Appendix F – Proposed Forest Plan Amendment for Big Game Security

Amending the Big Game Security Standard in the Helena National Forest Plan for the Blackfoot Travel Plan

Background

Elk serve as a management indicator for hunted species for the Helena National Forest (USDA Helena National Forest Plan [HFP] p. II/17). Federal laws and direction applicable to management indicator species include the National Forest Management Act (NFMA) as well as the Forest Plan. The NFMA requires the Forest Service to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives" [16 USC 1604(g) (3) (B)]. Forest Plan Standards contain the goals, objectives to ensure that this requirement is satisfied. Specifically, the goals and objectives of these standards were designed to provide habitat on the Helena National Forest to support an elk population of 6,400 elk by the year 2000 in support of State of Montana goals for harvestable elk (FP V/5). There were an estimated 4,900 elk on the Forest in 1981 (FP V/5).

- Goal: Maintain and improve the habitat over time to support big game and other wildlife species (FP II/1).
- Objective: To maintain elk habitat capacity, an annual program of burning on the winter range and a road management program to decrease human disturbance (FP II/4).

Elk numbers have been steadily increasing since the crafting of the Forest Plan in 1986. Aerial survey data collected by Montana Department Fish, Wildlife, and Parks staff through 2011 indicate that there are at least 13,075 elk within the hunting districts that comprise the Helena National Forest. This is well above the 6400 benchmark identified in the Forest Plan. The Forest Plan contains Forestwide big game standards and standards specific to each of the management areas identified in the Forest Plan. The standard that is the subject of this programmatic amendment is:

Forestwide Standard 4(a) [Forest Plan pp. II/17 – II/18]

Implement an aggressive road management program to maintain or improve big game security.

a. Road management will be implemented to at least maintain big game habitat capability and hunting opportunity. To provide for a first week bull elk harvest that does not exceed 40 percent of the total bull harvest, roads will be managed during the general big game hunting season to maintain open road densities with the following limits.

Table F- 1. Forest Plan big game security index

Existing Percent Hiding Cover [A]	Existing Percent Hiding Cover [B]	Max Open Road Density mi/mi^2
56	80	2.4
49	70	1.9
42	60	1.2
35	50	0.1

[A]. Forest Service definition - a timber stand which conceals 90 percent or more of a standing elk at 200 feet

[B]. MT Fish, Wildlife, & Parks definition - a stand of coniferous trees having a crown closure of greater than 40 percent

The existing hiding cover to open road density ratio should be determined over a large geographic area, such as a timber sale analysis area, a third order drainage, or an elk herd unit. Big game security, according to this standard, is based on the relationship between the amount of hiding cover in an elk herd unit and the open road density during big game rifle season. Hiding cover is estimated by a model that identifies forest stands able to hide standing elk at 200 feet (HFP, p. II-18). In this case, canopy cover (which can be determined by aerial photo interpretation and satellite imagery) serves as a surrogate for hiding cover (which can only be measured in the field, stand by stand). The Forest Plan provides a formula for converting canopy cover to hiding cover [HFP, p. II/18 and Table 1]. Open road densities include all motorized routes open during the big game rifle season, October 15 through December 1, and are calculated at 100% the length of all public roads and 25% the length of private roads[8]. The big game security index is calculated for elk herd units (EHUs) that include all lands, public and private, within the respective elk herd unit. This means that elk security/vulnerability as determined by this index is partly a function of road densities and timber harvest on private lands outside management control of the HNF. Table F- 2 summarizes the status of each Elk Herd Unit (EHU) in the Blackfoot Non-winter Travel Plan Area relative to this index [Big Game Standard #4a (HFP, p. II/17 – II/18].

Table F- 2. Hiding cover, weighted open road density, and consistency with Forest Plan big game Standard 4a, by Elk Herd Unit, by alternative

Elk Herd Unit	Percent Hiding Cover	Open Road Density (mi/mi^2)			Complies with *Forest Plan Big Game Standard 4a?*		
		alt. 1	alt. 2	alt. 3	alt. 1	alt. 2	alt. 3
Arrastra Creek	42%	1.0	1.0	1.0	No	No	No
Beaver Creek-Lincoln	55%	1.4	1.4	1.3	No	No	No
Flesher Pass	44%	1.0	0.9	0.8	No	No	No
Keep Cool	36%	1.3	1.2	1.1	No	No	No
Landers Fork	44%	0.4	0.4	0.4	No	No	No
Nevada Creek	64%	0.9	0.8	0.7	Yes	Yes	Yes
Ogden Mountain	43%	1.2	1.1	1.1	No	No	No

[8] This is based on research that indicates roads with less use have reduced impacts to elk (Perry and Overly 1976, Lyon 1979, Witmer and deCalesta 1985, and Rowland et al. 2000).

