (*Section 6.1*).

B. Tier 2 Habitat:

- New roads and motorized trails and reopenings will be covered by the CCA if:
  - Accompanied by offsite mitigation at ratio of 1 acre reclaimed: 1 acre disturbed; and
  - Standard minimization measures are applied (*Section 6.1*).

Nonmotorized Trails

A. Tier 1 Habitat:

- Realignments will be covered by the CCA if:
  - Realignment conserves or enhances sage-grouse habitat or other important natural resource (riparian areas); and
  - Decommissioned trail segments that result from realignments will be reclaimed; and
    - Standard minimization measures are applied (*Section 6.1*).
- New routes will be covered by the CCA if:
  - These routes would consolidate existing designated and user-created routes[3]; and

[3] For USFS and BLM, existing designated/system routes and user-created/nonsystem routes are defined by the 2010 Travel Management Plan (TMP) and subsequent Travel Management Implementation NEPA documents. For NPS, these are defined in the Curecanti National Recreation Area Motorized Vehicle Access Plan/Environmental Assessment, the NPS asset management system, and in the NPS GIS database.

- "Consolidation" is accomplished via decommissioning and reclaiming the replaced routes at a ratio > 1 acre reclaimed: 1 acre disturbed; and

- Signs are installed to ensure pets are leashed on the route during identified critical biological periods, with the exception of permitted outfitting activities; and

- Standard minimization measures are applied (*Section 6.1*).

B. Tier 2 Habitat:

- New routes will be covered by the CCA if:

  - Accompanied by offsite mitigation at ratio of 1 acre reclaimed: 1 acre disturbed; and

  - Standard minimization measures are applied (*Section 6.1*).

Closure Implementation

When implementing route closures under the 2010 Travel Management Plan (TMP) and the NPS Motorized Vehicle Access Plan (MVAP):

- Tier 1 habitat will be prioritized for reclamation work, to the extent feasible.[4]

- Using the Habitat Prioritization Tool and/or a route density map, reclamation options will be compared to optimize the size of intact, unfragmented Tier 1 habitat patches.[5]

[4] Sage-grouse habitat improvement is one of multiple resource concerns that will be taken into account to plan and prioritize closure implementation. When closed routes travel through Tier 1 and Tier 2 habitat, reclamation of Tier 1 segments alone may not be practical or desired from a management or habitat perspective. In such instances, reclamation of the entire closed segment may be preferred and implemented.

[5] See Section 8.4, Offsite Mitigation. Routes reclaimed after the date of the signed CCA and accompanying conference opinion may be "banked" as credits for future offsite mitigation, so long as monitoring demonstrates such reclamation to be successful.

Seasonal Closures

Tier 1 & Tier 2 Habitat

A. Lek Season:

- **Motorized** travel is restricted in occupied habitat during the lek season each year, and signatories to this CCA agreed to continue implementing such closures (BLM, USFS, NPS, and Gunnison County). Currently observed from approximately March 15 – May 15.[6] ***See Figure 9***. The closures apply uniformly to construction, maintenance, and access, with the following exceptions: permittees, access to private property, Hartman Rocks Recreation Area north of powerline, administrative access after 9am (10am NPS), emergency maintenance.

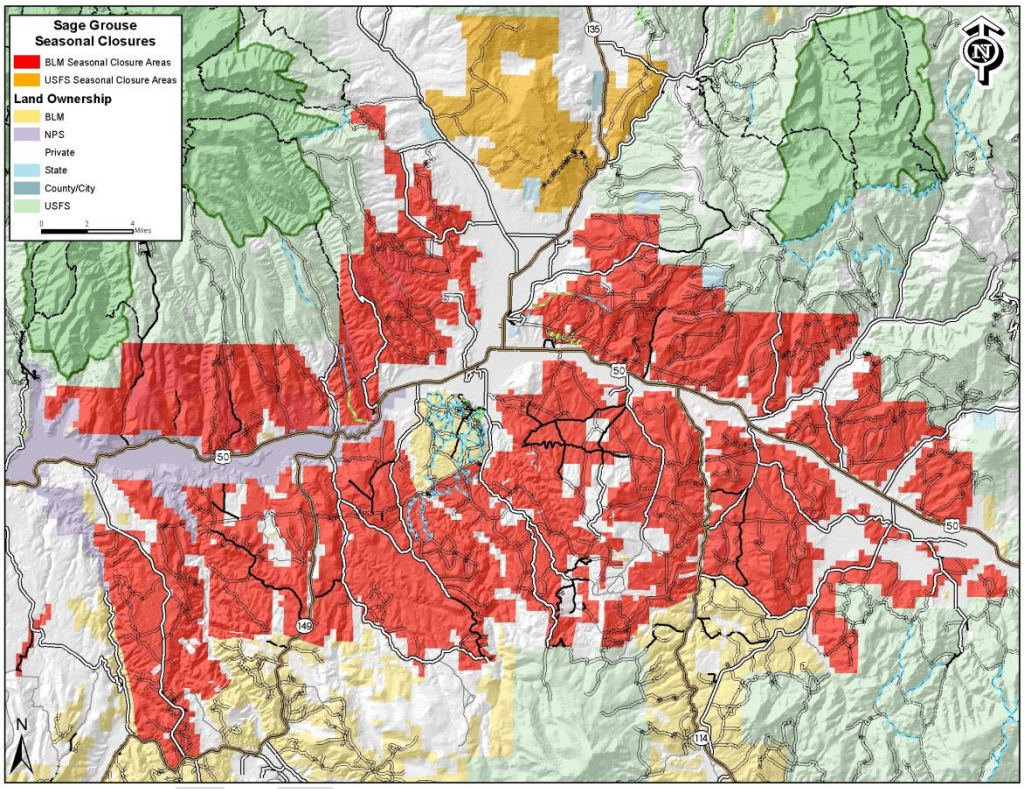


Figure 9. BLM, USFS & Gunnison County road and area closures, March 15-May 15.

[6] Spring closures to minimize disturbance to lekking grouse may be adjusted by the implementing agencies to accommodate changing environmental conditions, i.e., trend toward earlier lekking periods, etc.

- The USFS also implements an extended closure to motorized and mechanized uses through June 15 for 23,000 acres of occupied habitat, as well as an area closure to all public uses for an additional 4,395 acres.

- CCA signatories will install signs at major shooting areas within Tier 1 habitat or within .6 miles of active leks to encourage shooting only after 9am during the lek season, March 15-May 15.

B. Severe Winters

The agencies recognize that winter is a critical biological period for sage-grouse, and that even moderate-frequency travel through grouse concentration areas during severe winters would result in physiological stress that likely reduce the overall fitness of individuals and flocks (Hupp and Braun 1989; GSRSC 2005).

Management Trigger:

- Severe winters would trigger a collaborative, interagency management decision to implement area closures to protect identified grouse concentration areas. Closure decisions will be made in the context of managing for multiple resources, including big-game concentrations, public recreation, range condition, etc.
- Severe winters would be identified via a collaborative, interagency management discussion using the following criteria:
    - Snow depth
    - Temperature
    - Snow condition/consistency
    - Prior year's range condition
- Though frequency of severe winters cannot be predicted, on average, severe winters occur every 10 years.
- All other winter conditions:
    - Unless research indicates further consideration, no additional winter timing restrictions would be implemented during non-severe winters.
    - General messaging to recreation community will encourage cross-country winter travel in Urban Interface Recreation Areas, higher elevations and forested areas.

Management Tools:

- *Over-snow travel:*
    - Agency may implement area closures through all or a portion of identified grouse concentration areas, restricting travel to existing roads.

- Agency would implement closures to motorized cross-country travel at a minimum, and to all human use at a maximum.
    - If open roads lead to cross-country travel in closed areas, agency will consider closing specified roads as well.

- *Timeframe:*
    - In identified severe winters, closures would occur anytime between approximately December 1 and March 31.

- *Emergency Closures:*
    - The above grouse management tools are not intended to substitute for existing agency guidelines/policies regarding emergency seasonal closures. Emergency seasonal closures are implemented to protect a variety of natural resources.
    - Existing management tools for emergency seasonal closures:
        - CPW can implement temporary, emergency area closures during hunting seasons (Colorado Wildlife Commission Regulation 020-E-6).
        - The BLM, NPS, and USFS can implement temporary, emergency seasonal closures to identified federal lands pursuant to their regulatory authorities.

C. Additional Seasonal Closures:

- If research indicates additional restrictions are necessary to sustain the sage-grouse population, seasonal restrictions in identified seasonal grouse habitat may be applied to minimize disturbance during the following critical biological periods: nesting, brood-rearing, or winter.

- If and when additional seasonal restrictions are implemented, restrictions will be uniformly applied to construction, maintenance, and access, with the standard exceptions.

3.2.2 EFFECTS ANALYSIS: *Motorized Roads & Trails, Nonmotorized Trails, & Closure Implementation*

Action: Building new motorized roads and trails, nonmotorized trails, and closing and reclaiming routes including the associated conservation measures.

Direct and Indirect Effects

<u>Roads</u>

The ground-disturbing activity associated with road construction may flush individuals within the vicinity and temporarily expose them to increased risk of predation. Additionally, ground disturbance introduces the potential for weed establishment.

With respect to direct effects of the new road, it is not known if there are direct mortalities from road traffic, but with max speeds of 35 mph and the need to travel even slower on most roads within the action area, road traffic is not expected to cause significant or measurable direct mortality.

With respect to indirect effects of the new road, roads can reduce the quality of proximal habitat via increased invasive plant species abundance and increased predation. Roads may facilitate increased predation by providing predators with linear routes through sage-grouse habitat. When birds choose to nest in close proximity to roads, nest success and chick survival may be reduced due to increased susceptibility to predation. Furthermore, roads can reduce the function of proximal habitat via documented behavioral avoidance. Birds may change behavior in order to avoid noise and disturbance of motorized travel or increased predator travel. This may be particularly true in the case of lekking and nesting habitat. At the patch-scale within the Gunnison Basin, Aldridge's 2011 study of nesting habitat found that the most predictive variable for nest site selection was the Euclidean distance to the nearest road class 1 or 2, or paved, high-volume roads. This is compounded by prior avoidance at the landscape-scale of areas with a high-density of roads class 1-4.

Trails

The ground-disturbing activity associated with trail construction may flush individuals within the vicinity and temporarily expose them to increased risk of predation. Additionally, ground disturbance introduces the potential for weed establishment.

Direct effects from new trails may be limited to travel on the trails, which may flush individuals within the vicinity and temporarily expose them to increased risk of predation.

With respect to indirect effects, trails can reduce the quality of proximal habitat via increased invasive plant species; furthermore, trails may facilitate increased predation by providing predators with linear routes through sage-grouse habitat. With respect to reduced habitat function at the landscape- or patch-scale, we cannot extrapolate Aldridge's 2011 findings regarding road impacts on nesting habitat to trails (Aldridge, pers. comm.).

Route closures and decommissioning

The BLM and USFS are implementing road closures to comply with the decisions made in the 2010 Travel Management Plan, and they are decommissioning system and

nonsystem routes to improve watershed condition and terrestrial wildlife and aquatic habitats. Furthermore, implementation of the off-site mitigation component of the CCA will entail route decommissioning. A combination of methods, including ground-disturbing activities, will be conducted to enact these closures and to restore sage-grouse habitat. Methods include pulling culverts, creating waterbars for water drainage, ripping and seeding to reduce the soil compaction, placement of slash, installing barriers and restoration signage, and constructing informational kiosks. In the short-term, implementing route closures via these methods may result in temporary disturbance to individual birds. The ground-disturbing activity may flush individuals within the vicinity and temporarily expose them to increased risk of predation. Additionally, ground disturbance introduces the potential for weed establishment.

Benefits & Conservation Measures

Roads

By establishing a mitigation ratio of 2:1 for new roads in Tier 1 habitat and 1:1 for new roads in Tier 2 habitat, the CCA reduces future threats by addressing the 50-year projected increase of roads (2010 status review), and reduces the existing threats from the current road network. In most cases, offsite mitigation will be implemented via comparable route decommissioning, thereby ensuring a reduction in overall route density and mileage in Tier 1 habitat, and ensuring no net increase in overall route density and mileage in Tier 2 habitat.

To address the direct impacts to sage-grouse of motorized travel on both existing and future roads, the agencies will continue their March 15 –May 15 closure. Closures are enacted across the majority of occupied habitat, and these closures result in functional closures to the majority of proposed critical habitat. Furthermore, the CCA outlines a process to implement severe winter closures to minimize disturbance to sage-grouse.

By following standard minimization measures, ground-disturbing activity will occur during the least-sensitive biological periods, and the potential for weed establishment will be minimized.

Trails

By establishing a mitigation ratio of 2:1 for new trails in Tier 1 habitat and 1:1 for new trails in Tier 2 habitat, the CCA establishes the same conservation standards for trails as for roads, despite limited to no data to suggest that they have the same effect. In most cases, offsite mitigation will be implemented via comparable route decommissioning, thereby ensuring a reduction in overall route density and mileage in Tier 1 habitat, and ensuring no net increase in overall route density and mileage in Tier 2 habitat.

By following standard minimization measures, ground-disturbing activity will occur during the least-sensitive biological periods, and the potential for weed establishment will be minimized.

Route closures and decommissioning

With the completed travel management plan in 2010, roads were reduced within 4 miles from leks by 39%, but the footprint of most of the closed routes are still on-the-ground and continue to impact sage-grouse habitat. Installing blockades and signage will increase or fully ensure public compliance with these closures, thereby reducing direct disturbance to sage-grouse from continued travel, both motorized and nonmotorized. Over time, decommissioning routes will restore much of the habitat function along the route itself via revegetation. And over time, decommissioning roads will begin to restore proximal habitat function – at the patch-scale, absent motorized travel and a linear route for predators, behavioral avoidance can be anticipated to decrease. As a result, nest-site selection may increase near former roads. At the landscape-scale, reduced road densities would further restore habitat function, specifically increasing the size and quality of effective habitat to increase nest-site selection and success within the action area. The CCA will prioritize closure and decommissioning actions on routes within Tier 1 habitat.

By following standard minimization measures, ground-disturbing activity will occur during the least-sensitive biological periods, and the potential for weed establishment will be minimized.

Effect Determination and Rationale

In spite of conservation measures implemented under the CCA, we determine that these activities may affect, and are ***likely to adversely affect*** Gunnison sage-grouse because:

- *Direct disturbance in short-term from significant construction activity and long-term from continuous use.*
    - New road construction in the short-term and road use in the long-term is a direct disturbance that can reduce nest success and cause individuals to flush and expose them to greater predation. These impacts will be mitigated in the long-term at the landscape-scale via off-site mitigation.
    - New trail construction in the short-term and trail use in the long-term is a direct disturbance that can cause individuals to flush and expose them to greater predation. These impacts will be mitigated in the long-term.at the landscape-scale via off-site mitigation.

In spite of conservation measures implemented under the CCA, we determine that these activities may affect, and are ***likely to adversely affect*** Gunnison sage-grouse proposed **critical habitat** because:

- *Permanent removal of site-scale PCEs in critical habitat.*
    - New road construction will remove any site-scale PCEs for the length/width of the road, although these impacts will be mitigated in the long-term at the landscape-scale via off-site mitigation.
    - New trail construction will remove any site-scale PCEs for the length/width of the trail, although these impacts will be mitigated in the long-term at the landscape-scale via off-site mitigation.

- *Functional habitat modification.*
    - The function of habitat immediately adjacent to new roads may be compromised such that these areas exhibit decreased nest success and increased behavioral avoidance. These impacts will be mitigated in the long-term at the landscape-scale via off-site mitigation.

3.3 RECREATION EVENTS & OUTFITTERS

3.3.1 ACTIONS & CONSERVATION MEASURES

Tier 1 & Tier 2 Habitat

Special use permits for recreation events, guides, and outfitters will be covered by the CCA if:

- Applicants will comply with any existing public seasonal closures; and
- Events and guides utilize designated open routes (vs. cross-country travel) as identified in the TMP (BLM, USFS) or MVAP (NPS); and
- Recreation permits, including those for outfitters, are modified at renewal and issuance to allow for management flexibility in event of a severe winter;
    - I.e., *"When severe winter conditions are identified by permitting agency, in order to protect natural resources, including sensitive species, the permitting agency reserves the right to restrict permittee' s travel from identified areas and/or routes, consistent with restrictions that would be placed on general public access….approx. December 1 to March 31 ….;* and
- The permitting agency demonstrates reasonable attempt to focus events and outfitters on/through areas outside of sage-grouse habitat, or to identified high-use, urban interface recreation areas. Nonetheless, certain activities require a specific resource, and implementing agencies recognize that not all activities can be located outside of sagebrush habitat.

3.3.2 EFFECTS ANALYSIS: *Recreation Events & Outfitters*

Action: Permitting recreation events and outfitters, including the associated conservation measures.

Direct and Indirect Effects

Permitted recreation events and outfitter activities have the potential to temporarily disturb and displace Gunnison sage-grouse. Birds may flush when stressed from human activity, leaving the area of disturbance. Birds may expend energy avoiding the disturbance, rather than foraging or resting. Indirectly, birds could be more susceptible to predation, especially from avian predators, when flushed as they become exposed and subsequently alert raptors to their presence. In addition, hens may temporarily leave chicks unattended when avoiding a disturbance.

Conservation Measures

Permitting agencies will first direct recreation events and outfitters to areas outside of Tier 1 and Tier 2 Gunnison sage-grouse habitat and secondarily to high-use, urban interface recreation areas. When activities are permitted in Tier 1 and Tier 2 habitat, they will be confined to footprints of disturbance associated with designated open routes as identified in the 2010 Gunnison Basin Federal Lands Travel Management Plan, which will render the possibility of trampling birds or nests to an insignificant level. Permitted activities will adhere to seasonal timing restrictions to avoid impacts during the lek season. Additionally, severe winters would trigger emergency area closures that the federal agencies, in collaboration with CPW, would implement to reduce physiological stress to Gunnison sage-grouse.

Although the direct impact of temporary disturbance is likely to occur, and is therefore not discountable, the impacts – when minimized via the above seasonal restrictions, use of designated open routes, and geographic guidelines – are rendered insignificant.

As outlined, permitted recreation events and outfitter/guide activities will not impact, modify, or remove critical habitat and will not result in the loss, degradation, or fragmentation of sagebrush plant communities.

Effect Determination and Rationale

Due to the conservation measures implemented under the CCA, these activities may affect, and are ***not likely to adversely affect*** Gunnison sage-grouse because:

- Permitted activities will first be directed to areas outside of critical habitat; or

- When authorized in critical habitat, will be confined to existing footprints of disturbance associated with designated open routes; and
- Activities will comply with seasonal timing restrictions to avoid disturbances during the lek season and during severe winters.
- For the reasons described above, these activities are likely to disturb individual birds, but the effect will be insignificant.

Due to the conservation measures implemented under the CCA, these activities will have ***no effect*** on Gunnison sage-grouse critical habitat because:

- Permitted activities will first be directed to areas outside of critical habitat; or
- When authorized in critical habitat, will be confined to existing footprints of disturbance associated with designated open routes; and
- Activities will comply with seasonal timing restrictions to avoid disturbances during the lek season and during severe winters.
- For the reasons described above, permitted activities will not result in the removal or modification of any of the primary constituent elements, and thus will not impact, modify, or remove critical habitat.

3.4 URBAN INTERFACE RECREATION AREAS

From the CCA:

> *The intent of [Urban Interface Recreation Areas] is to outline the preferred locations for current, concentrated recreation at the urban interface, and to outline long-term planning for recreation expansion to balance the needs of a growing population and the need to maintain sage-grouse habitat. A guiding strategy of the CCA Recreation Team has been to balance sage-grouse and recreation via the concentration of use in preferred areas. The following three areas are generally in close proximity to Gunnison[7] and especially in the case of Hartman Rocks, capture the vast majority of recreationists in grouse habitat in the Basin. Although sage-grouse conservation measures should still be observed in each of these areas, such as seasonal closures to minimize disturbance to leks and complete avoidance of new infrastructure within .6 miles of a lek, the off-site*

[7] These areas also capture recreation use in sage-grouse habitat from the outlying subdivisions, including Tomichi Heights, Cranor Hill, Upper and Lower Castle Mountain, Antelope Hills, and outlying neighborhoods adjacent to Hartman Rocks.

mitigation standards outlined in sections 4.3, 4.4, 5.2, and 5.3 of the CCA would not be required in these areas to compensate for new route and facility development. For efficiency, route reclamation efforts will be best- suited to areas at a greater distance from the urban interface. For each of the following areas, a minimum set of grouse conservation measures is proposed below (CCA, App. B).

3.4.1 ACTIONS & CONSERVATION MEASURES

Hartman Rocks

Long-Term Planning – Future Need and Development:

The use of Hartman Rocks will continue to grow as population increases in Gunnison and the region, as accounted in the Hartman Rocks Area Management Plan (2012). In compliance with the Management Plan, facility development would be allowed in the Front Country (1814 acres) and Middle Country Zones (4205 acres.). Facility development could include but is not limited to trails, restrooms, a motorcycle track, open play areas, or shooting ranges. ***See Figure 3 & Figure 4***.

*Total Acreage***:** Tier 1 habitat = 2617; Tier 2 habitat = 3402.

Proposed sage-grouse Conservation Measures in this Recreation Area:

- Open north of the Power Line Road March 15 – May 15, when a large number of roads are closed to motorized travel. *Note: This is not a conservation measure for sage-grouse **in** Hartman Rocks, but the open area does concentrate recreation use here and limit noncompliance with closures elsewhere in the Basin.*

- Human uses discouraged prior to 9 AM. March 15 to May 15.

    - Human uses in future facilities, i.e. shooting ranges, motorcycle tracks, would be discouraged prior to 9 AM during this time period.

- Closed south of the Power Line Road to motorized and mechanized use from March 15 to May 15.

- If the proposed facility development were to fall outside the scope of the CCA, then the default conference or consultation process would begin with USFWS.

Signal Peak

Long-Term Planning – Future Need and Development:

Managing recreation use in an area like Signal Peak is very difficult, and offering people structured recreation is a practical compromise to balance wildlife and recreation needs. Developing a stacked loop trail system would keep most people and pets on designated trails and allow the BLM to successfully close routes—and gain public compliance with the closures— in areas where human presence is undesirable from a wildlife perspective. This may require trail construction or designation in Tier 1 habitat. While the proposed condition includes a greater number of open route miles, increased compliance with closures are expected via well-defined loop systems.

Current condition: 93 miles existing (open) and 140 miles (closed) = 233 miles of disturbance. ***See Figure 5 and Figure 6.***

Proposed condition: 121 miles of open routes, including up to approximately 28 miles of new construction. Decommission the remainder; target routes for reclamation in Tier 1 areas (140 miles). ***See Figure 10 &Figure 11***.

Total Acreage: Tier 1 = 8856. Tier 2 = 4915.

Proposed sage-grouse Conservation Measures in this Area:

- No human uses before 9:00 a.m. between March 15 and May 15.
- No motorized travel between March 15 and May 15.
- Dogs on leash from March 15 to August 15. *Note: In the long-term, as Van Tuyl is developed and popularized for dog walkers originating in the city dog park, it may be appropriate and feasible to close areas of Signal Peak to dogs during critical grouse periods.*

Figure 10. Proposed Travel Routes in Signal Peak.

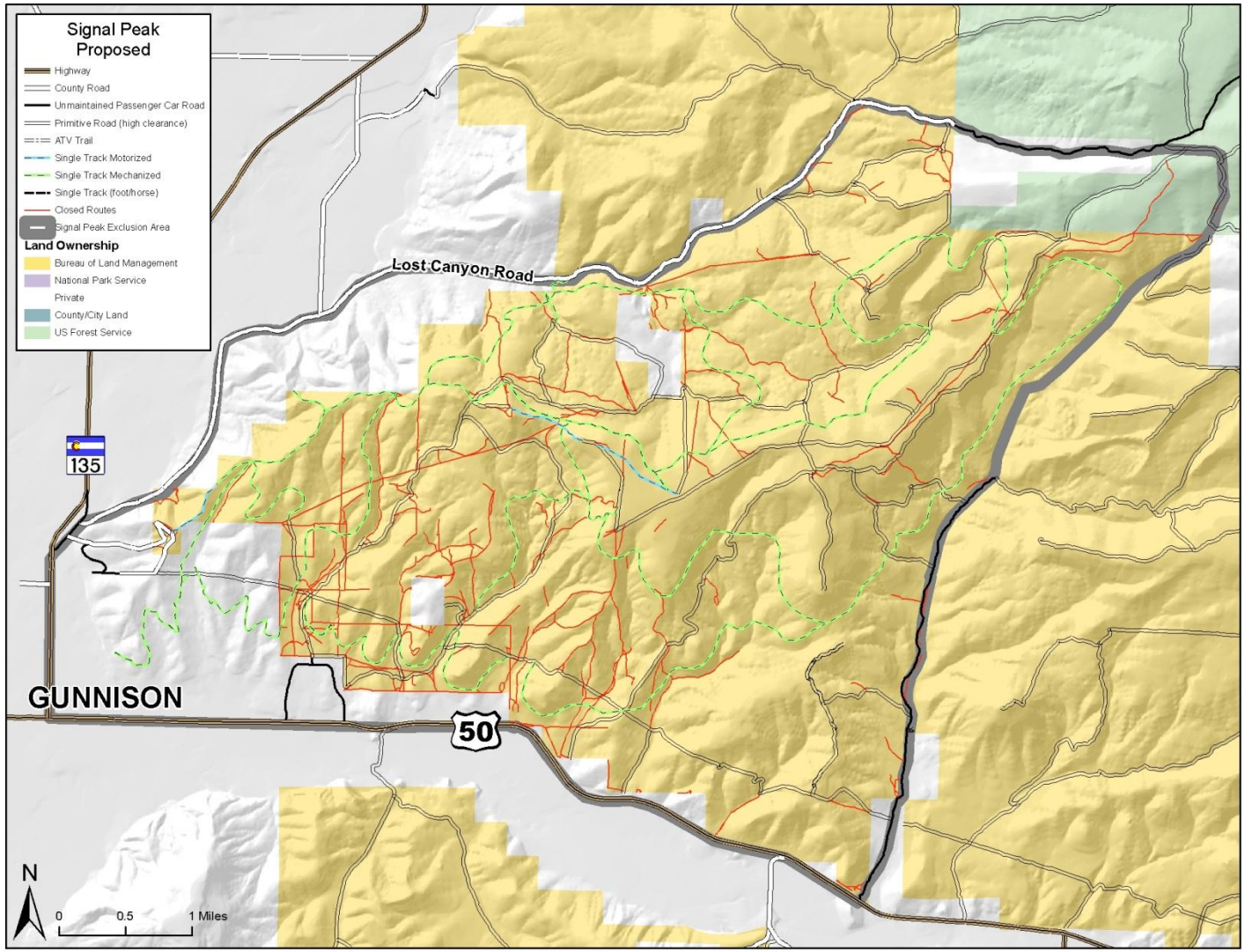
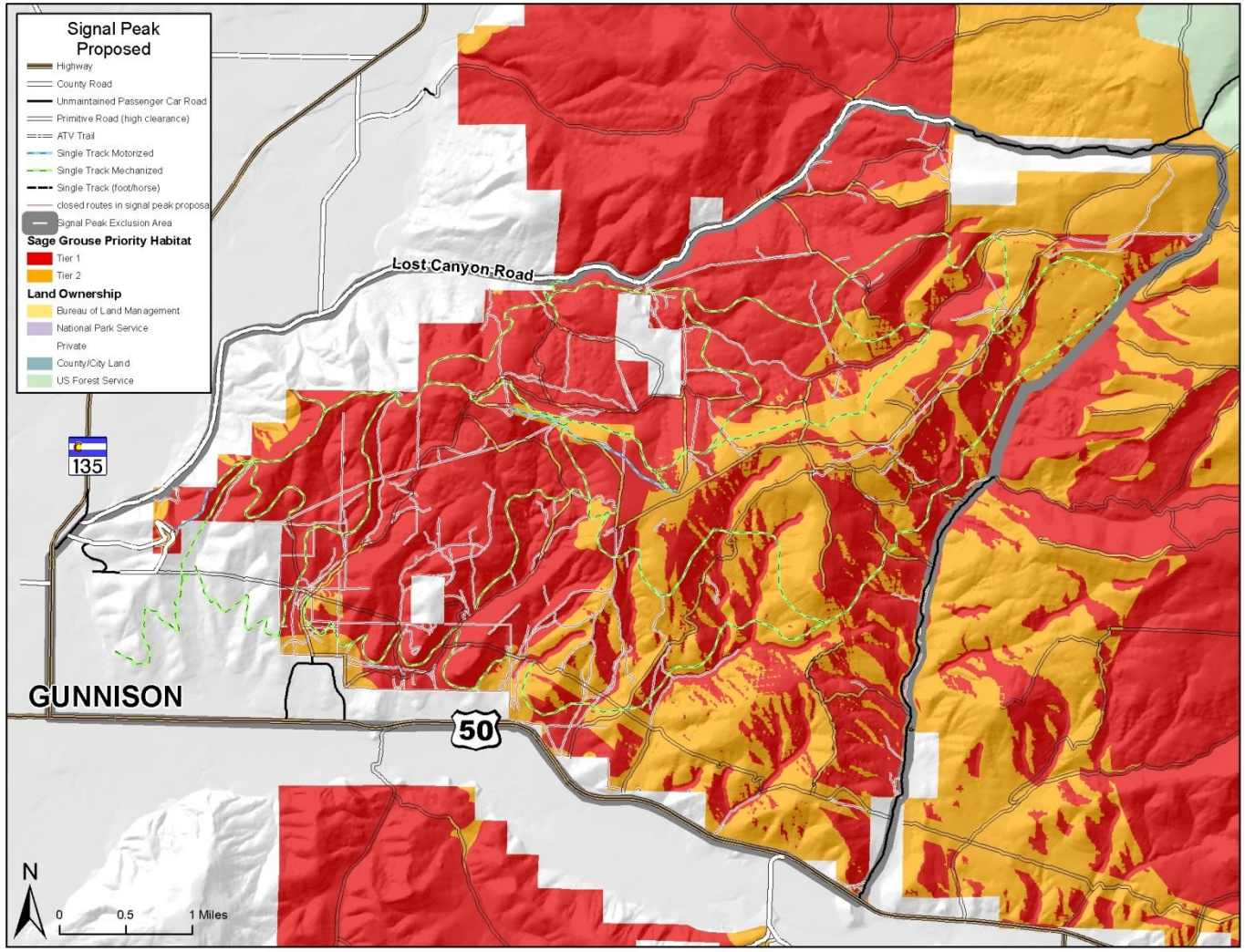


Figure 11. Proposed Travel Routes in Signal Peak with GUSG habitat.



Van Tuyl

Long-Term Planning – Future Need and Development:

In order to provide for focused recreation opportunities for a growing population and to focus dog use away from Signal Peak, nonmotorized user groups envision future development in the area. In order to develop and maintain a limited trail system on the west side of the Gunnison River, a bridge may be constructed. Trails would be developed on BLM lands in a bench below the ridge line of the palisade. Use on this trail system would be hiking and biking. ***See Figure 7 and Figure 8.***

Total Acreage: Tier 1 = 51; Tier 2 = 8.

Proposed sage-grouse Conservation Measures in this Area:

- No motorized travel.
- Possible closure from March 15 to May 15, or no human uses before 9:00 a.m. during that time period.
- Dogs on leashes in areas outside of the city-maintained/owned Ranch, which includes a dog park.

3.4.2 EFFECTS ANALYSIS: *Urban Interface Recreation Areas*

Action: Building new motorized roads and trails, nonmotorized trails, and closing and reclaiming routes in identified urban interface recreation areas. Authorizing new rights-of-way or easements for new access roads. Actions include the associated conservation measures.

Direct and Indirect Effects

The ground-disturbing activity associated with road and trail construction may flush individuals within the vicinity and temporarily expose them to increased risk of predation. Additionally, ground disturbance introduces the potential for weed establishment.

Much like the effects described in the travel management section, GUSG are expected to be directly and indirectly affected by disturbance from human use on roads and trails within these urban interface areas. Birds may exhibit behavioral changes, including shifts in habitat use and distribution, to avoid these areas with high human activity. Indirect

effects also include the potential for roads and trails to facilitate the spread of non-native plants, and to provide travel routes for predators.

Some new routes may be constructed within .6 miles of active leks, which could reduce the integrity of leks if non-natives become established along the routes and spread, and if predators use these new routes during the lekking season.

Approximately 28 miles of new routes and 140 miles of decommissioned routes are anticipated over the lifetime of the conference opinion.

Benefits and Conservation Measures

These recreation areas will concentrate recreation use in close proximity to Gunnison and its subdivisions, where functional habitat is currently limited via close proximity to class 1-2 roads, residential development, and other permanent infrastructure. Especially in the case of Hartman Rocks, these areas capture the vast majority of recreationists in grouse habitat in the Basin, but they also capture use from subdivisions including Tomichi Heights, Cranor Hill, Upper and Lower Castle Mountain, Antelope Hills, and outlying neighborhoods adjacent to Hartman Rocks. When public land exists adjacent to subdivisions, social trails proliferate, yet recreation planners anticipate that when timely, well-developed, evolving, and high-value opportunities are provided, the extent of unauthorized trail construction and cross-country travel will be dramatically reduced.

By focusing increased recreation infrastructure and use in these discrete areas, current and future recreation impacts at the landscape-scale will be minimized.

Measures to minimize disturbance to grouse will be used in each of these areas. Motorized use will continue to be restricted during the lekking period. New routes within .6 miles of leks will be closed during lekking season. The BLM will implement reroutes and decommission routes in close proximity to leks and within riparian areas, as well as routes that may be highly erosive and unsustainable. No off-site mitigation standards would be required in association with new routes.

Effects Determination and Rationale

In spite of conservation measures implemented under the CCA, we determine that Urban Interface Recreation Areas may affect, and are ***are likely to adversely affect*** Gunnison sage-grouse because:

- *Direct disturbance in short-term from significant construction activity and long-term from continuous use.*
    - New road construction in the short-term and road use in the long-term is a direct disturbance that can cause individuals to flush and expose them to greater predation and reduce nest success.

- New trail construction in the short-term and trail use in the long-term is a direct disturbance that can cause individuals to flush and expose them to greater predation.

In spite of conservation measures implemented under the CCA, we determine that Urban Interface Recreation Areas may affect, and are ***are likely to adversely affect*** Gunnison sage-grouse critical habitat because:

- *Permanent removal of site-scale PCEs in critical habitat.*
  - New road construction will remove any site-scale PCEs for the length/width of the road.
  - New trail construction will remove any site-scale PCEs for the length/width of the trail.

- *Functional habitat modification.*
  - The function of habitat immediately adjacent to new roads may be compromised such that these areas exhibit decreased nest success and increased behavioral avoidance.

3.5 GRAZING MANAGEMENT

3.5.1 ACTIONS & CONSERVATION MEASURES

The following five measures will be incorporated into current grazing management:

1. RCP/CCA grazing management guidelines[8] *(See 6.4)* will continue to be incorporated into all permits and any associated allotment management plans and/or coordinated management plans in occupied sage-grouse habitat (BLM, USFS, NRCS, NPS). *RCP Grazing Objective 1-1, p. 211*

Allotments and/or pastures containing occupied habitat will be managed for both breeding and summer/fall herbaceous heights.

[8] RCP **grazing management** guidelines—a list of Best Management Practices (pgs. 212-213 of RCP) are distinct/different from the RCP (**structural) habitat** guidelines – on-the-ground vegetation parameters necessary for maintenance of sage-grouse habitat (Appendix H of RCP).

2. At permit renewal or in annual operating instructions for each grazing permit containing occupied sage-grouse habitat, if not earlier, an agency IDT, in cooperation with the permittee, will use the Habitat Condition Assessment (*See 7.1 and 7.2*) to incorporate habitat guidelines for herbaceous heights as a term and condition of the permit.[9]

a. For riparian areas, Gunnison Basin GUSG Conservation Plan guidelines for herbaceous heights will be incorporated as a term and condition of the permit.

b. For non-riparian habitat, RCP guidelines for herbaceous heights will be incorporated as a term and condition of the permit.

c. Short-term/annual monitoring points will be selected by an IDT, including permittees, to monitor compliance with herbaceous height standards. (*See 7.1 and 7.2. which prescribes indicators and monitoring methodology.)*

d. For permittees participating in cooperative monitoring, implementing agencies will conduct on-the-ground review of the monitoring protocol.

3. At permit renewal or in annual operating instructions for each grazing permit containing occupied sage-grouse habitat, incorporate into all applicable permits, allotment management plans, and coordinated management plans the following framework of actions that will take effect if herbaceous heights are not met by the following timelines:

a. If monitoring shows that herbaceous heights are not meeting the terms and conditions of the permit, and changes in grazing are needed, changes will be coordinated with a team approach that involves the permittee.[10]

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[9] For the purposes of the CCA, herbaceous heights will only become a "standard" if and when they are incorporated into a grazing permit through this process. Otherwise, the habitat indicators will be used as long-term objectives to move toward via management of relevant factors.

[10] Consistent with grazing regulation 4130.3-3, which requires the authorized officer to provide affected permittees "an opportunity to review, comment and give input during the preparation of reports that evaluate monitoring and other data that are used as a basis for making decisions to increase or decrease grazing use, or to change the terms and conditions of a permit or lease."

b. If the sagebrush habitat structure is a limiting factor to achieving the guidelines, habitat treatments will be considered as funding and opportunities become available.[11]

c. If permitted or dispersed recreation is identified as a causal factor for the failure to meet the guidelines, agencies will address as practicable.

d. If other land use authorizations and factors are limiting factors to achieving the guidelines, address as appropriate.

After year 1:

If the Authorized Officer determines via compliance monitoring that an allotment is not meeting habitat guidelines for herbaceous heights and due in part or whole to current livestock grazing:

- Adjust intensity, timing, distribution and/or duration of livestock grazing for year 2. Employ grazing BMPs *(See 6.4).*

- Address any other contributing factors, as appropriate.

If the Authorized Officer determines via compliance monitoring thatan allotment is not meeting habitat guidelines for herbaceous heights and not due to current livestock grazing:

- Record adequate monitoring data to determine cause.

- Address any other contributing factors, as appropriate.

If the Authorized Officer determines via compliance monitoring that an allotment is not meeting habitat guidelines for herbaceous heights and the cause is unclear:

- Conduct more monitoring in year 2, including key areas of livestock use and important habitat areas for grouse, pre-season, and during the grazing season as needed to determine the cause.

[11] Habitat treatments may require additional conference or consultation with USFWS.

- Adjust intensity, timing, distribution and/or duration of livestock grazing for year 2. Employ grazing BMPs *(See 6.4)*.

After year 2:

If the Authorized Officer determines via compliance monitoring that an allotment is not meeting habitat guidelines for herbaceous heights for 2nd consecutive year due in part or whole to current livestock grazing:

- Adjust intensity, timing, distribution, and/or duration of livestock grazing for year 3. Employ grazing BMPs *(See 6.4)*.
- Address any other contributing factors, as appropriate

If the Authorized Officer determines via compliance monitoring that an allotment is not meeting habitat guidelines for herbaceous heights for 2nd consecutive year and not due to current livestock grazing:

- Record adequate monitoring data to determine cause.
- Address any contributing factors, as appropriate.

If the Authorized Officer determines via compliance monitoring that an allotment is not meeting habitat guidelines for herbaceous heights for 2nd consecutive year and the cause is unclear:

- Employ additional adjustments to livestock grazing and to other contributing factors for year 3.
- Continue additional monitoring in year 3, key areas of livestock use and important habitat areas for grouse, etc.

After years 3-5:

If the Authorized Officer determines via compliance monitoring that an allotment is not meeting habitat guidelines for herbaceous heights for 3rd-5th consecutive year due in part or whole to current livestock grazing:

- Employ longer-term adjustments to grazing, including changing grazing system, reducing stocking/season of use, rest, etc.

- If appropriate, treat/restore structural habitat[12].
- Address any other contributing factors, as appropriate.

If the Authorized Officer determines via compliance monitoring that an allotment is not meeting habitat guidelines for herbaceous heights for 3rd-5th consecutive year and not due to current livestock grazing:

- Continue to manage other factors and monitor progress.

For undetermined causes, continue to implement applicable BMPs to move towards sage-grouse habitat guidelines. Continue to monitor progress towards meeting relevant guidelines.

4. Conduct adequate monitoring of herbaceous heights on active grazing allotments in occupied sage-grouse habitat in accordance with the monitoring protocols outlined in the CCA (BLM, USFS). *RCP Grazing Objective 2-1, p. 212.*

a. Short-term monitoring[13] will be conducted during season of grouse use (nesting, brood-rearing, etc.) for early-season grazing, and following livestock use for late-season grazing.

b. Prioritize limited funding to ensure adequate monitoring is accomplished in Tier 1 habitat.

5. Manage grazing in riparian areas, swales, and wet meadows to improve habitat conditions.

Note: These are included in Appendix D, Grazing Management Guidelines, but are also included here to emphasize the importance of maintaining and improving riparian and other brood-rearing habitat.

[12]Habitat treatments may require additional conference or consultation with USFWS.

[13] Minimum short-term monitoring information will include grass and forb stubble height along transects, in addition to photo points (See 7.1 and 7.2).

a. Encourage continued use of irrigation water rights for existing hay meadows, particularly those that maintain riparian areas on allotments in sage-grouse habitat.

b. Manage grazing in riparian areas to maintain or move towards the desired riparian vegetation condition. *CCA Team*

c. New spring developments and spring reconstructions will be designed to minimize changes to the natural flow of the water. *CO GrSG Conservation Plan – Grazing Management Options, p E-3*

- Develop any new alternative livestock water sources outside of naturally occurring riparian areas (develop wells, install pipelines, etc.). *CCA Team; RCP Grazing Management Guidelines for GUSG, #9, p.213*

- Where possible (when sufficient water is present to support riparian habitat and supply livestock water), redesign existing water developments that are in naturally occurring riparian areas to protect riparian habitat and pipe a portion of the water to troughs that are well away from naturally occurring riparian habitat. *CCA Team; RCP Grazing Management Guidelines for GUSG, #9, p.213*

d. Salt at least 1/4 mile away from riparian areas, to the extent feasible within existing pasture boundaries.

e. Move 95% of all livestock from one pasture to the next within 3 days of scheduled move, with 100% moved within one week from scheduled move.

f. Maintain at least 4" of stubble height (residual material) on hydrophytic plant species (wide-leaved sedges such as beaked sedge, water sedge, rushes, tufted hairgrass, and spikerush) in riparian areas throughout the growing season.[14] *Gunnison Basin GUSG Conservation Plan*

Furthermore, the following grazing conservation measures are identified to share the conservation responsibility amongst key partners:

[14] This will help these deep-rooted plants hold onto sediment, sustain streambanks, and support water table levels (Clary & Leininger 2000, Wyamn et al 2006).

1. Seek opportunities to achieve greater flexibility in the distribution of current AUMs across the landscape in order to improve GUSG habitat.[15]

a. Inventory inactive grazing allotments on state and federal lands. Identify vacant allotments that may enable short and long-term flexibility in the grazing system. *(Initial inventory complete.)*

b. If climate events delay the turnout date on federal lands, short-term options for flexibility include, subject to NEPA adequacy requirements:

- The agencies will work with the permittees to limit the length of delay and allow the days delayed to be added to extend the season, as long as grouse standards can be met.

- BLM and Forest grazing seasons may be changed to aid important grouse habitat on private land from being grazed beyond the standards.

- If the permittee is able to find alternative grazing capacity at the start of the season, then an equivalent amount of time may be added to the end of the grazing season on federal lands.

c. Long-term options for flexibility:

  - As opportunities arise, create coordinated Allotment Management Plans to improve GUSG habitat across private and federal lands (NRCS, BLM, USFS, NPS, CPW, private landowners/stockgrowers).

[15] Because of the landscape scale of grazing and grouse habitat, additional grazing conservation measures are identified to share the conservation responsibility amongst key partners. These measures – including coordinated allotment management planning across private, state, and federal boundaries, upkeep of data analysis unit plans for big game—will not be addressed in the Biological Assessment or conference opinion, but are necessary components of a range management system that ensures sage-grouse conservation.

3.5.2 EFFECTS ANALYSIS: *Grazing Management*

Action: Renewing and issuing term permits for grazing, including the associated conservation measures.

Direct and Indirect Effects

Direct impacts to sage-grouse include the physical disturbance associated with livestock. Livestock may trample grouse nests and can cause birds to flush from nests or broods; either of these impacts has been documented to cause temporary or permanent abandonment of nests and/or chicks (Rasmussen and Griner 1938, p. 863; Patterson 1952, p. 111; Call and Maser 1985, p. 17; Holloran and Anderson 2003, p. 309; Coates 2007, p. 28). Sage-grouse have been documented to abandon nests following partial nest depredation by cows (Coates 2007, p. 28). Within the Gunnison Basin, the NPS monitored sage-grouse nests from 2000 to 2010 (n= 96 nests with known fates). The only abandoned nest in the sample was discovered under a dead sagebrush with all residual grass cover recently grazed (n=1 abandoned per 96 per 10 years). If we estimate approximately one magnitude larger, i.e. approx. 1000 nests as the annual number of nests across the Gunnison Basin, and a 20-year period for the life of the BA and associated conference opinion, we estimate that approximately 1 nest per year, or 20 in total over the lifetime of the BA will be abandoned as a direct result of livestock grazing. This number has been measured within the Basin, the effect has been documented in the literature, and is therefore not insignificant. Although grazing is likely to affect individual nests and is therefore not discountable, there is no noticeable effect on nest success or recruitment at the population level as a result of nest trampling, depredation, or abandonment. By the definitions of the ESA, there are adverse effects associated with direct livestock impacts to nesting habitat, although these impacts will be minimal.

With respect to habitat quality, indirect impacts of livestock grazing include a temporary reduction of herbaceous understory, which could limit food availability and hiding cover. Without sufficient hiding cover, nest success may be compromised. Sage-grouse exhibit high nest site fidelity, with hens often returning to nest in the same general location each year. They may continue this pattern even in areas experiencing habitat degradation. With significant reductions in herbaceous cover, nest sites lose concealment and may be more susceptible to predation.

In addition, reductions in herbaceous cover may also influence how birds choose to move across and utilize the landscape. Over time, sage-grouse may avoid areas with poor herbaceous cover.

Grazing can also impact habitat quality via compacted soil, erosion, and the increased probability of the presence and spread of exotic plant species. Each of these impacts is anticipated to continue under reauthorized livestock grazing permits. Yet in order to meet permit terms and conditions for herbaceous heights in the CCA, effects to soil and

erosion are inherently minimized via associated changes in intensity, duration, and rest-rotation schemes.

Positive effects of livestock grazing on sage-grouse habitat have also been identified in the literature. As cited in the RCP (GSRSC 2005), studies have found that sage-grouse preferentially selected and used grazed meadows during the summer over ungrazed meadows that were comprised of dense residual herbaceous cover, presumably because vegetative conditions in the grazed meadow better resembled structural habitat guidelines than did the grazed (Robel et al 1970). In this case, effective cover height did not decrease below 5 cm during the summer, and ranged between 5-15cm. This height is in the range of the RCP structural habitat guidelines/PCE 3 for forb height, and ranges slightly below the minimum recommended for grass height (10cm). Nonetheless, when compared to ungrazed meadows with 30-50cm grass height, the grazed meadow openings were preferred.

Crawford et al (2004), as cited in the RCP (GSRSC 2005), noted that moderate utilization by livestock in spring, early summer, winter is sustainable in non-degraded meadow and riparian areas within sagebrush habitat, citing Shaw 1992, Clary et al 1996, and Mosley et al 1997. "Moderate use" equated to a 10-cm residual stubble height for for most grasses or sedges and 5-cm for Kentucky bluegrass (Mosley et al 1997 and Clary and Leninger 2000, as cited by Crawford 2004). It is worth noting that these residual heights that are "sustainable" for sage-grouse meet the minimum recommended RCP structural habitat guidelines/PCEs 2 & 3 for grass height.

Conservation Measures

To address the domestic livestock grazing impacts of reduced herbaceous cover, and to ensure continued livestock grazing is sustainable with sage-grouse habitat, the CCA conservation measures will a) standardize permit terms and conditions to include the RCP habitat guidelines/Proposed Rule PCE Tables 1-2 for herbaceous heights, and b) commit the agencies to a level of monitoring to both ensure and demonstrate compliance with those terms and conditions. Although the focus of the effects analysis is on these measures, additional livestock grazing conservation measures from the RCP are brought forward in the CCA.

Domestic livestock grazing that meets[16] the CCA's conservation measures and permit terms and conditions for herbaceous heights will still impact habitat by causing

[16] In order to determine whether an allotment is meeting or is not meeting RCP guidelines for herbaceous heights, an agency IDT team will use the short-term, annual monitoring data collected via the prescribed protocols (see Section 7.2).

reductions in herbaceous cover that would not occur in the absence of livestock grazing. Furthermore, there may be localized, temporary reductions of herbaceous cover that result in hotspots that fall below the minimum recommendations in the RCP/PCE Tables 1-2, despite thorough monitoring and prompt grazing adjustments. Yet over individual and the cumulative total of allotments, incorporating RCP/PCE habitat guidelines for herbaceous heights as permit terms and conditions and monitoring to ensure compliance will minimize the extent and occurrences of herbaceous cover being grazed below RCP/PCE guidelines to the occasional hotspot.

If an allotment fails to meet permit terms and conditions for herbaceous heights, the permitting agency will continue to manage and monitor conditions under the CCA, BA, and associated conference opinion for up to five years before separate Section 7 consultation is required.

If monitoring data indicate an allotment does not meet the herbaceous height requirement in any given year due solely or in part to livestock grazing, the permitting agency and permittee will make changes to attempt to improve conditions in year two. Although improvement for herbaceous heights is anticipated in year two, the CCA allows that it may take up to five years for monitoring data to demonstrate that herbaceous heights meet the minimum standards in a given allotment. If five consecutive years of monitoring data on any given allotment indicate that the allotment is still not meeting herbaceous heights standards – whether data is trending upwards or not—and if grazing is one of the causal factors, additional consultation with USFWS on that allotment's permit may be required, and the allotment is no longer covered under the CCA BA and conference opinion.

Through the short-term, annual, and long-term monitoring requirements, the land management agencies will be able to demonstrate compliance with the CCA, have a better understanding of habitat conditions across the landscape, and will be able to focus on improving habitat for the species where most needed.

Over the long-term and the landscape-scale of grazed, occupied habitat, it is anticipated that livestock grazing – when combined with the CCA conservation measures-- can be managed to maintain and/or improve allotment condition to meet site-scale PCEs/RCP habitat guidelines, with consideration to site capability.

Effect Determination and Rationale

In spite of conservation measures implemented under the CCA, we determine that livestock grazing on federal lands may affect, and is ***likely to adversely affect*** Gunnison sage-grouse because of:

- *Temporary, localized modification of site-scale PCEs below minimum guidelines.* Currently, grazing on federal lands occurs over 65% of occupied habitat in the Gunnison Basin during the nesting season. In the course of managing grazing to meet the RCP/PCE herbaceous heights guidelines, there will be localized and temporary hotspots in which herbaceous heights fall below the minimum guidelines for site-scale PCEs. This can lead to birds abandoning nests and greater exposure to predation, both of which negatively affect recruitment.

- *Individual harassment that impacts individual breeding behavior.* Permitted A.U.M.'s (Animal Use Months) vary year to year but up to approximately 60,000 units are permitted across the federal lands in the Gunnison Basin. Because of the widespread livestock distribution across nesting habitat during the nesting season, we anticipate approximately 20 nests (1 per year over 20 years) may be trampled or abandoned as a direct result of livestock grazing over the lifetime of the BA. This effect does not reach the level of a population concern.

- *Short-term and widespread modification of site-scale PCEs below minimum guidelines may occur.* The CCA BA and associated conference opinion enable permitting agencies to adaptively manage livestock grazing for up to five years on a given allotment in an effort to achieve compliance with the herbaceous height standards; over the course of adaptive management implementation, reduction of herbaceous cover below site-scale PCE guidelines may reduce nest success and recruitment due to reduction of hiding cover and food.

Livestock grazing on federal lands may affect, and is ***likely to adversely affect Gunnison sage-grouse critical habitat*** because:

- *Temporary, localized modification of site-scale PCEs below minimum guidelines.* Grazing will occur within all habitat types, and some localized areas are expected to not meet minimum habitat guidelines identified in the site-scale PCE for breeding and/or summer/fall habitat due to livestock grazing. The temporary, annual grazing of herbaceous cover below height standards in hotspots is likely even under the best grazing management, and therefore does not meet the definition of "discountable." The temporary, annual grazing below height

standards in hotspots can be measured and therefore does not meet the definition of "insignificant" in the ESA.

- *Short-term and widespread modification of site-scale PCEs below minimum guidelines may occur.* The CCA BA and associated conference opinion enable permitting agencies to adaptively manage livestock grazing for up to five years on a given allotment in an effort to achieve compliance with the herbaceous height standards; over the course of adaptive management implementation, grazing herbaceous cover below site-scale PCE guidelines will be documented and measured, so the action therefore fails to meet the definition of "insignificant" or "discountable" in the ESA.

3.6 SMALL-SCALE INFRASTRUCTURE

3.6.1 ACTIONS & CONSERVATION MEASURES

Water Developments

Tier 1 & Tier 2 Habitat

- Right-of-way/easement authorizations and renewals through occupied habitat on federal lands to access and maintain existing water developments will be covered by the CCA if:
    - Standard minimization measures are applied as terms and conditions of the permit (*Section 6.1*), including:
        - Timing restrictions for access and construction, consistent with spring seasonal closures for general public. Emergency maintenance excepted from this provision; and
        - Integrated weed prevention practices used for all construction and maintenance activity *(See 6.1).*

Additional Small-Scale Infrastructure

Includes: signs, kiosks, vault toilets, vehicle barriers, concentrated parking areas, culverts, gates, cattle guards, exclosures, and water developments not otherwise detailed above.

A. Tier 1 Habitat:

- New infrastructure will be covered under the CCA if:
    - Total acres of new ground disturbance is < ¼ acre; and
    - Infrastructure is sited at least .6 miles from active leks, with the exception of signs and culverts along existing development footprints; and
    - Standard minimization measures are applied (*Section 6.1*).

B. Tier 2 Habitat:

- New infrastructure will be covered under the CCA if:
    - Total acres of new ground disturbance is < 1 acre; and
    - Standard minimization measures are applied (*Section 6.1*).

3.6.2 EFFECTS ANALYSIS: *Small-Scale Infrastructure*

Action: Authorizing maintenance of existing small-scale water developments in term permits for grazing, rights-of-way authorizations, and easements. Administrative installation of small-scale infrastructure, including signs, kiosks, vault toilets, vehicle barriers, concentrated parking areas, culverts, gates, cattle guards. Actions include the associated conservation measures.

Direct and Indirect Effects

Water Developments

The maintenance of water developments – removing sediment deposits and/or re-compacting dam structure — can result in the temporary removal of vegetation within and immediately adjacent to the water development footprint. However, these footprints have been previously disturbed and will not contain sagebrush canopy consistent with site-scale PCEs 2-4, and rarely exhibit other native shrub or herbaceous cover.

Nonetheless, these areas could become conducive to weed propagation and spread.

Other Small-scale Infrastructure

The installation of vault toilets, concentrated parking areas, culverts, gates, and cattle guards may require removal of site-scale PCEs. Construction is not anticipated to result in significant disturbance to nearby birds, as construction will be of a very short duration and in a very localized area.

It is reasonable to suspect that some of the identified small-scale infrastructure could serve as perches for raptors or corvids, which would facilitate predation.

Benefits and Conservation Measures

Water Developments

Concentrated livestock use for water developments helps reduce disturbances across occupied habitat. Many of these structures have been developed to divert livestock use from natural water sources such as seeps and springs, thus avoiding localized damage of important brood-rearing habitats. Many of these cattle ponds are developed for water retention and consequently sediment retention, which creates mesic sites with food sources that could be used for brood-rearing habitat, or PCE 5. These areas also provide insects that may not have otherwise been available, and improve watersheds downstream that often times succumb to high-flow events.

Furthermore, well-maintained and -managed water developments provides for water retention and infiltration in surrounding soils, providing mesic sites (PCE 5) suitable for summer and late fall sage-grouse habitat.

Conducting maintenance activities in accordance with the integrated weed management measures reduces the risk of weed spread to proximal sage-grouse habitat.

Other Small-scale Infrastructure

Administrative small-scale infrastructure reduces disturbance across occupied habitat. Correct signage, educational kiosks, public restrooms and parking areas all reduce distributed impacts to sage-steppe communities by concentrating these impacts to localized areas that often exist within pre-existing disturbance footprints or rights-of-way. Gates can enable land managers to seasonally, temporarily, or permanently close and rehabilitate routes and areas. Culverts minimize erosion and limit the need for the intermittent, long-term impact of road re-construction and maintenance.

By limiting total ground disturbances from new small-scale infrastructure in Tier 1 habitat to less than 0.25 acres and less than 1 acre in Tier 2 habitat, the total amount of site-scale PCEs that may be removed is limited to less than .0001% in Tier 1, and less than .001% in Tier 2. It is expected that most infrastructure would be placed within the footprint of a previously disturbed area.

By following standard minimization measures, including the .6 mile buffer from active leks, the potential for facilitated predation near leks and proximal nesting habitat is reduced. Installation of small-scale infrastructure along existing development footprints results in an insignificant risk of facilitated predation; sage-grouse may already avoid the area (alongside a road or concentrated parking area), or there already may be alternative perches within the vicinity (fence posts, power lines, other signs) such that additional perches have an insignificant, or immeasurable, additive effect.

Effect Determination and Rationale

Maintenance of existing water developments and installation of small-scale infrastructure in compliance with the identified conservation measures may affect, and is ***not likely to adversely affect*** Gunnison sage-grouse because:

- Any construction activity would be of a short duration and very localized, minimizing disturbance to individual birds;
- There are tight restrictions on total new ground disturbance outside of existing footprints and rights-of-way from this category of infrastructure;
- It is expected that most small-scale infrastructure would be installed within the footprint of a previously disturbed area;
- Limiting structures to outside of a 0.6 of mile buffer from active leks reduces the risk of facilitated predation near leks and proximal seasonal habitat;
- These conservation measures render impacts to the species insignificant.

Maintenance of existing water developments and installation of small-scale infrastructure in compliance with the identified conservation measures may affect, and is ***not likely to adversely affect*** Gunnison sage-grouse critical habitat because:

- Critical habitat does not include man-made structures such as roads. Therefore, small-scale infrastructure installed within a road right-of-way will have no effect on critical habitat;
- Maintenance of water developments would not cause any additional alteration or destruction of critical habitat constituent elements;
- The caps on total new ground disturbance outside of existing footprints and rights-of-way from this category of infrastructure render impacts to site-scale PCEs insignificant.

3.7 FENCES

3.7.1 ACTIONS & CONSERVATION MEASURES

A. Tier 1 and 2 Habitat:

New fences will be covered by the CCA if:

- Fence is necessary to improve vegetative habitat conditions for sage-grouse, such as facilitating grazing rest rotation systems; and

- Built to general wildlife standards, as recommended by CPW (Hanophy 2009):

- Posts at minimum 16’ intervals; and
- Gates, drop-downs, removable fence sections or other passages where animals concentrate and cross; and
- If area is identified as high-risk for grouse collision based upon topography, use flagging to mark the fence[17];
    - Otherwise, use a high-visibility wire, flagging or other visual markers for the top; and
- Fencing wire placed on the side of the fence posts where the domestic animals are located; and
- Smooth wire on the bottom; and
- Height of top rail or wire should be 42” or less; and
- At least 12” between the top two wires; and
- At least 16” between the bottom wire or rail and the ground; and

o Standard minimization measures are applied (*Section 6.1*).

3.7.2 EFFECTS ANALYSIS: *Fences*

Action: Building new fences, including exclosures; includes the associated conservation measures.

Direct and Indirect Effects

Approximately 1160 miles of fence are located on public lands within the Gunnison Basin. Approximately 159 miles are located in GUSG occupied habitat on USFS lands in the Gunnison Basin. Thus, fences are widely distributed throughout GUSG habitat. Fence posts create perches for avian predators; USFWS anticipates the effect on sage-grouse populations by such facilitated predation is comparable to the effect of powerlines (75 FR

[17] Consistent with: BLM IM 2010-22, Managing Structures for the Safety of sage-grouse, Sharp-tailed grouse, and Lesser Prairie-chicken, or as updated; USFS R2 SUPPLEMENT 2600-2004-1 2011, Section 2631.1, Sage-grouse and Sagebrush Habitats.

187, 59816-7). Fences may pose a physical barrier or disturbance to grouse, and a significant risk of mortality from direct collision –although mediated by local topography, location relative to seasonal habitat, and fence design—is documented in Greater sage-grouse populations.

Benefits and Conservation Measures

Fence infrastructure may be applied to facilitate conservation objectives by providing a means to control movement of both permitted livestock and human use – such as motorized and nonmotorized travel and recreation—on the landscape,. Fencing can be an effective tool for managing wild and domestic livestock disturbance to sage-grouse habitat or reseeded or reclaimed sites. Exclosures can enable land managers to monitor control sites and temporarily or permanently protect restoration areas or riparian sites from livestock grazing.

By avoiding new fences along ridgelines and marking fences in areas of flat topography, the risk of collision is minimized by as much as 75% (Stevens 2011 and 2012). For low risk areas (smaller leks, greater distance from leks), collision counts along marked fences totaled 0.02 birds/500 m/lek season, and in high risk areas (larger leks, lesser distance to leks), collision counts along marked fences totaled 2.2 birds/500 m/lek season (Stevens 2011 and 2012). For 4 new miles of fence, or 7040 m, we can estimate that even by marking fences and locating them at least .6 miles from leks, the collision totals per lek season per year could total .28 – 30.98 birds. Over 20 years, this total would be 5.6-619.6 birds. However, terrain ruggedness is a strong predictor of collision risk, and researchers have documented that when topography reaches a terrain ruggedness index (TRI) threshold >10m/km^2, that risk drops off to an indistinguishable degree (Stevens 2011 and 2012). Anecdotally, the Gunnison Basin is characterized by more rugged terrain than the collision risk study areas of southern Idaho, and flight behavior reportedly occurs at higher levels. If we estimate that 90% of new fences would be in areas exceeding the TRI threshold of >10m/km^2, the remaining 10% of new fences could result in a total of .56—61.96 birds "taken" during the lek season over the lifetime of the BA. To account for the remainder of the year, a conservative estimate could anticipate roughly 4x the rate, or 2.24—247.84 birds over the 20-year period, though the existing literature has not documented collision risk outside of the lekking season.

By using wildlife standards for new fences, such fences are not anticipated to impede bird movement.

Approximately 2 miles of new fence for livestock management has been proposed in the Gunnison Field Office BLM in the past 10 years, and the projected need for additional livestock fencing is anticipated to be minimal to insignificant. If approximately 4 miles of new fence is estimated over the lifetime of the BA, consistent with historical demand trend, the 4 miles would be <.003% of existing fence infrastructure within the Basin.

Effect Determination and Rationale

In spite of the identified conservation measures, fences may affect, and are ***likely to adversely affect*** Gunnison sage-grouse because:

- *Permanent addition of documented collision hazard.* Although we can minimize collision with fence markers and siting, the permanent addition of a linear collision hazard on the landscape may result in increased, direct mortality on the order of 2.24—247.84 birds over the lifetime of the BA.

Fences, when installed in compliance with the identified conservation measures, may affect, and are ***not likely to adversely affect*** Gunnison sage-grouse critical habitat because:

- Projected need for new fences is <.003% of total existing fences;
- Siting, design, and construction timing criteria will minimize the likelihood of the fences to functionally modify habitat to an immeasurable, or insignificant, degree;
- Construction of new fences may rarely require some brush removal, but the removal would be highly specific and localized.

3.8 MEDIUM-SCALE INFRASTRUCTURE

3.8.1 ACTIONS & CONSERVATION MEASURES

NEW Utility Lines & Pipelines

*Note: Includes amendments on existing ROWs/easements for construction **beyond** the footprint of the original ROW authorization/easement permit. Routine maintenance and reconstruction within the footprint of the original ROW authorization/easement permit are included in the **EXISTING Overhead Utility Lines** Section.*

If proposal is for a major project, such as major transmission line construction, then it would fall outside the scope of the CCA and not be covered under the USFWS conference opinion. A major project would entail one or more of the following:

- > 5 acres permitted area OR
- > 25 feet-wide utility ROW permitted area OR
- >.5 mile aboveground infrastructure (not including buried utilities, buried pipelines).

A. Tier 1 Habitat:

For a line proposed through Tier 1 only or Tier 1 <u>and</u> Tier 2 habitat, each of the following standards apply in order to be covered under the CCA:

- Avoid Tier 1 to the maximum extent feasible, and demonstrate full consideration of this alternative.

If unable to avoid,

- Co-locate new utility line on existing overhead lines, to the maximum extent feasible; and
- Apply standard minimization measures (*Section 6.1*).

If unable to co-locate on existing overhead lines,

- Bury line (vertical structure avoided); and
- Co-locate buried line within existing comparable development footprints (roads, other pipelines) to the maximum extent feasible;[18] and
- Apply standard minimization measures (*Section 6.1*).

B. Tier 2 Habitat:

For a line proposed <u>only</u> in Tier 2 habitat, each of the following standards applies in order to be covered under the CCA:

- Co-locate new utility line on existing overhead lines, to the maximum extent feasible; and
- Apply standard minimization measures (*Section 6.1*).

If unable to co-locate,

- Bury line (vertical structure avoided) to the maximum extent feasible, and demonstrate full consideration of this alternative; and

[18] Design criteria largely consistent with BLM WO IM 2010 – 071, which advises that proposed transmission lines be routed outside of priority sage-grouse habitat. Enabling the transmission line to be buried in Tier 1 habitat provides some flexibility to achieve the desired conservation outcome: avoiding additional vertical infrastructure in Tier 1 sage-grouse habitat.

- Co-locate buried line within existing comparable development footprints (roads, other pipelines) to the maximum extent feasible; and
- Apply standard minimization measures (*Section 6.1*).

If unable to bury,

- Offsite/compensatory mitigation required at a ratio of 1:1, mitigated area: impacted area; and

  Install the most effective perch deterrents available on all power poles for the proposed segment; and
- Apply standard minimization measures (*Section 6.1*).

EXISTING Overhead Utility Lines

Tier 1 & Tier 2 Habitat

A. *Prior to ROW/easement renewal:*

Routine maintenance and reconstruction that does not require ROW/easement amendments are covered under the terms and conditions of the original ROW/easement authorization. Nonetheless, participating permit holders may adopt the following voluntary measures:

- During the course of routine maintenance within the footprint of the existing ROW/easement, install the most effective perch deterrents available on all power poles for that segment.
  - Agency biologists will identify recommended perch deterrents and cooperate with utilities to ensure such mechanisms meet any applicable code requirements.
- Standard minimization measures, (*Section 4.2*), including:
  - Limit access and construction during the lek season, consistent with spring seasonal closures for general public. Emergency maintenance excepted from this provision.
  - Use integrated weed prevention practices for all construction and maintenance activity *(See Appendix A).*

B. *A renewed or amended ROW/easement permit for construction within the footprint of the original authorization*[19] *will be covered by the CCA if:*

- As a condition of renewal or amendment approval, during the course of routine maintenance and upgrades that include pole/line replacement within the footprint of the existing right-of-way/easement, permit holders will install the most effective perch deterrents available on all power poles for that segment; and
- The permitting agency reserves the right to require additional modifications to all powerline structures placed on rights-of-way/easements, should they be necessary to minimize impacts to Gunnison sage-grouse, consistent with *Section 4.2, Standard Minimization Measures*; and
- Standard minimization measures are applied as terms and conditions of the permit (*Section 4.2*), including:
    - Timing restrictions for access and construction, consistent with spring seasonal closures for general public. Emergency maintenance excepted from this provision; and
    - Integrated weed prevention practices used for all construction and maintenance activity ***(See Section 6.2)***

Communication Sites, MET Towers [20], & Comparable Infrastructure

A. Tier 1 Habitat:

For communication sites, MET towers, and comparable infrastructure, each of the following standards apply in order to be covered under the CCA:

- Co-locate new equipment on existing communication tower, other comparable structure, and/or visually conceal[21] structure in a forested area (*if unable to co-*

[19] See section 4.4 for construction *beyond* the footprint of the original ROW/easement authorization.

[20] Meteorological towers. BLM IM 2010-22 advises that the siting of new temporary MET towers be avoided within 2 miles of active sage-grouse leks, unless they are located out of the direct line of sight of the active lek. The design criteria detailed above should achieve a comparable and higher standard by requiring co-location of MET towers and comparable equipment with existing infrastructure in all occupied habitat.

[21] Visual concealment of vertical infrastructure can minimize the documented behavioral avoidance of such structures by sage-grouse, avoidance likely due to the association between vertical features and predator perches (Braun 1998, Pruett et al 2009).

locate on comparable structure, defer to USFWS for individual consultation); and

- Apply standard minimization measures (*Section 6.1*).

For associated access routes:

- Use impacted areas to the maximum extent feasible: utilize system roads and nonsystem roads; and

- Apply standard minimization measures (*Section 6.1*).

If there is no existing access,

- Demonstrate that the proposed access route is the only reasonable, feasible option, and no sufficient alternative access is available; and

- Apply offsite mitigation standards for new access routes, consistent with *Section 4.3, Motorized Roads*; and

- Apply standard minimization measures (*Section 6.1*).

B. Tier 2 Habitat:

For communication sites, MET towers, and comparable infrastructure, each of the following standards apply in order to be covered under the CCA:

- Co-locate new equipment on existing communication tower or other comparable structure, to the maximum extent feasible;

- Apply standard minimization measures (*Section 6.1*).

If unable to co-locate on comparable structures,

- Co-locate within existing comparable development footprints (proximal to other vertical infrastructure) and/or forested areas**;** and

- Incorporate each of the mitigation measures in the USFWS Interim Guidelines on the Siting, Construction, Operation and Decommissioning of Communication Towers (*See 6.2);* and

- Apply standard minimization measures (*Section 6.1*).

For associated access routes:

- Use impacted areas to the maximum extent feasible: utilize system roads and nonsystem roads; and

- Apply standard minimization measures (*Section 6.1*).

If there is no existing access,

- Demonstrate that the proposed access route is the only reasonable, feasible option, and no sufficient alternative access is available; and

- Apply offsite mitigation standards for new access routes, consistent with *Section 3.1, Motorized Roads*; and

- Apply standard minimization measures (*Section 6.1*).

3.8.2 EFFECTS ANALYSIS: *Medium-Scale Infrastructure*

Action: Rights-of-way and easement authorizations for new transmission lines, communication towers, pipelines and associated access routes. Re-authorizations for maintenance of such rights-of-way, easements, and their access routes. Actions include associated conservation measures.

Direct and Indirect Effects

USFWS analysis indicates that "68 percent of the Gunnison Basin population area is within 4.3 miles of an electrical transmission line and is potentially influenced by avian predators utilizing the additional perches…These results suggest that potential increased predation resulting from transmission lines have the potential to affect a substantial portion of the Gunnison Basin population" (75 FR 187, p. 59819). Additionally, power lines can pose as a collision and electrocution hazard to grouse (Braun 1998, pp.145-146; Connelly *et al.* 2000a, p. 974). NPS researchers recorded 2 adult GUSG mortalities directly related to collisions with large overhead power lines collisions (0.04% of sample) while conducting a 12-year radio-telemetry study of sage-grouse in the western Gunnison Basin.

Powerlines can cause indirect effects by decreasing lek recruitment (Braun *et al.* 2002 p.10). Pellet transect data demonstrates that sage-grouse may display behavioral avoidance to overhead power line structures (Braun 1998, pp.145-146); as a result, additional aboveground utility lines or structures outside of existing corridors may limit functionally available habitat. Although not specified in these references, it is reasonable to say that the effects of communication sites and MET towers have similar effects on sage-grouse.

With respect to underground utility lines, including water pipelines, the installation of these pipelines may temporarily convert the project area to an unsuitable condition by removing vegetation and creating ground disturbance. These activities, if not properly managed, can promote weed infestations and further degrade habitat of native plant communities. Ground disturbance from buried pipelines may produce temporary but similar effects as trails, including functioning as predator corridors.

Critical habitat impacts associated with medium-scale infrastructure include the temporary removal of vegetation and habitat degradation for the construction of utilities, water lines, communication sites, MET towers, and comparable infrastructure, and the creation of access routes if there are no existing roads providing reasonable access. Additionally, ground-disturbing activity increased the potential for invasive plant species and associated proximal changes in sagebrush plant community structure and dynamics (78 FR 2540). For these reasons, project activities are likely to temporarily affect the site-scale PCEs 2 – 5.

The discussed powerlines do not include Western Area Power Authority (WAPA) powerlines or corridors, as the magnitude of these structures are outside of the scope of this analysis and would require an individual biological assessment and separate consultation with FWS.

Conservation Measures & Benefits

- By requiring perch deterrents for aboveground utility line reauthorizations, existing impacts from facilitated predation will be minimized;
- Water lines have typically been developed to divert cattle impacts in sensitive riparian habitats which, by design, allow brood-rearing habitats to remain intact;
- By co-locating communication sites and MET structures to existing sites or siting in forested, non-functional habitat, the direct and indirect effect of this infrastructure is anticipated to be insignificant and discountable to the species;
- For all construction and maintenance activities, integrated weed management will be used to minimize the associated risk of invasive species establishment.
- Existing roads will be utilized for access; if no reasonable access exists, offsite mitigation standards for new access routes, consistent with *Section 4.3, Motorized Roads*, will be applied.

Unique to Tier 1

- Conservation measures - burying and co-locating utility lines along existing developed footprints - ensure no net gain of aboveground utility lines in Tier 1 habitat; and
- Any habitat removal and or degradation associated with buried utilities and water lines should be temporary, as areas of ground disturbance will be rehabilitated, including native seeding.

Unique to Tier 2

- Only when in Tier 2 habitat and no co-location options are available, and in combination with off-site mitigation at a ratio of 1:1, are new aboveground utility lines covered in the CCA; and
- Perch deterrents for new aboveground utility lines will minimize the impacts of facilitated predation.

Due to the CCA conservation measures and criteria for medium-scale infrastructure, particularly the conservation measures for burying or co-locating infrastructure within existing footprints of disturbance, we anticipate a small acreage would be directly and indirectly impacted. Although medium-scale infrastructure may impact the site-scale PCEs due to temporary habitat removal, we anticipate that the function of critical habitat would not be affected at the landscape-scale (PCE 1).

Effect Determination and Rationale

In spite of the conservation measures described in the CCA, the construction of utility lines, communication sites, MET towers, and comparable structures and pipelines constructed may affect, and are ***likely to adversely affect*** Gunnison-sage-grouse because:

- *Direct disturbance in short-term from significant construction activity.*
    - Burying pipelines and installation of co-located infrastructure and aboveground utility lines (Tier 2 habitat only) will result in short-term, direct disturbance over linear routes that may cause individuals to flush, exposing them and/or nests to greater predation.
    - Although pre-existing roads are preferred, some new access roads or cleared routes may be necessary. New road construction in the short-term is a significant and direct disturbance along a linear route that can cause individuals to flush, exposing them and/or nests to greater predation. ***(See effects in Section 3.2.2)***

- *Permanent addition of documented collision hazard.* If we estimate that .08% of the population over the lifetime of the conference opinion may collide with existing aboveground powerline infrastructure, then the addition of a much lesser amount of aboveground powerline infrastructure (in Tier 2 habitat) may result in the additional mortality of <.08% of the population. If off-site mitigation is in-kind, i.e., burial of other utility line, then this collision risk would be offset.

- *Temporary removal of site-scale PCEs in critical habitat*. Burying utility lines and pipelines will create a short-term linear route through grouse habitat that may facilitate predation, if that route is not alongside an existing road. As the site is revegetated, the impact will be minimized.

These activities may affect, and are ***likely to adversely affect*** Gunnison sage-grouse critical habitat because: Gunnison sage-grouse critical habitat PCEs 2 – 5 because of:

- *Temporary removal of site-scale PCEs in critical habitat.* Burying utility lines and pipelines will temporarily remove site-scale PCEs, although these impacts will be mitigated via on-site mitigation.

- *Functional habitat modification in Tier 2 habitat.* The function of habitat immediately adjacent to new aboveground utility lines (in Tier 2 habitat) may be compromised such that these areas exhibit decreased nest success and increased behavioral avoidance. These impacts will be mitigated in the long-term at the landscape-scale via off-site mitigation.

- *Permanent removal of site-scale PCEs in critical habitat.* Although pre-existing roads are preferred, some new access roads or cleared routes may be necessary. New road construction will require removal of any site-scale PCEs for the length/width of the road, although these impacts will be mitigated in the long-term at the landscape-scale via off-site mitigation. ***(See effects in Section 3.2.2)***

3.9 CUMULATIVE EFFECTS

Cumulative effects under ESA are "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the Action Area of the Federal action subject to consultation" (50 CFR 402.02). The effects of future federal actions will be evaluated during future section 7 consultations and are not included in cumulative effects.

The Action Area has a scattered pattern of ownership of private and state lands interspersed within and around BLM, US Forest Service, and National Park Service lands. Management practices occurring on private lands range from residential home site developments to agricultural practices such as livestock grazing and hay production.

The majority of state lands in Gunnison are managed for wildlife, but hay production and livestock grazing occur in several areas.

As outlined in the 2010 status review, the population of Gunnison is projected to continue to grow over the next 50 years and beyond. New development on private lands will likely accommodate all or a portion of this growth, which will likely reduce the overall amount of sage-grouse habitat on non-federal lands over time. This development can furthermore be expected to impact sage-grouse habitat located on adjacent federal lands, reducing the continuity of habitat at the federal/exurban interface.

Although we anticipate some direct loss of sage-grouse habitat on private lands and associated indirect impacts to adjacent federal lands, we cannot predict the habitats associated with the loss, or the specific locations of development. While the 2010 status review cited 1.7% projected annual population growth in Gunnison County as a "middle growth" scenario, the Colorado State Demography Office projects annual growth in the range of 0.7-1.7% through 2040, for an average of 1.2% annual growth (2012). Assuming similar growth between 2040-2050 as the previous ten years, these projections indicate that the Gunnison County population will grow by as much as 7600 by 2050. Following the same assumptions outlined in the status review, this may be associated with an additional 2,213 units in Gunnison sage-grouse habitat (versus the 4,630 units projected in the status review); 30,538 acres of direct and indirect habitat loss (versus 63.824 acres); and a net increase in percentage of habitat affected that ranges between 4.5-7.5% (versus 9-15%). Yet as noted in the status review, projected loss may be overestimated by not taking into account the likelihood of clustered, higher-density developments, some of these within areas already compromised by existing development; or may be underestimated by excluding expected increases in second-home development.

Conservation easements currently protect from further development approximately 34,255 acres of private lands in occupied sage-grouse habitat in Gunnison and Saguache counties (Pelletier, pers.comm). Although this figure constitutes approximately 5% of total habitat within the Gunnison Basin, that 5% is definitively protected from further development, and is on par with the total amount of *projected* indirect and direct habitat loss from future development. It constitutes 20% of the roughly 171,951 acres of habitat on private lands. Future efforts to target new conservation easements within high-priority habitat at risk of future development, using the Habitat Prioritization Tool and habitat models, may enable greater continuity and integrity of habitat for dollar spent on easements.

CPW has also worked in cooperation with USFWS and private landowners over the past several years to complete Candidate Conservation Agreements with Assurances (CCAAs). Although voluntary, they do commit participating landowners to manage their enrolled lands for the benefit of sage-grouse. The process has already enrolled 14,669 acres of sage-grouse habitat within the Gunnison Basin, and 20,799 acres are in process for completion. All told, a total of 35,468 acres will be enrolled within the next 1-2 years (Seward, pers. comm.). Although some of these properties are undoubtedly already held in conservation easements, the CCAA program will be in place on greater than 20% of habitat on private lands.

A cumulative total of 67% of occupied habitat will be included in the CCA. In combination with a further 3% of CPW lands, most of which are managed for wildlife, the 5% in conservation easements, and 5% in CCAAs (although some may be additional to acreage included in the conservation easements), approximately 75-80% of habitat is effectively protected from further residential development and committed to a standard of habitat conservation and management to maintain and/or improve sage-grouse habitat for the long-term. By 2050, if 4.5-7.5% of habitat is directly and indirectly impacted by

future residential development, and in the unlikely scenario that the entirety of those impacts are realized on the above federal, state, and privately conserved lands, then 67.5-75.5% of the habitat will be effectively protected from further residential development and committed to a standard of habitat conservation and management to maintain and/or improve sage-grouse habitat for the long-term.

3.10 INTERRELATED & INTERDEPENDENT ACTIVITIES¶

Interrelated activities are those that are part of the larger measures under consideration for consultation and depend on a larger measure for their justification. Interdependent activities are those that have no significant independent utility apart from the measure that is under consideration for consultation.

After review of these actions and the corresponding conservation measures, we conclude that the same effects determination would apply for interrelated and interdependent (I&I) activities on non-federal lands, when those activities are of similar nature and magnitude. For example, a new utility line may extend across federal and non-federal lands, and the entirety of the line would have short-term and long-term adverse effects on the species and critical habitat. When possible, conservation measures in the CCA will be recommended for interrelated, interdependent activities on private lands. If a given activity on private land is interrelated and interdependent to a covered federal action, and the CCA conservation measures cannot be applied on the non-federal portion of the action, then the activity would no longer be covered under the CCA BA and associated conference opinion and may require separate Section 7 consultation.

One additional interrelated and/or interdependent activity that could arise within the lifetime of the CCA is a right-of-way or easement for development of a larger magnitude on adjacent private lands, i.e., a private residence, subdivision. If the private development would not occur *but for* the right-of-way or easement authorization for access or utilities through federal land, then the development would be considered an interrelated and/or interdependent activity. Although the federal agencies anticipate this to be a rare, if ever, occurrence during the lifetime of the CCA, such an action would be considered outside of the scope of the CCA BA and associated conference opinion.

3.11 SUMMARY OF EFFECTS DETERMINATIONS

Measure	Determination: Species	Determination: Habitat
Motorized Roads & Trails, Nonmotorized Trails, & Closure Implementation	LAA	LAA
Permitted Recreation Events & Outfitters	NLAA	No effect
Urban Interface Recreation Areas	LAA	LAA
Grazing Management	LAA	LAA
Small-Scale Infrastructure	NLAA	NLAA
Fences	LAA	NLAA
Medium-Scale Infrastructure	LAA	LAA

4 ADAPTIVE MANAGEMENT

Signatories to the GUSG CCA agree that implementing conservation measures is most effective when accomplished within an adaptive management framework. Adaptive management involves the scientific method of hypothesizing how conservation measures will affect a population or other conservation target, monitoring results, comparing them to pre-defined expectations, and modifying actions to better achieve stated goals and objectives (Walters and Holling 1990; Lyons et al 2008).

Accurate and credible monitoring is a necessary component of adaptive management to ensure that conservation measures described herein are successfully implemented and objectives met. However, it is not sufficient to simply monitor a population without having pre-defined population targets and thresholds that trigger additional actions.

As noted in the RCP, "if a series of population estimates for a given population continually declines toward a threshold, managers should increase efforts to evaluate the decline and potential conservation actions before the population passes the threshold" (GSRSC 2005, p. 198). The RCP identified a conservative threshold of 30% below the RCP population target of 3000 as such a trigger[22]. Therefore, during the lifetime of the CCA, if the 3-year moving average of the Gunnison Basin population declines toward a population estimate of 2000 a) over two consecutive years or b) over a 5-year period, CCA signatories will revisit the conservation measures and management actions outlined in the CCA.

As with most land management decisions, signatories to the CCA must rely on the best available scientific information as to the efficacy of the included conservation measures, especially when such information is not locally available or readily ascertained through monitoring. If the signatories were to commit to monitoring the efficacy of weed BMPs or perch deterrents, and to correlate such measures to population-level effects, we would quickly consume all available biology staff time with such endeavors.

Nonetheless, the federal land management agencies are charged with managing the habitat, and therefore the overarching objectives of the CCA are to reduce net fragmentation (Tier 1 habitat) and avoid further net fragmentation (Tier 2 habitat). Compliance monitoring to account for these objectives will be conducted and submitted in the annual report, as detailed in the Monitoring Plan, ***Section 7***. As referenced in the CCA, future research or agency policy may identify cumulative levels of disturbance that Gunnison sage-grouse can tolerate. At that time, parties to this CCA would consider modifying Tier 1 and Tier 2 habitat objectives to be consistent with identified disturbance caps, thereby ensuring the GUSG CCA remains a viable and relevant instrument.

Furthermore, as the off-site mitigation plan is developed and implemented, ground-level effectiveness monitoring will be necessary to ensure that if functional habitat is disturbed, functional habitat is created or improved. With respect to trail decommissioning, randomized sampling of the vegetative condition will serve to both a) document compliance with overall habitat objectives in the CCA, and b) enable managers to improve habitat reclamation methods (see ***Section 7.3).***

[22]Future updates to the Gunnison Basin population targets via new population viability analyses will be incorporated to the CCA via a revised trigger threshold, i.e., a continual decline toward 70% of the revised population target would necessitate revisiting the conservation measures and management actions outlined in the CCA.

Additionally, adaptive management to ensure maintenance and improvement of land health (BLM) and compliance with Forest Plan standards (USFS) is an integral part of federal land management and is well-integrated into livestock grazing management programs. For the GUSG CCA, prescribed short-term monitoring results will be used in conjunction with additional data to ensure maintenance and improvement of habitat conditions for Gunnison sage-grouse.

5 OFFSITE MITIGATION FRAMEWORK

The mitigation hierarchy typically includes three steps prior to offsite mitigation: avoid, minimize, restore. Although the CCA applies such steps for new infrastructure in sage-grouse habitat, the CCA also takes a precautionary and conservation-oriented approach to include off-site mitigation as a design criterion for specific infrastructure projects. Whereas biodiversity offsets are frequently used in situations where development is sought despite detrimental environmental impacts (McKenney 2005, Gibbons and Lindenmayer 2007), such as during the development of interstate transmission lines and oilfields, it is less commonly employed for small-scale projects such as those covered in the CCA. Generally, on-site mitigation and minimization measures are applied during the environmental review and permitting processes for small-scale projects such that off-site mitigation is not required. Yet such a project-by-project approach does not account for the cumulative impacts of even small-scale development.

Triggers for offsite mitigation in the GUSG CCA include[23]:

1. *Project impacts cannot be mitigated to an acceptable level onsite.*

   In the GUSG CCA, design criteria have been developed such that the maximum feasible level of on-site mitigation is applied. Yet with respect to the concrete objectives—avoid net Tier 2 habitat loss and achieve a net gain in Tier 1 habitat—permitting certain permanent land-use authorizations in sage-grouse habitat cannot be fully mitigated on-site. These actions, as identified above, include:

   - New road construction and reopenings
   - New motorized trail construction and reopenings

[23] Offsite mitigation in the GUSG CCA is consistent with BLM WO IM 2008-204.

- New nonmotorized trail construction and reopenings
- Aboveground utility lines

2. *It is expected that the proposed land use authorization as submitted would not be in compliance with important resource objectives.*

   To accomplish the CCA's habitat objectives, yet to allow continued, unavoidable, and viable land-use authorizations in the affected area that are consistent with the mission of the authorizing agency, offsite mitigation is included as a design criterion in order for specified new, ground-disturbing infrastructure to be covered under the CCA.

5.1.1 GEOGRAPHIC PARAMETERS

At a maximum, the service area for offsite mitigation implementation is limited to the defined affected area of the CCA: federal lands in occupied sage-grouse habitat in the Gunnison Basin. At a minimum, distance between the action area and the offset area is a project-specific discretionary determination, and should be made during project planning and authorization processes. By definition, offsite mitigation consists of compensating for resource impacts by replacing or providing substitute resources or habitat at a different location than the project area. For the purposes of the CCA, the offset action should not be located within the action's direct impact area, i.e., permitted area. Further, the functional value of the offset may be overshadowed if located within the action's functional impact area. Ultimately, the offset should be located to maximize the net benefit to GUSG habitat in the Gunnison Basin.

5.1.2 ACCOUNTING

While replacement ratios are specified in the CCA to account for the relative habitat value of Tier 1 versus Tier 2 habitat, there are admittedly more complex accounting systems to determine the size of offsets based upon on-the-ground assessments of habitat quality and function. Habitat assessments of impact and offset sites can provide thorough information to compare their relative values, but such efforts are time-consuming and costly, and are generally inefficient for small-scale projects. Another recent method involves identifying a biologically-based offset currency, based upon anticipated population declines from the project impact (Doherty e al 2010), but existing sage-grouse science limits applicability to development with established density-dependent effects on lek counts and bird distribution, such as oilfield development; paved, high-frequency roads; residential development (Aldridge et al 2011). No such impacts are covered in the CCA.

Instead, the CCA relies on the landscape-level delineation of relative habitat value in the Habitat Prioritization Tool to arrive at more simple, acre-for-acre replacement ratios to meet the stated habitat objectives: >1:1 in Tier 1 habitat; 1:1 in Tier 2 habitat.

If the impact occurs in Tier 1, yet the replacement or offset action is identified in Tier 2, then the standard 2:1 ratio would apply.

Yet while many offset policies identify replacement ratios and calculate acreage accordingly, i.e., a 2:1 replacement ratio for a 10-acre project would simply require 20 offset acres, critics of such an approach argue that time lags and success probability hinder their reliability in achieving no net loss objectives (Kiesecker et al 2010). Although preservation actions deliver value from the outset, restoration actions may take years to reach expected potential and provide full conservation benefit, thus rendering a time lag component that is not accounted for in simple replacement ratios. With respect to success probability, or the likelihood of a particular type of restoration to reach full conservation potential, a simple replacement ratio assumes that all restoration approaches are guaranteed equal results, irrespective of ecological site characteristics and methods. Although most restoration actions completed as offsite mitigation in the CCA will likely be road and trail decommissioning, other restoration actions may surface as viable currency. Methods may vary, as well as the potential of a site to be successfully reclaimed. A high-medium-low probability of success can be estimated case-by-case from experience and professional judgment.

By accounting for both factors (See Table 5.1), offsite mitigation accounting in the CCA will include a back-calculation of the total offset acreage required in order to meet the identified habitat objectives and corresponding replacement ratios.

Time lags

- The time to maturity of a restoration action can be estimated to apply a discount rate.

- Over time, the accounting sheet for offset actions will be adjusted to reflect actual time lag, pending conservation maturity.

    - *Example:* .5 mile trail is reclaimed, estimated to take 5 years to reach maturity, which starts out at .49 miles of credit. Yet monitoring data may indicate restored habitat function within 3 years; in this case, the credits would be adjusted to ~.5 miles. "Credits" may increase or decrease, depending upon the actual time lag to conservation maturity.

- In the event that an offset action constitutes fee title acquisition or assurances via a conservation easement on private land in grouse habitat, time lag is estimated at 0 years (Kiesecker et al 2010).

Success probability

- The probability of the conservation action's success can be roughly estimated, based upon past restoration actions in the same vegetation communities/ecological types.

- Over time, the accounting sheet for offset actions will be adjusted to reflect actual performance, pending conservation maturity.

- *Example:* .5 mile trail is reclaimed, estimated to be 90% successful, based upon past success with the chosen methods and in the particular ecological types, which equals .45 miles of credit. Yet after the expected number of years to reach maturity, only 25% of the segment appears in a trend toward meeting the sage-grouse habitat guidelines, the credits would be adjusted to .125 miles. At that point, the implementing agency may decide to reinvest effort on this site to make up the difference, or it may make up the missing credits elsewhere on the landscape. "Credits" may increase or decrease, depending upon the actual performance of the offset action.

- In the event that an offset action constitutes fee title acquisition or assurances via a conservation easement on private land in grouse habitat, success likelihood is estimated at 100% (Kiesecker et al 2010).

Table 6. Calculating total conservation benefit from different offset actions.

Impact Size multiplied by replacement ratio = Offset Goal		
1/2 acre of Tier 1 habitat impacted; 2:1 replacement ratio requires minimum 1 acre restored		
Offset portfolio	***Site A, Tier 1***	***Site B, Tier 1***
Acres at offset site suitable for conservation	1/2 acre restoration	1/3 acre restoration
Proposed conservation action	Decommissioning a closed road	Redesigning a water source t
		relocate livestock out of r
Probability of success of conservation actions	90%	100%
Time lag to conservation maturity	5 yrs	0 yrs
Effective discount rate	0.5%	0%
Offset credits	.44 acres	.33 acres
Minimum offset credits required	1 acre	1 acre
Implicit ratio,	*(may be >2:1)*	
Total offset acres: impact acres	2:5	1:3
Minimum replacement ratio,		
Offset credit acres: impact acres	2:1	2:1
Additional acres needed to meet ratio?	.56 acres	.67 acres
Cost/acre for offset	$500/acre	n/a
Total cost	$250	$1000 fixed cost
Cost/offset acre credit delivered	$568/acre	$3030/acre

(Table modified from Kiesecker et al 2010, p. 178)

5.1.3 CURRENCY: OFFSET ACTIONS

Roads and trails

For public and recreational road and trail construction and reopenings, offsets actions will include:

- Decommissioning old routes to Level 3 or higher and monitoring to ensure public compliance with the route closure. While Level 3 or higher is generally preferred, there may be circumstances in which ground disturbance of a portion of a route

should be minimized due to a) use of site openness for lekking grouse, and/or b) risk of spread of invasives. Such exceptions will be documented on a case-by-case basis in the annual reports submitted by the agency biologists.

A. Level of Decommissioning done by hand, passenger vehicle, or ATV/UTV[24]

Level 1 – Allow the closed road to naturally revegetate.

Level 2 – Install sign with a hand crew

Level 3 –These activities will be done by a hand crew.

a) Install/Remove worm fence/barricade, buck and pole fence/barricade, rock barriers, or gate.

b) Place slash on the road surface, drop trees, dead plant vegetation, plant live vegetation, transplant live vegetation from nearby areas, and install erosion products such as coir logs (i.e. wattles) , mulch, and erosion control blankets.

c) Install and remove cross ditches/drains; check dams; and water bars.

d) Hand crews rototill or scarify the ground.

B. Levels of Decommissioning done with heavy equipment (excavator, dozer, track hoe).

Level 4 – Physical Barricades. Install gates, rock blockades or trees with mechanized equipment, such as a tracked excavator or dozer.

Level 5 – With mechanized equipment, rip the road; sub-soil the road; or construct water bars or ditches within and outside of the road prism.

Level 6 – With mechanized equipment, re-contour the road prism by pulling back all cut and fill slopes in addition to inboard ditches.

Level 7 –With mechanized equipment, remove all drainage structures including cross drains (culverts, rolling dips, and water bars); stream crossings structures (culverts); and unstable fills.

[24] BLM terms and framework.

For private ROW access that necessitates road construction or reopenings, offset actions will include:

- An in-lieu fee that will be calculated and charged to the project applicant, based upon the average cost of decommissioning and reclaiming a comparable area of road to Level 3 or higher. Timeline for completion of the on-the-ground offset action by the authorizing agency will be identified in any NEPA planning documents and the annual reports to USFWS; or

- Additional offset actions may be identified by the project applicant. The suitability of the action to meet net habitat objectives will be determined on a case-by-case basis by the implementing agency biologists, in cooperation with USFWS.

Utility Lines

Offset actions may include:

- Additional buried utility lines on public lands;[25] or

- An in-lieu fee will be calculated and charged to the project applicant, based upon the average cost of reclaiming an area of habitat comparable to the permitted area of impact. Timeline for completion of the on-the-ground offset action by the authorizing agency will be identified in any NEPA planning documents and the annual reports to USFWS; or

- Additional offset actions may be identified by the project applicant. The suitability of the action to meet net habitat objectives will be determined on a case-by-case basis by the implementing agency biologists, in cooperation with USFWS.

5.1.4 BANKING

Subsequent to the date of the signed CCA and conference opinion, utility companies may "bank" miles of utility lines they bury on public lands to serve as future credit toward mitigation requirements, so long as the action is not otherwise required.

[25] Action is additional vs. redundant, i.e., the action is not otherwise required.

Subsequent to the date of the signed CCA and conference opinion, agencies and their recreation partners may "bank" acres of routes they reclaim in sage-grouse habitat to serve as future credit toward mitigation requirements.

5.1.5 TIMELINE

Required timelines for completing offset actions will be identified in the NEPA planning documents and/or reported to USFWS in the annual reports. If a "banked" credit is used to meet the offset requirements of a particular project, that will likewise be identified in the annual reports to USFWS.

- In the case of a) realignments and b) recreation trails that will consolidate existing dispersed recreation, new open routes may be necessary in order to effectively close the old segments or routes.

- Otherwise, offset actions should be completed concurrent with or prior to new construction activities.

6 CONSERVATION STANDARDS & BEST MANAGEMENT PRACTICES

6.1 STANDARD/GENERAL MINIMIZATION MEASURES

6.1.1 Timing Restrictions & Seasonal Closures

- Seasonal restrictions on construction, maintenance, and access in seasonal grouse habitat (excepting emergency maintenance), including public access.

    - Currently implemented: Lekking period, currently observed from approximately March 15 – May 15[26]

[26] Spring closures to minimize disturbance to lekking grouse may be adjusted by the implementing agencies to accommodate changing environmental conditions, i.e., trend toward earlier lekking periods, etc.

        - Closed to motorized travel, with the following exceptions. Excepted travel is encouraged after 9am where possible.
            - Permittees
            - Access to private property
            - Hartman Rocks Recreation Area, north of powerline
            - Emergency maintenance
        - Define approximate geographic boundary.
    - If research indicates additional restrictions are necessary to sustain the sage-grouse population, seasonal restrictions in identified seasonal grouse habitat may be applied to minimize disturbance during the following critical biological periods: nesting, brood-rearing, or winter periods of use by grouse.

6.1.2 Siting & Construction

- Co-locate new construction or infrastructure within existing development footprints to the maximum extent feasible, unless implementing agency biologists have identified such existing infrastructure as detrimental to grouse; and
- Siting options analyzed with habitat prioritization tool (HPT) to determine least-fragmenting general location; and
    - For infrastructure that requires temporary or permanent access routes (i.e., utility lines, communication sites), siting options should be considered in conjunction with proposed access routes to determine least-fragmenting general location; and
- Avoid construction and ground-disturbing activities within .6 miles of a lek, with the following exceptions:
    - Urban interface recreation areas;
    - Topography blocks any visual and/or noise disturbance to lek;

- Highways or major county roads occur between the lek and the proposed action area;
- Route closures and decommissioning;
- Sage-grouse habitat restoration work.

- Field-verify all HPT designations to ground-truth final siting decisions[27]; and

- Site using topography to conceal or minimize noise and visual[28] impacts to sage-grouse; and

- Site and construct new infrastructure to minimize hydrological modification and riparian disturbance;[29] and

- Integrated weed prevention practices used for all construction and maintenance activity (*See 6.1*); and

- Close coordination between right-of-way/easement-permitting agency and the respective county for new and amended ROW grants, easements and permits in grouse habitat on federal lands at the earliest possible stage of development.

6.1.3 Follow-up/Reclamation Standards

- Habitat reclamation employed for any ground disturbance, in order to minimize establishment of invasive weeds and to accelerate restoration of habitat function. (*See 6.1*).

Adaptive element:

[27] Standards for Tier 1 Habitat and Tier 2 Habitat will be applied based upon the most current version of the Habitat Prioritization Tool base maps. Nonetheless, within contiguous blocks of Tier 1 or Tier 2 Habitat, habitat quality is likely to vary. A site visit is critical to locate new ground disturbance in the location with the least impact to grouse habitat.

[28] Visual concealment of vertical infrastructure can minimize the documented behavioral avoidance of such structures by sage-grouse and other grouse species, avoidance likely due to the association between vertical features and predator perches (Braun 1998, Pruett et al 2009).

[29] The BLM will site and construct new infrastructure such that PFC condition is maintained or improved.

- Although these measures are intended to be thorough and sufficient to minimize impacts to sage-grouse and sage-grouse habitat from new human infrastructure, additional or more stringent minimization measures may be developed and recommended by the Strategic Committee, RCP Steering Committee, agency policy, and/or full agreement by the implementing agencies for inclusion as Standard Minimization Measures. At a minimum, meetings between the implementing agencies and the USFWS will be used to update the CCA.

    - New or updated science will be incorporated into management direction via these committees, the policy of the implementing agency, and/or by full agreement by the implementing agencies.

- In order to accommodate this adaptive element, the permitting agency will reserve the right to require additional modifications to all permitted structures, should they be necessary to minimize impacts to Gunnison sage-grouse.

    - Such modifications may be developed and recommended by the Strategic Committee, RCP Steering Committee, agency policy, and/or full agreement by the implementing agencies.

    - At such time that modifications are required, the permit holder may elect to develop a phased implementation schedule in cooperation with the permitting agency.

6.2 INTEGRATED WEED MANAGEMENT: PREVENTING THE SPREAD OF INVASIVE PLANTS

6.2.1 Background

Weeds are identified as a "moderate+" threat to GUSG by the USFWS, with the likelihood of "indefinite increases due to increased human presence and climate change." And much research indicates that ground disturbance caused by construction and maintenance activities, as well as unclean equipment, contributes heavily to the spread of invasives.

Recognizing that many weed prevention and management efforts are underway in the region, and many BMPs are already incorporated into standard operating procedures, nonetheless, the participants to early discussion – listed above – identified room for improvement across the agencies and counties.

Participants recognize that integrated weed prevention and management measures not only contribute to grouse habitat conservation, but contribute to better resource management in general.

6.2.2 BEST MANAGEMENT PRACTICES: ROAD MAINTENANCE & GROUND DISTURBANCE OPERATIONS

In order for a signatory to receive coverage under the CCA and conference opinion, the signatory will apply these best management practices to the extent feasible for work within Gunnison sage-grouse habitat on and through federal lands, including signatories' contractors and right-of-way, easement, and permit holders.

Including but not limited to crown or slope reconstruction; clearing ditches, culverts and catchments; replacement of road surface, roadside mowing operations, and dust abatement.

A. SCHEDULE & TIMING

1. Plan work from non-infested areas to infested areas, as practicable. Plan work with Basin Weed Coordinator or Agency Weed Specialist, using existing weed inventories along planned route.
2. If heavily infested areas are known along planned routes for grading or mowing, work with Basin Weed Coordinator/Agency Weed Specialist to identify sections where it may be appropriate and practical to lift grader's blade or mower deck.
3. Minimize operations of equipment during conditions when mud can accumulate on equipment. Generally, these types of conditions exist when damage to the road resource can occur.
4. When scheduling allows, schedule activity when seeds or propagules are least likely to be viable and to be spread or when grading/blading/mowing could reduce the vigor of the weed infestation.
    - Contact Basin Weed Coordinator or Agency Weed Specialist and refer to Gunnison Basin Weed Inventory GIS database (to be developed).
    - Generally grade roads early in the spring before grasses develop seed heads or late in the season after grasses have set seed and become dormant.

B. MOBILIZING EQUIPMENT: EQUIPMENT CLEANING

1. Clean all heavy equipment and mobilizing equipment[30] before entering Gunnison County and West Saguache County.
2. Power-washing is the most effective method of cleaning.
3. Equipment shall be considered free of soil, seeds, vegetation, and other such debris when a visual inspection by operator or staff does not disclose such material on the undercarriage, cross members, frame, skid plates, belly pans, wheels, treads, tracks, suspension, bumpers, wheel wells, radiator grills, and the ledges on the inside of rear and front bumpers. *Disassembly of equipment components or specialized inspection tools is not required.*

C. BETWEEN-SITE OPERATIONS: EQUIPMENT CLEANING

1. Clean all heavy equipment <u>before entering each project</u> area if:
    - Equipment is covered with mud, plants, or other foreign materials and/or
    - Previous operation site was infested with invasive plant species.
2. Power-washing is the most effective method of cleaning, when available. Mechanical removal via "brooming" may be appropriate when in the field.
    - *Ideally, equipment should be washed between each route within Gunnison sage-grouse habitat and/or in between infested areas and non-infested areas.*
    - *Yet the infrastructure – portable power-washing stations—is not yet available in the region.*
    - *Cleaning equipment arriving from outside of the Basin is a good step but not sufficient.*
    - *A practical compromise is that equipment should be cleaned via following methods:*
        - *Commercially washed whenever movement between sites takes operators through towns with commercial facilities;*
        - *Hose-washing in staging area/area with drain may suffice;*
        - *In the field: mechanical removal may be appropriate in the field.*

3. Equipment shall be considered free of soil, seeds, vegetation, and other such debris when a visual inspection by operator or staff does not disclose such

[30] earth-moving equipment; does not include pickup trucks and personal vehicles.

material on the undercarriage, cross members, frame, skid plates, belly pans, wheels, treads, tracks, suspension, bumpers, wheel wells, radiator grills, and the ledges on the inside of rear and front bumpers. *Disassembly of equipment components or specialized inspection tools is not required.*

D. ON-SITE OPERATIONS & OPERATOR EDUCATION

1. Locate and use weed-free project staging areas.
2. Avoid acquiring water for road dust abatement where access to the water is through weed-infested sites.
3. Only use gravel, chip seal, soil, sand or other types of imported road/fill materials from sites that have no weed infestations.
    - For agency/County work, these sites should be identified or inspected by the Gunnison Basin Weed Coordinator or Agency Weed Specialist prior to mobilization.
    - For contracted work, a list of agency or County-recommended sources will be provided and recommended to contractor.
    - In the future, should a state or local weed-free certification program for road/fill materials be initiated, participating entities in the CCA will adopt the certification standards and require use of certified weed-free road/fill materials for their own and contracted work.
4. Only grade the road or mow the shoulder when necessary for resource protection, safety, or function.
5. As practicable, keep the grader's blade 1 to 2 inches above the road surface when the primary goal is to remove rocks that have fallen onto the road.
6. Annually, train operations and maintenance staff in the identification of invasive plant species and relevant weed BMPs.

E. RESEEDING & RECLAMATION

1. During the same growing season that the ground disturbance takes place/within 30 days following completion of construction, revegetated the newly disturbed sites with approved seed mixes.
    - Identify party responsible for revegetation work if work is contracted.
    - If ground disturbance occurs after late August/average date of first frost, generally delay reseeding until October 1/average date of consistent frost to ensure seedlings remain dormant and viable until following growing season (NRCS guidance, Scott pers comm). *Date may vary depending upon elevation.*

- Consult Agency Weed Specialist, Botanist, or Ecologist for approved seed mixes. The agencies and/or the Weed Commission will work together to provide suitable seed mixes.
- For surfaces that are annually graded and cleaned, including the road prism[31] and water bars, revegetation would not be appropriate.
- Culvert installation and lead-out ditch construction should be revegetated.
- Seeding shall be repeated if a satisfactory stand is not obtained as determined by the agency representative upon evaluation after the second growing season.

2. Use only weed-free (certified when available) erosion control devices, such as coir logs, erosion control blankets, straw, topsoil, and soil amendments. Wattles, jute mats, and rice straw are examples of weed- free products.

3. Following ground-disturbing activities, treat infested areas with herbicides, hand pulling, or biological controls as deemed necessary by Basin Weed Coordinator or Agency Weed Specialist.
   - Unless otherwise agreed, surfaces that are annually graded and cleaned, including the road prism and water bars, do not require treatments.
   - Culvert installation and lead-out ditch construction areas should be treated.

F. INVENTORY & MONITOR

1. Agencies and Counties should inventory areas for invasive plants prior to their own/contracted road maintenance activities and ground-disturbing construction and flag these areas for avoidance or post-project treatment *(see Treatments section, above*). Inventories should include the following information:
   - Road number and mile markers
   - UTM's
   - Infestation type, i.e. existing infestations
   - Infestation size
   - Cover class
   - Type(s) of species observed
2. Update Gunnison Basin Weed Inventory GIS database at minimum once a year.

[31] Road prism is area from the top of the cut to the bottom of the fill.

- Gunnison Basin Weed Coordinator will annually coordinate with agencies to collect, compile, and make available most updated weed inventory information.

3. Monitor sites between two and three years following all treatments, as practicable. Prioritize monitoring in priority grouse habitat.
   - Unless the Weed Commission can absorb the work load, the agency will be responsible for monitoring.

6.2.3 SPECIAL TERMS AND CONDITIONS FOR CONTRACTORS, RIGHTS-OF-WAY & EASEMENT HOLDERS

In order for a federal signatory to receive coverage under the CCA and conference opinion, federal signatories will incorporate these terms and conditions into new and renewed individual right-of-way authorizations, easements and permits on federal lands within GUSG habitat.

In order for non-federal and federal signatories to receive coverage under the CCA and conference opinion, signatories will apply these terms and conditions to both internal and contracted work to maintain and construct infrastructure within Gunnison sage-grouse habitat on federal lands.

Unless otherwise agreed, to prevent the introduction of the seeds of noxious and invasive weeds onto lands within occupied Gunnison sage-grouse habitat on federal lands:

A. CLEANING

Contractor, utility, or individual operator shall ensure all heavy equipment moved onto lands is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds.

1. Equipment shall be considered free of soil, seeds, vegetation, and other such debris when a visual inspection by operator or staff does not disclose any such material on the undercarriage, cross members, frame, skid plates, belly pans, wheels, treads, tracks, suspension, bumpers, wheel wells, radiator grills, and the ledges on the inside of rear and front bumpers.

2. For equipment arriving from outside Gunnison County and West Saguache County, operator shall clean all heavy equipment and mobilizing equipment[32] before entering Gunnison County and West Saguache County.
3. Although power-washing is the most effective method, prior to moving between sites *in the field*, operator shall employ **whatever cleaning methods necessary** to ensure compliance with the terms of this provision.
4. Movement between field sites that *requires travel through or return to Gunnison/urban center* shall be accompanied by power-washing at a commercial washing station, **if one is available**.
5. Disassembly of equipment components or specialized inspection tools is not required.

B. NOTIFICATION

Contractor, utility, or individual operator shall notify agency representative prior to moving each piece of heavy equipment onto such agency-administered lands, unless otherwise agreed.

1. If the agency representative requests an inspection, arrangements will be made to inspect equipment prior to it being moved onto agency lands.
2. Use of contractors by individual private ROW/easement holder would require agency notification, with the following exceptions:
    - Private land access ROWs/easement holders operating own equipment are excepted from this measure, unless otherwise agreed.
    - Does not apply to snow removal equipment.

C. SOURCING/STAGING

When the agency/County specifically provides the necessary information, contractor/utility/individual operator shall:

1. Use identified/mapped weed-free project staging areas.
2. Use identified/mapped access routes and water sources for road dust abatement.

[32] earth-moving equipment; does not include pickup trucks and personal vehicles.

3. Use only gravel, chip seal, soil, or other types of imported road materials from agency-approved or inspected sources.
4. Use identified/mapped turn-around locations.

6.2.4 APPLICABLE ONLY TO RIGHT-OF-WAY/EASEMENT HOLDERS

1. The holder shall be responsible for weed control within the limits of the right-of-way. The holder shall be responsible for consultation with the appropriate agency representative for acceptable weed control methods.

2. The holder shall revegetate all disturbed areas using a seed mixture specified by the agency representative within 30 days following completion of any construction.

- If ground disturbance occurs after late August/average date of first frost, generally delay reseeding until October 1/average date of consistent frost to ensure seedlings remain dormant and viable until following growing season (NRCS guidance, Scott pers comm). Reseeding shall be completed prior to the following growing season.
- Consult Agency Weed Specialist, Botanist, or Ecologist for approved seed mixes.
- Seed shall be **certified** weed-free seed; exceptions to this requirement must be approved in writing by the agency representative.
- The seed mixture container shall be tagged in accordance with State law(s) and the tag(s) submitted for inspection by the agency representative at least 14 days before the date of proposed seeding.
- The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)/acre.
- For surfaces that are annually graded and cleaned, including the road prism[33] and water bars, revegetation would not be appropriate.
- Culvert installation and lead-out ditch construction areas shall be revegetated.
- Seeding shall be repeated if a satisfactory stand is not obtained, as determined by the agency representative upon evaluation after the second growing season.

[33] Road prism is area from the top of the cut to the bottom of the fill.

6.3 COMMUNICATION TOWERS STANDARDS

From *Service Interim Guidelines for Recommendations On Communications Tower Siting, Construction, Operation, and Decommissioning,* US Fish And Wildlife Service Migratory Bird Program, 2000.

1. Any company/applicant/licensee proposing to construct a new communications tower should be strongly encouraged to co-locate the communications equipment on an existing communication tower or other structure (*e.g.,* billboard, water tower, or building mount). Depending on tower load factors, from 6 to 10 providers may collocate on an existing tower.

2. If collocation is not feasible and a new tower or towers are to be constructed, communications service providers should be strongly encouraged to construct towers no more than 199 feet above ground level (AGL), using construction techniques which do not require guy wires (*e.g.,* use a lattice structure, monopole, etc.). Such towers should be unlighted if Federal Aviation Administration regulations permit.

3. If constructing multiple towers, providers should consider the cumulative impacts of all of those towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower.

4. If at all possible, new towers should be sited within existing "antenna farms" (clusters of towers). Towers should not be sited in or near wetlands, other known bird concentration areas (*e.g.,* state or Federal refuges, staging areas, rookeries), in known migratory or daily movement flyways, or in habitat of threatened or endangered species[34]. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.

5. N/A If taller (>199 feet AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white (preferable) or red strobe lights should be used at night, and

[34] With respect to the recommendation that towers not be sited in habitat of threatened or endangered species, the CCA and programmatic conference opinion would cover siting within Gunnison sage-grouse habitat, although such siting would be minimized via a minimum standard of co-locating the new towers with comparable development and/or locating it in a forested area.

these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. The use of solid red or pulsating red warning lights at night should be avoided. Current research indicates that solid or pulsating (beacon) red lights attract night-migrating birds at a much higher rate than white strobe lights. Red strobe lights have not yet been studied.

6. Tower designs using guy wires for support which are proposed to be located in known raptor or waterbird concentration areas or daily movement routes, or in major diurnal migratory bird movement routes or stopover sites, should have daytime visual markers on the wires to prevent collisions by these diurnally moving species. (For guidance on markers, see *Avian Power Line Interaction Committee (APLIC). 1994. Mitigating Bird Collisions with Power Lines: The State of the Art in 1994. Edison Electric Institute, Washington, D.C., 78 pp.*, and *Avian Power Line Interaction Committee (APLIC). 1996. Suggested Practices for Raptor Protection on Power Lines. Edison Electric Institute/Raptor Research Foundation, Washington, D.C., 128 pp.* Copies can be obtained via the Internet at http://www.eei.org/resources/pubcat/enviro/, or by calling 1-800/334-5453).

7. Towers and appendant facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint". However, a larger tower footprint is preferable to the use of guy wires in construction. Road access and fencing should be minimized to reduce or prevent habitat fragmentation and disturbance, and to reduce above ground obstacles to birds in flight.

8. If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction area, relocation to an alternate site should be recommended. If this is not an option, seasonal restrictions on construction may be advisable in order to avoid disturbance during periods of high bird activity.

9. In order to reduce the number of towers needed in the future, providers should be encouraged to design new towers structurally and electrically to accommodate the applicant/licensee's antennas and comparable antennas for at least two additional users (minimum of three users for each tower structure), unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.

10. Security lighting for on-ground facilities and equipment should be down-shielded to keep light within the boundaries of the site.

11. If a tower is constructed or proposed for construction, Service personnel or researchers from the Communication Tower Working Group [or respective federal land management Authorized Officer] should be allowed access to the site

to evaluate bird use, conduct dead-bird searches, to place net catchments below the towers but above the ground, and to place radar, Global Positioning System, infrared, thermal imagery, and acoustical monitoring equipment as necessary to assess and verify bird movements and to gain information on the impacts of various tower sizes, configurations, and lighting systems.

12. Towers no longer in use or determined to be obsolete should be removed within 12 months of cessation of use.

6.4 GRAZING MANAGEMENT GUIDELINES FOR GUSG

From pages 212 – 213 in the Rangewide Conservation Plan; modified December 2011 by Gunnison area participants in the CCA Grazing Team.

The grazing management guidelines below represent a partial list of grazing management practices that may be compatible with achieving GUSG habitat objectives. Site-specific grazing prescriptions should specify timing, intensity, duration, and frequency of grazing that together provide a recovery period for plant health and maintenance and fit the specific circumstances (both biotic and abiotic factors) unique to that area, including other resource or operational considerations. This site specificity also maximizes potential flexibility or opportunities for each situation including incorporating private, state, and/or federal lands to reach habitat objectives.

6.4.1 GUIDING PRINCIPLE & OBJECTIVES

Applicable to all livestock grazing in occupied sage-grouse habitat:

1. To maintain and improve grouse sage-grouse seasonal habitat:
   - **a.** Control the distribution of livestock, duration of use, and the time of year that livestock graze a particular location by using grazing systems such as rest-rotation, deferred rotation, or low intensity/longer duration.
   - **b.** Allow for growth and/or re-growth in each pasture during the spring growing season to provide quality vegetation and vegetation height requirements during periods of sage-grouse seasonal use (refer to "GUSG Structural Habitat Guidelines", Appendix H).
     - Specifically, retain adequate cover for nesting habitat during current season *and* residual cover for nesting habitat the subsequent year.

2. Furthermore, in order to improve riparian, swales, and wet meadow habitat for grouse/other species:
   - **a.** Encourage continued use of irrigation water rights for existing hay meadows, particularly those that maintain riparian areas on allotments in sage-grouse habitat. *CCA team suggestion*

b. New spring developments and spring reconstructions should be designed to minimize changes to the natural flow of the water. *CO GrSG Conservation Plan – Grazing Management Options, p E-3*

- When possible, develop alternative livestock water sources outside of naturally occurring riparian areas (dig wells, install pipelines, etc.). *CCA team suggestion; RCP Grazing Management Guidelines for GUSG, #9, p.213*
- Where possible (when sufficient water is present to support riparian habitat and supply livestock water), redesign existing water developments that are in naturally occurring riparian areas to protect riparian habitat and pipe a portion of the water to troughs that are well away from naturally occurring riparian habitat. *CCA team suggestion; RCP Grazing Management Guidelines for GUSG, #9, p.213*

c. Place salt, minerals, and supplements at least 1/4 mile away from riparian areas, to the extent feasible within existing pasture boundaries.

d. Move 95% of all livestock from one pasture to the next within 3 days of scheduled move, with 100% moved within one week from scheduled move.

6.4.2 BEST MANAGEMENT PRACTICES

If monitoring data indicate that an allotment is not meeting RCP habitat guidelines, then apply the following strategies, as appropriate:

1. Where possible, do not graze the same pasture at the same time of year for consecutive years. If not possible, develop smaller grazing units within large pastures using salting, supplements, water, herding, or fencing to facilitate improved grazing practices.

2. Consider rotating the type of livestock (age, species), if possible.

3. If needed, to avoid overuse of riparian areas, water sources, and other known livestock concentration areas, use management actions such as the placement of salt/supplements, herding, and/or fencing to achieve improved livestock grazing distribution.

4. If needed, manage grazing in riparian areas to maintain or move towards the desired riparian vegetation condition.

5. If needed, modify the livestock use in pastures or allotments when abnormal environmental events occur (e.g., drought, heavy snow fall, flooding) and stress vegetation.

6. If the need arises and as determined by, and with prior approval from the managing agency, periodically use livestock grazing as a vegetation treatment to improve the openness of lek sites. *Note:* temporary fencing, herding, or increased stocking rate may be used, but grazing needs to be limited to specific lek site, so as to not overgraze surrounding area. Consistent with #6, strategic grazing of lek sites should occur outside of the grouse breeding season.

7. Avoid placing salt, minerals or supplements within ½ mile of leks.

8. Avoid livestock concentrations in lek areas during the breeding season, approximately March 15 – May 15. Depending on seasonal conditions, this date may fluctuate.

9. For areas failing to meet RCP habitat guidelines, develop a range vegetation improvement plan in consultation with the affected permittee, which could include but is not limited to:

   If monitoring data indicate forb density and height do not meet the RCP habitat guidelines or is declining:
   - **a.** Periodically defer spring grazing.
   - **b.** Plant native forb seed in rangelands that have enough moisture and the soil characteristics to establish and support forbs.

   If sagebrush stands don't meet the RCP habitat guidelines:
   - **a.** Use grazing treatments that will rejuvenate new sagebrush growth, improve sagebrush quality and age diversity, and improve the understory.

   If an allotment or area is not meeting sage-grouse habitat guidelines due in part/all to weeds:

   - **a.** Strategically graze to control noxious and invasive weeds.

10. Restrict grazing in vegetation treatment areas for 2 full growing seasons after treatment, unless grazing is needed for seedbed preparation or desired understory and overstory are established.

7 MONITORING PLAN

"The vegetation structure guidelines we present… should be interpreted as minimum standards, and managers should strive to meet the full potential of any given site. These habitat guidelines should be considered adaptive, and interim in nature. The guidelines were developed from actual grouse use sites, but should be considered as guidance until

further and more specific and quantified data are available from grouse research, or until the development of a rigorous mapping protocol. These guidelines are intended to represent a variety of landscape situations. Landscapes are diverse; some areas on the landscape will not meet these guidelines, some areas will meet the guidelines, and some areas will exceed the guidelines. As new information is collected, these guidelines, as well as the plan are meant to be adaptable."

RCP App H: GUSG Structural Habitat Guidelines, H-5.

To this end, grouse habitat monitoring will be used to:

- characterize the variability across the landscape with "further and more specific and quantified data"
- better enable managers "to meet the full potential of any given site" to provide sage-grouse habitat via livestock management and habitat reclamation, as outlined in the CCA
- track the habitat quality and conservation maturity of offsite mitigation in the form of restoration

7.1 HABITAT CONDITION ASSESSMENT & LONG-TERM HABITAT MONITORING

**NOTE: This section is not specific to grazing, but is a component of an integrated vegetation monitoring plan that is relevant to multiple program areas and uses.*

7.1.1 GOALS & OBJECTIVES

- Monitor and assess sage-grouse habitat conditions relative to RCP sage-grouse Structural Habitat Guidelines for nesting and brood-rearing sagebrush habitat at the landscape scale.
- Use RCP/GUSG Rangewide Steering Committee 2007 habitat monitoring protocol
- Habitat data will be used ***in conjunction with*** other monitoring data (grouse and non-grouse) to inform Land Health Assessments and Determinations (BLM) and relevant long-term management actions.
    - Participants recognize in order to describe grouse habitat conditions at the ***allotment*** level, additional information may be necessary, including annual stubble height measurements and additional transects read with the RCP habitat monitoring protocol.

1. Compile and analyze existing baseline data.

a. Agencies will examine existing data that can be compared to the Rangewide Conservation Plan, section 6.3, GUSG Structural Habitat Guidelines. Potential data sets include the Habitat Partnership Program inventory, CPW baseline data[35], trend studies, and sagebrush treatment monitoring transects.
b. Using existing quantitative transect data, agencies may describe ecological site potential of vegetation communities as meeting any or all of the GUSG structural habitat guidelines.

2. Select transect locations.

a. An agency ID team, in coordination with CPW, livestock permittees, and other interested entities, would select a subset of existing transect locations to maintain permanent, long-term monitoring. This subset should include vegetation communities/ecological sites capable of meeting any/all habitat indicators.
b. Additionally, new transects may be established to ensure coverage of all pertinent vegetation communities/ecological sites.
c. Selected transects will be comprised of a random sample across federal lands in occupied habitat in the Basin.
d. Agencies will monitor transects with the methods outlined in the RCP vegetation monitoring protocol (see section 6.5).

3. Collect Data.

At a minimum, participating agencies will complete the following:

a. *For areas that are meeting most/all of the structural habitat guidelines:*
   - Re-read transects every 8-9 years, and/or when short-term monitoring indicates habitat conditions have changed. Read more frequently if a significant change occurs in management or vegetation condition (fire, large-scale weed invasion, die-off event, multiple-year drought, etc.)
b. *For areas that are not meeting the minimum value of most/all of the structural habitat guidelines:*
   - Collect monitoring data at established study transect sites every 3-5 years.

4. *Land Health Measures (BLM)*

[35] Williams 2012. *Characteristics of Gunnison sage-grouse Habitat in Dry Mountain Loam and Mountain Loam Ecological Sites of the Gunnison Basin.* CPW.

a. Incorporate GUSG RCP structural habitat guidelines into Land Health Standards Determinations[36] on BLM, Gunnison Field Office-administered lands. *RCP Grazing Objective 1-2, p. 211*
    - Assessment will include data collected with the RCP monitoring protocol (long-term transects) and with the modified stubble height protocol (short-term, see section 6.4).
b. Complete Land Health Determinations (revised, including RCP structural habitat guidelines) on all occupied sage-grouse habitat.
    - Priorities may include: grazing allotments in Tier 1 GUSG habitat, areas previously determined *Not Meeting - Moving towards*, etc.
    - Encourage interested parties to work with the BLM to complete Land Health Assessments.

7.1.2 PROTOCOL

From 2007 supplement to the Rangewide Conservation Plan, Minimum Structural Vegetation Collection Guidelines for the Gunnison sage-grouse Rangewide Steering Committee. March 2007.

The following protocol was designed to assess suitability of vegetation conditions for the Gunnison sage-grouse as outlined in the Gunnison sage-grouse Rangewide Conservation Plan (RCP) (Appendix H [Gunnison sage-grouse Structural Habitat Guidelines]).

- This protocol is intended to provide a consistent method for measuring the minimum vegetation characteristics to evaluate site-specific suitability for Gunnison sage-grouse as described in the RCP Structural Habitat Guidelines (Appendix H). If additional vegetation data is needed, consult the BLM Technical Reference 1734-4 or other agency technical manuals.

- This protocol can be used to evaluate current suitability of site-specific conditions, monitor changes in the suitability of site-conditions over time (other techniques will be needed for specific monitoring projects) and evaluate impacts of habitat and restoration treatments on Gunnison sage-grouse site-suitability.

[36] Land Health assessments and determinations are utilized by the BLM to inform management. Decisions specific to recreation, grazing, and development may follow from Land Health determinations.

- Vegetation data must be collected during the season of use by Gunnison sage-grouse. For breeding habitat, measurements should start around the middle to the end of May or after the first nests begin to hatch and continue through June to encompass both nesting and early-brood-rearing habitat. Summer habitat measurements should start around mid-June (after the chicks are about 4 weeks old) and continue through mid-August to encompass late-brood-rearing habitat. Winter structural habitat variables (sagebrush canopy cover and sagebrush height) may be collected at any time of the year as these variables do not change substantially on a seasonal basis.

- To ensure repeatability in data collection, all methodology should be established before beginning field work and documented for future reference. To maintain consistency in data collection, use of this protocol is recommended. If an alternate methodology is used to evaluate site suitability with regards to the RCP Structural Habitat Guidelines (Appendix H), techniques must be reported.

General Guidance

- To measure sagebrush and other shrub canopy cover, the line intercept method developed by Canfield (1941) should be used. For other canopy cover estimates use Daubenmire (1959) plots.

- Take a minimum of 1 photo per vegetation transect preferably at the starting point of the transect line. Attempt to take the photo at a height and angle that will provide a good representation of the general condition of the site.

- Frequency, density, and composition are additional types of information that could be collected but are not required by this protocol to assess Gunnison sage-grouse with regards to the RCP Structural Habitat Guidelines. If this type of data is needed consult the Technical Reference 1734-4 (http://www.blm.gov/nstc/library/pdf/samplveg.pdf).

Specific Measurements

Transect Lines

- Line transects should be 30 m in length.

- Placement of transects should be done using any statistically valid design.

- Collect a UTM coordinate with a GPS unit at the start pointing of the transect line and record on the field form so that transects can be located in the future.

- Transects placement could be stratified by community types and soils.

Shrub Canopy Cover

- Measure all shrubs and trees that intersect the line transect. The sagebrush species (if it can be identified) that intersects the line should be documented; all others non-sagebrush shrubs can be lumped into one category.

- Measure the amount of live shrub canopy cover that intersects the transect line. Large spaces in the foliage cover (>5 cm) should be excluded from the canopy cover measurement so that only live shrub cover is recorded.

- Do not measure overlap of canopy of species—i.e., if two sagebrush plants overlap along the transect, the length of the transect covered from a vertical vantage point is the percent canopy cover regardless of how may individual plants makeup that coverage. Canopy cover should never exceed 100%.

General Guidelines for Application of Daubenmire (1959)

- See Daubenmire (1959) or USDI-BLM (1996) for additional details.

- Five other vegetation variables will be collected along line transects within a Daubenmire frame:

    o Sagebrush Height

    o Grass Height

    o Forb Height

    o Grass Cover

    o Forb Cover

- Collect data in 10 Daubenmire frames along each 30 m transect.

- Select a consistent and statistically valid method for placement of the Daubenmire frame along each transect. Record your method on the field form so future transects can be completed in the same way.

Sagebrush Height

- Take one height measurement per sampling point (Daubenmire frame) by selecting the sagebrush closest to the lower left corner of the Daubenmire frame, based on its canopy and not its root. The closest sagebrush could be within the frame, in front of the frame, behind the frame, and on either side of the transect. Choose the sagebrush closest to the lower left corner of the frame regardless of its direction from that corner.

- Note on the data sheet whether the shrub measured is a seedling (no woody base) or a very young plant.

- Exclude seed heads (inflorescences) from height measurement of sagebrush.

- Do not re-measure the same shrub even if it is the closest sagebrush for a subsequent plot. Instead select the next nearest sagebrush within 10 meters of the plot. If there is no other sagebrush within 10 meters, do not take a height measurement for that plot.

Understory Cover

To the extent possible, plants should be identified to the species level, but training and time limitations may prevent this. The important habitat variables to be collected include:

- Grasses: break out perennial versus annual at a minimum. Identify dominant species to the extent possible in comments section of form. Identify cheat grass (e.g. *Bromus tectorum*) and other non-native species to the extent possible.
- Sedges are included in the grass category.
- Forbs: At a minimum list the number of different forb species per plot, even if you cannot identify the species. Identify species to the extent possible.
- Measure the live and residual foliar cover of grasses and forbs.

Understory Height

Height measurements are conducted to characterize the vertical and horizontal structure of the understory. Gunnison sage-grouse select habitat based on vertical (how tall it is) and horizontal (how thick it is) structure. Both aspects contribute to a diversity of structure and provide a sense of security for birds. These aspects contribute to nest, chick and adult concealment from predation events. That is why these measurements are relatively, but not absolutely consistent.

- Measure 1 grass and 1 forb in each Daubenmire frame. The plants must be rooted in the frame, and if there are no grasses or forbs in the frame, record as not present.
- Measure height of the nearest grass and forb from the bottom left corner of the Daubenmire frame.
- Grass height only includes the current year's growth. There are no criteria or guidelines for previous year's growth (e.g. residual grass height).
- Grass height can include annual or perennial grass. It should be documented on the datasheet if annual grass (cheat grass, e.g. *Bromus tectorum*) is measured. It is preferable to measure perennial grasses.
- Additional grass heights can be measured, but at a minimum grass height should be measured in the following manner:

    - Measure grass height (leaf or inflorescence) at the tallest vertical point (do not straighten up the plant, i.e. droop height) where the bulk of a plant's mass occurs. If the inflorescence of the plant does not provide visual obstruction, measure where the bulk of the mass occurs in the leafy portion of the plant at the tallest leaf height (Fig. 1). If the inflorescence provides a bulk of the mass, then the tallest portion of the inflorescence is measured (see Fig. 2 above).
    - This protocol does not provide guidelines for every species of grass. The individual conducting the sampling will have to make a judgment for each plot and each species along a plot. Consistency by following this protocol is key, as well as collecting an adequate number of measurements.
- The same protocol should be followed for forbs (see Fig. 3, above - the bulk of the mass of the plant occurs in the leafy portion and the tallest leaf height is measured; see Fig. 4, above - the inflorescence provides the bulk of the mass the tallest portion of the inflorescence is measured)

All cover estimates should be placed in the categories noted in Table 1. The standard Daubenmire method uses six cover classes, but the specific ranges lump too much in the 5-25% class for Gunnison sage-grouse vegetation variables. Therefore, this category was split into 2 cover classes below.

Table 7. Cover classes for Gunnison sage-grouse habitat variable estimation.

Cover Class	Range of Coverage	Midpoint of Range
1	0-5%	2.5
2	5-15%	10
3	15-25%	20
4	25-50%	38
5	50-75%	63
6	75-100%	88

7.2 SHORT-TERM MONITORING FOR GRAZING MANAGEMENT

7.2.1 GOALS & OBJECTIVES

- Monitor herbaceous heights in occupied sage-grouse habitat in order to inform grazing management and management of other contributing factors in the short-term.
- Integrate grouse habitat monitoring for grazing-relevant RCP habitat guidelines with range monitoring.

1. Select monitoring locations.

a. An ID team, including participating permittees and range and wildlife Authorized Officer, will choose a subset of the baseline CCA plots for short-term monitoring locations that best represent the habitat conditions AND livestock/big game use in the pasture/use area. To the extent possible, short-term monitoring locations will include the long-term fixed point monitoring locations, but more locations may be necessary.

b. Locations should be established in areas that can support GUSG habitat objectives *(use information from Section 6.4, sage-grouse Habitat Condition Assessment, to locate appropriate ecological sites/vegetation communities.)*

c. The ID team will aim to establish fixed monitoring points for efficiency and consistency, but changing conditions may warrant that the ID team add locations over time to best represent grouse habitat and livestock use. Need at least one per pasture.

2. Collect & Interpret Data.

At a minimum, implementing agencies will complete the following:

Determine whether an allotment is meeting/not meeting the minimum value of the RCP habitat guidelines for herbaceous heights:

a. **"Meeting" RCP Guidelines:** In a given year, if 70 % of the grass height measurements within a given allotment—in plant communities that have site potential to meet the RCP grass height guidelines in normal precipitation years—have met the RCP guidelines, the allotment will be determined to be "meeting".

b. **"Not meeting" RCP Guidelines:** In a given year, if more than 30% of the grass height measurements within a given allotment –in plant communities that have site potential to meet the RCP grass height guidelines in normal precipitation years—the allotment will be determined to be "not meeting".

c. Consideration of site potential is warranted in the process of determining "meeting" vs "not meeting", because as the RCP notes, "landscapes are diverse; some areas on the landscape will not meet these guidelines, some areas will meet

the guidelines, and some areas will exceed the guidelines" (GSRSC 2005, App. H).

When data indicate an area is meeting/exceeding the minimum value of the RCP habitat guidelines for herbaceous heights:

a. Collect herbaceous heights and photo points once every *three years* – prior to livestock, immediately following livestock use, and at the end of the growing season.

When data indicate an area is not meeting the minimum value of the RCP habitat guidelines for herbaceous heights, consistent with Section 3.3, Livestock Grazing:

a. Conduct trigger monitoring:
    - Conduct utilization monitoring (Grazing Response Index, Key Forage Plant, Pellet Counts, etc.) as soon as practical.
    - Using the same sampling and monitoring methods, monitor herbaceous heights in exclosures/rested pastures with comparable ecological sites, in order to establish control data.
    - All causes for not meeting RCP herbaceous heights guidelines will be documented.
    - If *livestock* grazing is found to be a significant contributing cause to not meet the heights guidelines, conduct utilization monitoring the following year during the grazing season.
    - Use utilization data to assess stocking rates and to trigger pasture/allotment moves, within the terms and conditions of the current permit.
b. Collect herbaceous heights and photo points *annually*, immediately following livestock use. Every third year, collect this information prior to livestock use and at the end of the growing season.

3. Cooperative Monitoring

a. To provide a more complete short-term monitoring record in allotments containing sage-grouse habitat, permittees will be encouraged to enter into cooperative monitoring programs with the respective agency/ies to collect short-term monitoring information on the two years that the agency does not (including prior to livestock, immediately following livestock use, and at the end of the growing season).
b. For participating permittees who manage allotments where annual short-term monitoring indicates RCP herbaceous height guidelines are consistently being met, these permittees would receive more consideration for increased flexibility in their grazing management systems.
c. If a coordinated monitoring program is in place or a new one is developed for reasons outside of the CCA, participating agencies will work to incorporate these sampling methods into the monitoring program.

7.2.2 PROTOCOL

Excerpts consistent with the Colorado Rangeland Monitoring Guide (2011) for stubble height measurements; incorporates elements from the Interagency Technical Reference for Utilization Studies and Residual Measurements (1996) and the Gunnison sage-grouse Rangewide Conservation Plan (2005).

Grass and forb (plants other than grasses & shrubs) plant cover is important to Gunnison sage-grouse for hiding cover for chicks, food, nesting, and insects. Retaining an adequate amount of standing herbaceous cover (stubble) in sagebrush plant communities, swales, wet meadows, and riparian areas is critical for maintaining sage-grouse habitat and long-term forage for livestock production.

This adapted Stubble Height method is simple to use and will help provide consistency in short-term monitoring of livestock and big game use in occupied sage-grouse habitat across all land ownerships. "Stubble height monitoring typically occurs on predetermined key plant species in key areas. Depending on the objectives and resource concerns, key areas may be along the streamside or in wet or dry meadow sites within the riparian area or in upland areas. In some instances, monitoring is based on species groups, such as sod-forming species with similar growth form and response to grazing" (Colorado Rangeland Monitoring Guide 2011).

For pastures that are grazed by livestock or big game before or during grouse nesting and/or early brood-rearing, monitoring should ideally be conducted within the season of use by grouse, approximately late March through mid-August (Phillips, pers. comm.). For pastures that are grazed during late brood-rearing (late summer/fall), short-term monitoring should be conducted following livestock use to determine if adequate residual cover remains to provide nesting and hiding cover the following spring (RCP 2005).

Procedure

- Measurements need to be made in designated key areas, within riparian areas (but possibly on uplands), and on predetermined key plant species. Alternatively, heights may be determined for a group of similar species, such as wet-site, wide-leaved sedges or rushes or dry-site, narrow-leaved grasses or sedges. The key is that this group of species be used by, and react similarly, to grazing effects [by livestock or big game]. *On BLM and Forest Service lands, permittees and other affected interests (CPW, USFWS, WSC students, etc.) are encouraged to assist in the establishment of transects and the measurement of stubble heights* (BLM 1996).

  For riparian areas, sampling should be done on both sides of a stream segment [or wetland] along the Greenline, when feasible. For upland or meadow sites, measurements should be taken along a predetermined transect or course.

- Once the riparian segment or transect site has been selected, take a photograph looking down the stream segment or transect. Include a relocatable, prominent feature in the photo background, such as a rocky point or distinctive horizon. Determine the distance between observation points (this is the sample interval). This will vary depending on the size and shape of the site selected. Record the sample interval in the Sample Interval blank at the top of the form.

- Determine how many paces (2 steps per pace is typical) will give the selected sample interval, and begin pacing along the Greenline or the predetermined transect course. Stop at each sample interval and do the following:

    - Locate the individual plant nearest the toe of your boot for the identified key species. The nearest plant may not be immediately at your toe.

    - *Instead of recording the average stubble height (average leaf length) of the nearest key species (CRMI 2011), record the droop height using Gunnison sage-grouse Rangewide Conservation Plan (GSRSC 2007) guidelines attached below. This alteration in the CRMI method follows RCP guidelines and more closely measures hiding cover for sage-grouse. Measure height (leaf or flower) at the tallest vertical point (droop height – do not straighten up the plant) where the bulk of a plant's mass occurs. If the flower of the plant does not provide visual obstruction, measure where the bulk of the mass occurs in the leafy portion of the plant at the tallest leaf height (see Figure1 below). If the flower provides a bulk of the mass, then the tallest portion of the flower is measured (Figure 2 below) (GSRSC 2007).*

    - Where it is difficult to tell where one plant starts and another stops, visualize a three-inch circle and sample the key species within that circle. Estimate and record the average [droop] height within the three-inch circle.

    - If you are sampling for more than one key species, or grouping of similar species, record [droop] height for each key species. There will be a minimum of 30 [droop] height measurements for each species. Additional readings can be taken if variability on the site warrants. *This procedure does not provide guidelines for every species of plant. The individual conducting the sampling will have to make a judgment call for each measurement and each species along the transect. Consistency in following this protocol is key, as well as collecting an adequate number of measurements (BLM 1996).*

    - *The same protocol should be followed for forbs (Figure 3 below – the bulk of the mass of the plant occurs in the leafy portion where the tallest leaf*

height is measured). In Figure 4 below, the flower provides the bulk of the mass where the tallest portion of the flower is measured (GSRSC 2007).

- After a minimum of 30 samples have been recorded, total the measurements for each column, and divide by the number of plant samples for each species to calculate the average [droop] height.

7.3 MONITORING OFFSITE MITIGATION ACTIONS

7.3.1 RECLAIMED ROUTES

Objective:

- Monitor reclaimed routes in occupied sage-grouse habitat that are accounted for in the off-site mitigation accounting system, in order to:
  - Track the habitat quality and conservation maturity of this form of off-site mitigation, including:
    - Revegetation over time; and
    - Public compliance with closures.
  - Adjust reclamation methods used in order to speed and enhance revegetation.

1. ***Select monitoring locations and collect data.***
   A random set of reclaimed routes in the off-site mitigation accounting system will be monitored by the implementing agency at periodic intervals (one year after reclamation activity, three – five years, etc.). At minimum, a photo point will be taken from the entrance/start of the route; modified vegetation transects may be appropriate in some cases.

8 REPORTING REQUIRMENTS

Annual Meeting: At the end of one full year of implementation, dated from the signed CCA and conference opinion, CCA participants and the USFWS will meet to review progress toward CCA habitat objectives, identify problems encountered, and make updates to the CCA, as needed. Meeting would include review of each implementing agency's annual report. At that time, signatories will cooperatively establish subsequent meeting review periods, i.e., five year-intervals, to perform basic maintenance on the CCA. Yet consistent with the principles of adaptive management, changing conditions may warrant more frequent dialogue and adjustment to the CCA.

Annual Report Components:

8.1 Ground-disturbing Development *(Excluding Trail/Road Closure Implementation)*

New, amended*, and reauthorized* right of ways/easements and other activities involving short term or permanent habitat fragmentation will be reported, including the following information:

*(*Include only reauthorizations and amendments for ground-disturbing activity beyond footprint of original authorization)*

a. Map/shapefile clearly identifying amount, if any, of new ground disturbance, construction, and new activity in Tier 1 and Tier 2 Habitat, in the following categories:

   i. Buried pipeline or utility line

   ii. Aboveground pipeline

   iii. Overhead utility line

   iv. Reopened nonsystem[37] roads and trails

   v. Roads, including realignments

   vi. Motorized trails, including realignments

   vii. Nonmotorized trails, including realignments

   viii. Fences

   ix. Communication sites

   x. Miscellaneous infrastructure

[37] A nonsystem road or trail is one that is not formally approved; in this case, formerly officially closed roads and trails that are officially reopened should be reported.

b. Associated spreadsheet, including the following information for each category:

    i. Individual action/project

    ii. Mileage/acres of each ground disturbance/infrastructure

    iii. Location in Tier 1 or Tier 2 habitat

    iv. CCA process used vs. individual/additional consultation process (yes/no)

        1. If no, why

    v. Accompanied by offsite mitigation (N/A/yes/no)

    vi. Accompanied by additional conservation measures not outlined in the CCA (yes/no)

        1. If yes, what

    vii. Accompanied by monitoring?

    viii. Weed management and revegetation on ROWs- Compliance inspection

    ix. Fences – Compliance with marking, wildlife-friendly fencing standards

8.2 Reauthorized and amended rights-of-ways/easements

Unless amendment of existing right-of-way/easement involves ground disturbance or additions to the permitted area *beyond the original permitted area*, include amendments and reauthorizations in a spreadsheet detailing the following:

    i. Individual reauthorization/amendment

    ii. Type of associated infrastructure

    iii. Relevant minimization measures incorporated into permit language (yes/no)

        1. If no, why

iv. Accompanied by additional conservation measures not outlined in the CCA (yes/no)

2. If yes, what

v. Accompanied by monitoring? /Compliance inspection?

8.3 Travel Management: Trail/Road Closures (excluding seasonal closures)

a. Map/shapefile clearly identifying amount, if any, of trail/road closures and realignments in Tier 1 and Tier 2 Habitat, in the following categories:

i. Designated open/system or closed/nonsystem in 2010 TMP (USFS, BLM) and MVAP (NPS)

ii. Class

iii. Closures accompanied by a realignment (new ground disturbance)

b. Associated attribute table, including the following information:

i. Individual road/trail section

ii. Designated open/system or closed/nonsystem in 2010 TMP (USFS, BLM) and MVAP (NPS)

iii. Closures accompanied by a realignment (new ground disturbance) (yes/no)

i. If yes, Length/class of open realignment (or ID corresponding segment in G.1.a)

iv. Class

v. Length of each section

vi. Level of closure

vii. Location in Tier 1 or Tier 2 habitat

viii. Any monitoring? Closure compliance?

8.4 Offsite Mitigation

For the first year of implementation, the agencies/partners will develop an accounting system to illustrate how offsite mitigation is used by agency recreation planners to develop and implement new roads and trails. Until otherwise agreed, report the following minimum information:

a. Baseline habitat map/shapefile, including all permanent infrastructure and linear features, including fences, closed roads and trails

b. Tier 1/Tier 2 habitat map:

   i. new roads/trails, if any, and associated mitigation actions

c. Spreadsheet detailing:

   i. Triggering action: new road/trail

      - Type
      - Size
      - Location in Tier 1 or Tier 2 habitat

   ii. Corresponding mitigation action

      - Type
      - Size
      - Location in Tier 1 or Tier 2 habitat
      - Photo point/any other monitoring information

8.5 Grazing

The following information will be reported:

a. Number of permits renewed.

   i. For each permit, an assessment of the habitat condition relative to RCP standards, using existing data.

b. Short-term monitoring:

i. Location of monitoring (transect number/approximate location)

- Herbaceous height data
- Photo point data
- Any additional environmental data
- For permits that have been modified to incorporate sage-grouse habitat guidelines or standards, identify whether or not area is meeting incorporated standard for grass/forb height (yes/no)

    1. If no, corresponding action and assessment (additional monitoring)

- Year recorded
- Next anticipated (staff) monitoring season/year

8.6 Overall Progress

a. Quantify overall progress toward CCA habitat objectives in Tier 1 (net reduction of fragmentation) and Tier 2 habitat (no net increase in fragmentation).

b. Long-term monitoring:

iii. Location of monitoring (transect number/approximate location)

- Data for RCP habitat guidelines/vegetation variables
- Photo point data, if any
- Any additional environmental data
- Meeting RCP Habitat Guidelines

    1. Sagebrush Canopy (%) (yes/no)

        a. If no, corresponding action/assessment

    2. Non–sagebrush Canopy (%) (yes/no)

        a. If no, corresponding action/assessment

3. Total Shrub Canopy (yes/no)
    a. If no, corresponding action/assessment
4. Sagebrush Height (yes/no)
    a. If no, corresponding action/assessment
5. Grass Cover (%) (yes/no)
    a. If no, corresponding action/assessment
6. Forb Cover (%) (yes/no)
    a. If no, corresponding action/assessment
7. Grass Height (yes/no)
    a. If no, corresponding action/assessment
8. Forb Height (yes/no)
    a. If no, corresponding action/assessment
9. Overall habitat condition for grouse (unsuitable/marginal/suitable)

- Year recorded
- Next anticipated monitoring season/year.

c. Report trends in habitat quality.

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10 APPENDIX: HABITAT PRIORITIZATION TOOL

Analysis Details

The below listed information was incorporated into a spatial model to evaluate habitat within the Gunnison Basin for Gunnison sage-grouse. The spatial model in itself can only be used on a broad scale for planning and rough habitat assessment. Projects and development will still need to be evaluated with an onsite assessment on a project-by-project basis. This model has been developed through collaborative efforts of Gunnison County, US Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), US Forest Service (USFS), Colorado Parks and Wildlife (CPW), National Park Service (NPS), Natural Resources Conservation Service (NRCS), and interested stakeholders. This Tool/Model incorporates the most recent information as provided by agency input from those working on the ground through numerous meetings and hours of discussion about data layers that provide the best representation of current on the ground conditions in the Gunnison Basin.

High priority habitat consists of all habitat layers and all uncontrollable threat layers. Controllable and other impacts can be changed or adjusted to decrease the impact on grouse habitat.

HABITAT

1. **Lek 0.6 mile buffer and average high male count for active leks**
   The official lek status and high male count are defined and reported from lekking data collected and published by CPW in their annual Gunnison Basin Lek Count Summary and Population Estimate. The Official Status of a lek is given as a cumulative status and designated as Active, Historic, Inactive, or Unknown. To be Officially Active, a lek only needs to be designated as Active in the current year. A lek is not considered Officially Inactive unless it has been seasonally Inactive for five consecutive years. Thus, a lek might not have any birds for a given season, but its official status may be Unknown because the lek had not been Inactive all of the past five years. Historical lek status is not given until a lek has been Inactive for 10 consecutive years. (Jackson and Seward, 2011)

   Geospatial Data: This layer is the CPW lek polygon layer and includes a 0.6 mile buffer from the outside edge of the lek polygon with spatial boundaries from the 2011 update as well as the Official Status from 2011. Buffering the lek polygons by 0.6 miles matches up with the disturbance guidelines in the Rangewide Conservation Plan. This 0.6 mile buffer serves as a measure of protection to insure that the entire lek polygon is captured within the buffer polygon and that potential direct or indirect impacts directly adjacent to a lek that could influence lekking behavior are evaluated.

Evaluation class breaks (weight) justification: Leks are considered the most important habitat for the grouse. Habitat alteration on or near a lek has the potential to have the greatest impact to the population. There is a need to conserve all leks, regardless of the number of birds displaying on the lek. (Aldridge, 2011b; Phillips, 2011).

- Officially Active (15) *Active leks are those of greatest value to the grouse population. Birds are displaying regularly on an annual basis.*

- Officially Unknown (10) *These leks could have and Official Status of unknown for many reasons, including missing count data. Leks can fall into this category in a one year time frame.*

- Officially Inactive (8) *These leks should not be completely discounted. There is potential for the grouse to comeback and begin using these areas on a regular basis if numbers increase or surrounding habitat improves. It takes 5 years for a lek to move into this category.*

- Officially Historic (1) *The majority of these leks is close to high build-out densities and will probably never be able to recover to active status regularly.*

Data for support:

- 2011 Gunnison Basin Gunnison sage-grouse Lek Count Summary and Population Estimate Final Report (Jackson and Seward 2011).
- 2011. Seward, Nate. Lek Status Definitions.
- 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison sage-grouse.
- 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison sage-grouse.

Area for improvement:

- The Local Annual Report definitions do not align with the RCP or current statewide definitions for Official Status as defined by Colorado Parks and Wildlife. Local CPW staff has maintained consistency in local definitions and is working to align them with the RCP and Statewide definitions.

Updated: This layer will be updated on a yearly basis.

2. **Brood-rearing habitat:**
Brood rearing habitat is defined in the RCP. It includes mesic areas (swales, meadows, sagebrush near irrigation ditches and irrigated meadows) with lush vegetation. This layer is intended to capture priority habitat as defined in the RCP.

Geospatial Data: Four spatial layers were combined to create this layer—NRCS mapped alluvial soils minus irrigated meadows, CPW streams, and wet meadow/sagebrush interface areas. A 50m buffer was placed around the streams and the wet meadow/sagebrush interface layer (RCP 2005). Areas were not double-counted where overlap occurred and areas where mesic sites were greater than 50m from the sagebrush.

Evaluation class breaks (weight) justification:
- Present (13)

Data for support:
- RCP

Area for improvement:
- Updated NRCS soils mapping and range site mapping for alluvial and riparian sites. *(Not possible in current timeframe, but progress has begun on this endeavor.)*
- Removal of any brood rearing habitat from forested areas.
- There is a need to add other features including springs and seeps that are not captured in the current data layers.

Updated: This layer will be updated if new and better data becomes available.

3. **Nesting/summer/late fall habitat:**
These habitats are defined in the RCP. It includes sagebrush dominated areas. This layer is trying to capture priority habitat as defined in the RCP.

Geospatial Data: This data layer was compiled from NRCS soils data and includes all sagebrush dominated range sites (mountain loam, subalpine loam, mountain outwash, and deep clay loam). Soils included from the Gunnison Soil Survey (CO662) are: CeC, CoE, CuE, DeB, DoE, GeB, GeE, JeE, KvE, LeE, MoE, MrE, PwE, RcE, SuE, YgE, YlE, YpE, EvD and the NE (331 to 149 degrees) aspects of CrE, DrE, DsE, KcE, LhF, PhF, PmF, and MrE. Soils included from the Grand Mesa-West Elk Soil Survey (CO660) are: 107, 138, 139, 142, 165, 172, 191 and the NE aspects of 153. Soils included from the Cochetopa Area Soil Survey (CO663) are: 103, 104, 108, 111, 119, 121, 122, 131, 132, 133, 134, 141, 142 and the NE aspects of 110.

Evaluation class breaks (weight) justification: As we looked at the map we decided to differentiate nesting habitats. We thought it would provide important additional information to give nesting habitat closer to the brood rearing habitat a higher score. sage-grouse hens have to be able to move their broods from the nests to brood rearing habitat by walking. All nesting habitat is of value, but nesting habitat closer to brood rearing habitat has potential to be of higher benefit. Disjunction of brood rearing habitat from nesting habitat results in habitat fragmentation and possibly the loss of usability. It is recognized that In order to capture most of the nesting locations, one would have to have to account for all nesting habitat within 4 miles of a lek (Connelly et al 2000, Aldridge 2011b) - which is all nesting habitat in the basin.

- Present <1500 ft. from brood rearing habitat (15)

- Present >1500 ft. from brood rearing habitat (10)

Data for support:

- RCP
- NRCS Soil Survey
- 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison sage-grouse.
- Connelly et. al 2000

Area for improvement:

- Updated NRCS soils mapping and range site mapping. *(Not possible in current timeframe, but progress has begun on this endeavor.)*

Updated: This layer will be updated if new and better data becomes available.

4. **Winter habitat:**

This habitat is defined in the RCP. It includes sagebrush dominated areas with both thermal cover and exposed sagebrush for winter use. This layer is intended to capture priority habitat as defined in the RCP.

Geospatial Data: Winter habitat was modeled using the dry mountain loam soils from NRCS Soil Survey mapping layers. Dry mountain loam sites are mapped on SE to NW (150-330 degrees) facing slopes. A 10m DEM was used in the slope analysis and boundaries were then smoothed to reduce the pixilation. Soils included from the Gunnison Soil Survey (CO662) are: CrE, DrE, DsE, KcE, LhF, PhF, PmF, and MrE. Soils included from the Grand Mesa-West Elk Soil Survey (CO660) are: 153. Soils included from the Cochetopa Area Soil Survey (CO663) are: 110, and 130.

Evaluation class breaks (weight) justification: Winter habitat was considered to be of lesser importance than the other habitat types for the grouse. In general, winter mortality of the Gunnison sage-grouse is low (Phillips, 2011)

- Present (10)

Data for support:

- RCP
- NRCS Soil Survey/ Web Soil Survey
- 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison sage-grouse.

Area for improvement:

- Updated NRCS soils mapping and range site mapping. *(Not possible in current timeframe, but progress has begun on this endeavor.)*

Updated: This layer will be updated if new and better data becomes available.

5. **Habitat status:**

The habitat status has been defined from the RCP and incorporates many researchers' and managers' expert knowledge of the current and historic distribution of the grouse. The occupied habitat layer will serve as this tool's boundary for grouse habitat evaluation. Potential and vacant/unknown habitats are not included in scoring because of lack of habitat and geospatial data. Vacant/Unknown habitat is apparent high quality habitat without birds. Potential habitat would require a significant amount of time, energy and resources to create to a habitat of sufficient quality that could be colonized by grouse, due to the large amount of forested acres. There are areas within the CPW mapped occupied habitat layer that are unusable to grouse and have been removed. These areas include within the landfill boundary, the UMTRA site, open water areas, and some gravel pits.

Geospatial Data: The original occupied habitat with polygons delineated by the CPW/USFWS is defined in the RCP. The current occupied habitat boundary is an updated version from May 2011 by CPW staff based on field observations. The 2011 spatial layer was incorporated into the tool.

Evaluation class breaks (weight) justification:

- Occupied (0) *Occupied habitat was not actually scored. It was used as the outer boundary for the prioritization tool.*

Data for support:

- RCP (page 32-40)
- Schroeder et al. 2004
- CPW - Species Activity Mapping Data

Area for improvement:

- Potential and vacant/unknown habitats are not included in scoring because of lack of habitat and geospatial data.

Updated: When revisions to the occupied habitat boundary occur, alterations and updates to this tool will be needed.

6. **Land near active leks:**

Land near active leks is considered a higher priority for preservation. Leks are often in close proximity to quality nesting habitat. (Connelly et al. 2000; Aldridge et al. 2011) The Local Gunnison sage-grouse Conservation Plan notes that these areas are priority areas used by nesting hens (1997).

Geospatial Data: A two mile buffer was placed around the outer edge of the lek polygon layer. Both the area within the 2 mile buffer and the lek itself were included in this layer. The two mile buffer is from the Gunnison sage-grouse Conservation Plan (1997).

Evaluation class breaks (weight) justification:

- Areas within active leks and <2 miles from the edge of the active leks (5)

Data for support:

- Connelly, J.W., M.A. Schroeder, A.R. Sands and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitat. Wildlife Society Bulletin 28:967-985.
- Aldridge et al. 2011
- Gunnison sage-grouse Conservation Plan; Gunnison Basin- Colorado. 1997. Local species management plan.

Area for improvement:

Updated: This layer will be updated if new and better data becomes available.

7. **Irrigated lands:**

Irrigated areas greater than 50m from the sagebrush interface and outside CPW lek polygons are not considered as suitable grouse habitat.

Geospatial Data: This layer was created by the Division of Water Resources using Landsat TM imagery. It is a spatial layer of irrigated meadows.

Evaluation class break (weight) justification:

- Present (-8)

Data for support:

- RCP
- Federal Register
- 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison sage-grouse.

Area for improvement:

Updated: This layer will be updated if new and better data becomes available.

8. **Non-Habitat:**
   Areas of no habitat such as open water and gravel pits are overlaid on top of the scoring polygons to show that these areas are not habitat. More areas, such as building footprints, could be added to this layer in the future when available.

UNCONTROLLABLE THREATS

1. **High density subdivisions:**
   A highly divided subdivision has a greater impact on grouse habitat than an individual home.

   Geospatial Data: Gunnison and Saguache County's parcel layers, as well as their 9-1-1 house point layers, have been combined to determine development potential/impact. Development was defined as home, barn, or any improvement valued at more than $30,000 on a parcel. At each house point, there was a 300 foot radius buffer added to the known structure. House points that where within 1000ft of another two house points location were then buffered by 1000ft due to the increased impact on the grouse. (Cochran, 2011) The 300ft buffered housing points buffer was clipped and removed from the 1000 ft. buffer so that points did not receive a negative score for both the buffers.

   Evaluation class break (weight) justification:
   - Areas within 300ft of a house point (-5) *Areas adjacent to houses are not suited for grouse habitation.*

- Areas where a housing point is within 1000ft of another 2 house points (-20) *Areas where more house points are located closer together (subdivisions) will have an even greater negative impact on the grouse habitat.*

- <70 acre parcels with development (-7) *Smaller developed parcels have a greater impact on both degradation and fragmentation of surrounding habitats than larger developed parcels, in most circumstances. They are given a negative score as a result of these negative impacts.*

Data for support:

- Cochran, Jim. 2011. Personal communication.
- Phillips, Mike. 2011. Personal communication.

Area for improvement:

Updated: This layer will be updated on a yearly basis to track changes in development and subdivision.

2. **Roads/Trails:**

All roads and improved trails were evaluated for their impact to the habitat from fragmentation and predator corridors. ***Use and recreation impacts from disturbance are considered under the recreation layer, not in this layer. This is a habitat impact evaluation of the roads themselves.*** Improved roads are considered all roads bigger than all season, 2-wheel drive roads. Improved roads are defined as passenger car roads, highways, and improved county roads. Double track roads are considered unimproved roads and include: admin routes, jeep trails, primitive roads, high clearance roads, private roads, and ATV routes. Single track routes are considered trails (mechanized and motorized are included). Closed routes are routes that are permanently closed (not seasonally) that have not been reclaimed.

Geospatial Data: Road data from the county, CPW, BLM and USFS were used to create this layer.

Evaluation class break (weight) justification:

- <150ft from the centerline of an improved road (-4) *These roads are defined as passenger car roads, highways, and county roads.*

- <50ft from centerline of a double track(-3) *These roads are defined as roads with vegetation growing between the tracks and include admin routes, jeep trails, primitive roads, private roads (driveways), unmaintained roads, and ATV routes.*
- <25ft from that center line of a single track *(-2) These are defined as smaller disturbances that include trails, including both mechanized and motorized uses.*

- <25ft from that center line of a closed route *(-1) These are defined as routes that are permanently closed (not seasonally) that have not been reclaimed.*

- <1000ft from a recreational use point (0) *This includes known access points, shooting areas, and more.*

- <100ft from trails in Curecanti National Recreation Area (0)
- Curecanti National Recreation Area recreation polygons (0)

Data for support:

- Aldridge et al. 2010- Aldridge does not agree with the 150ft buffer. He feels that improved roads can impact nesting habitat up to 8km away. Double track roads can have an impact to over 6 km away. He feels that there is not a non-linear response as you move away from the road and that a regression model needs to be used to depict this.

- *Gunnison Basin USFS and BLM Federal Travel Management Plan*

Area for improvement:

Updated: This layer will be updated on a yearly basis, if possible.

3. **Power Lines:**

Power lines pose a potential risk for habitat degradation due to predation and fragmentation. There is a significant distinction between WAPA lines and the GCEA lines. WAPA lines do have large structures, high lines, and improved roads associated with them. GCEA lines are smaller primary and secondary lines that usually do not have roads associated with them.

Geospatial Data: There is a data layer available with large, above ground, WAPA transmission lines mapped.

Evaluation class break (weight) justification:

- <450 feet from a WAPA above ground power line (-3)

Data for support:

- 2011. Phillips, Mike. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison sage-grouse. Mike feels that an impact from power lines is for direct mortality (2 birds within the scope of his study).

- 2011b. Aldridge, Cam. Public meeting information, December 1, 2011. Meeting to validate the priority tool model called by the Technical Subcommittee for the Gunnison Basin Strategic Committee for the Gunnison sage-grouse.

Area for improvement:

- Small power lines are not available and may need to be incorporated. GCEA will not make this information publicly available through this mapping tool for safety/protection reasons.

- Exponential decay out to about 2.5 km is more probably the direct influence of the power lines. This would reflect the impact of predation on the grouse from perching predators. (Aldridge 2011b.)

Updated: This layer will be updated when needed.

CONTROLLABLE THREATS

No Weights Applied. Attempts to combine controllable threats with the habitat map (which includes uncontrollable threats) were not successful. In order to allow future work on this issue, controllable threats were included in the scoring query but were assigned a zero (0) weight. Currently, it appears that the best way to approach the scoring issues associated with controllable threats is to overlay a "controllable threat layer" of interest over the habitat map for visual analysis.

1. **Development potential**:
   Areas that are currently developed pose risks to habitat degradation and fragmentation for the sage-grouse. The hope would be to update this layer on a yearly basis.

   Geospatial Data: Gunnison and Saguache County's' parcel layers were used to assess parcel size and development status. Seventy acres was chosen as a break point for this analysis because of the state law that allows for minimal restriction for subdivision of parcels as long as the final parcels are greater than 35 acres. Development was defined as home, barn, anything >$30,000 worth of improvements on a parcel.

   Evaluation class break (weight) justification:

   - <u>>70 acre parcels</u> (0) *Parcels greater than 70 acres, even undeveloped, can represent a large risk for subdivision and development. Colorado State law*

allows the subdivision of private property into parcels equal to or greater than 35 acres with minimal restriction or regulation by local government. This poses a significant risk to habitat degradation and fragmentation and therefore receives a high score for needed habitat protection.

- <u><70 acre parcels without development</u> (0) *Undeveloped parcels of this size have to go through a county review process to be further subdivided, in which a species conservation planner is consulted for risk to sage-grouse and mitigation opportunities to decrease the developmental impact. The risk for habitat degradation is decreased with this consultation and although there is a potential for fragmentation there is a lower, but still positive, score given for needed habitat protection. This also means that this property has a conservation potential.*

Data for support:

Area for improvement:

- There is a need for more support data for acreages and impact area sizes used in the model. Is there good development impact data available that could inform this process?

- There is a need for future analysis to be able to relate development densities to the RCP. It would be beneficial to complete this exercise using the acres from Appendix F in the RCP.

Updated: This layer will be updated on a yearly basis to track changes in development and subdivision.

2. **Invasive Species:**

Invasive species alter and degrade sage-grouse habitat. Different plant species have different potentials to impact the habitat.

Geospatial Data: Data from the BLM, USFS, NPS and Gunnison County are utilized in this layer.

Evaluation class break (weight) justification:

- <u>Cheatgrass</u> (0)

- <u>Other weed species</u> (0)

Data for support:

- Cheatgrass research

Area for improvement:

- There are no comprehensive records for private land.
- The data collected is sometimes incomplete and species at each point/line/polygon is not documented.

Updated: This layer will be updated on a yearly basis to track changes in infestations. This layer should be a cumulative layer where previous year's data is incorporated with each year's new data.

3. **Recreation:**
All recreational uses of the landscape have potential to impact the sage-grouse through habitat fragmentation, habitat degradation, and direct threat to individuals' survival.

- **Geospatial Data:** Large recreational area polygons have been drawn across the basin and have been rated with a seasonality and level of use. The BLM and recreational stakeholders have worked together to create this very broad layer which reflects the diffuse use that may occur in these areas. Impacts are not directly tied to specific routes, trails and points of interest.

- **Evaluation class break (weight) justification:**
  - Spring Use
    - Low (0)
    - Medium/Low (0)
    - Medium (0)
    - Medium/High (0)
    - High (0)
  - Summer Use
    - Low (0)
    - Medium/Low (0)
    - Medium (0)
    - Medium/High (0)
    - High (0)
  - Fall Use
    - Low (0)
    - Medium/Low (0)
    - Medium (0)
    - Medium/High (0)

    - High (0)
- Winter Use
    - Low (0)
    - Medium/Low (0)
    - Medium (0)
    - Medium/High (0)
    - High (0)

Data for support:

Area for improvement:

- This layer should be further refined.

- Spatial data layers will need to be collected for all recreational trails, fishing areas, parking areas, camp grounds, and boat launch areas from the BLM, USFS, CDOW, NPS, Gunnison County, and Saguache County. These are available, but not currently incorporated into the Tool.

Updated: This layer will be updated on a yearly basis to track changes in development and subdivision.

4. **Landfill:**

The Gunnison County landfill serves as a feeding/harboring location for sage-grouse predators. The landfill's influence on the surrounding area is considered controllable because active measures can be taken to reduce the sage-grouse predator populations.

Geospatial Data: This is a simple spatial layer that delineates a polygon around the landfill area as seen through ortho imagery.

- **Evaluation class break (weight) justification:**

- <u>Areas within ½ mile of the landfill</u> (0)

- <u>Area >½ mile and <1 mile of the landfill</u> (0)

Data for support:

Area for improvement:

- Data to supporting the evaluation classes and impact from predators will need to be documented.

Updated: This layer will be updated as needed or when better information becomes available.

OTHER IMPACTS

No Weights Applied.

1. **Landownership - Protections:**
   Areas that are currently developed pose risks to habitat degradation and fragmentation for the sage-grouse. Areas with easements specifically for sage-grouse habitat protection or with non-development agreements are considered beneficial to the grouse.

   Geospatial Data: Gunnison County has a database and a spatial layer with all qualified conservation easements. The CPW has also provided a layer of participating CCAA parcels (signed Certificate of Inclusion) which has been included in this layer. Public land boundaries are also available and can be incorporated.

   Evaluation class break (weight) justification:

   - Conservation Easements (0) - *These are voluntary agreements that protects the land in perpetuity. All of these easements have grouse mentioned in the documentation, whether management actually occurs to benefit the grouse is a different issue.*
   - CCAA (0) - *These are voluntary agreements that all have an endpoint of 2026 which can be renewed. These agreements can be terminated with 30-60 days' notice.*
   - Public lands (0) - *These are mostly undevelopable.*

   Area for improvement:

   - This layer has not been totally fleshed out at this point. Instead of being incorporated into the tool, it could be used as a layer for evaluation when looking at proximity to priority habitat.

   Updated: This layer will be updated on a yearly basis.