Elk Herd Unit	Percent Hiding Cover	Open Road Density (mi/mi²)			Complies with *Forest Plan Big Game Standard 4a?*		
		alt. 1	alt. 2	alt. 3	alt. 1	alt. 2	alt. 3
Poorman Creek	63%	1.4	1.4	1.1	Yes	Yes	Yes

Only two of the eight elk herd units in the Blackfoot travel planning area meet the big game security standard (Big Game standard #4a: HFP, p. II-18) under current conditions. The two units that meet the standard (Nevada and Poorman Creek) would continue to do so under both of the two Travel Plan action alternatives. The remaining six herd units currently out of compliance with Standard 4a either remain the same in terms of open road densities or slightly move closer to compliance under each of the action alternatives (because of lower open road densities).

In four of the eight EHUs, open road densities decrease in alternatives 2 and 3 compared to current conditions. These proposed reductions in hunting season road access (with consequent benefits for elk) do not result in any of the sub-standard EHUs moving into compliance with standard 4a—which suggests that the big game security index as defined in the Forest Plan, is not a particularly sensitive indicator of changing elk security conditions. Open road densities in the remaining EHUs do not change across all alternatives despite road closures in those EHUs.

The herd units that fail to comply with the standard do not support abnormally high open road densities. Rather, hiding cover percentages are low throughout much of the Blackfoot landscape that in five of the six herd units currently out of compliance, even if all open roads managed by the Forest were eliminated, they would still not comply with standard 4a. The sixth unit, Beaver Creek-Lincoln would require closure of 51 percent of its roads (approximately 37 miles) to achieve compliance. Currently, elk numbers are above population objectives for HD 281 that includes the Beaver Creek-Lincoln herd unit. There are no elk population objectives for HD 284 which also overlaps the Beaver Creek-Lincoln herd unit. Big game security, under the Forest Plan will not improve in the foreseeable future, because hiding cover will continue to decline as trees killed by the ongoing bark beetle epidemic begin to fall over the next few years.

In a word, the big game security index, as now formulated, is insensitive to real changes in elk security and it places impractical constraints on Forest management and on the ability of the public to use the Forest (even though the allowed use is not detrimental to elk security). The standard will be impossible to meet throughout most of—and possibly all of—the Blackfoot landscape for the foreseeable future (25-50 years), not because of deficiencies in travel management, but because of natural loss of hiding cover. Despite the ongoing loss of cover, elk numbers –13,075 elk within the HDs that comprise the Forest, continue to exceed the Forest Plan benchmark of 6,400 elk by the year 2000.

Proposed Amendment

The proposed amendment applies to all portions of the herd units included in the Blackfoot Travel Plan analysis. The proposed programmatic amendment language is as follows:

> When security areas comprise more than 30 percent of the fall use area of an elk herd unit within the HNF administrative boundary, management activities shall not reduce the amount of security areas from October 15 through December 1(approximate big game

rifle season) to less than 30 percent[9]. Where security areas comprise 30 percent or less of the fall use area of an elk herd unit (within the HNF administrative boundary) during the general rifle season, management activities shall not result in a further reduction.

Definitions

Security Area: A block of big game habitat, 250 acres or larger, that is generally at least 0.50 mile from any open motorized route that has administrative or public traffic during the rifle big game hunting seasons. Security areas are intended to reduce elk vulnerability during the elk hunting season, and to provide animals the opportunity to meet their biological needs without making large range movements (e.g., to private land where hunting is not allowed

Rationale

Elk numbers have been increasing across the west and in Montana since the early to mid-1900s. Statewide, post-season elk numbers increased from 8,000 in 1922 to 55,000 in 1978 and to about 160,000 in 2004 (MDFWP pp. 4-5). As such, there are no viability concerns for Rocky Mountain elk in Montana or on the Helena NF. This is supported by their global status of "G5' and the statewide status of 'S5' which are both defined as "common, widespread, and abundant…" However, elk remain a management indicator species on the Forest as well as an economically and socially important species, with large public interest. They continue to provide hunting, wildlife viewing, and photography opportunities, as well as fill the ecological roles associated with this native species on the landscape.

Elk management during the hunting season focuses on maintaining population numbers well above viability thresholds, protecting certain sex and age classes from over-harvest, providing public hunting opportunity, and attempting to balance elk distribution across public and private lands. While these functions are a responsibility of Montana Fish, Wildlife and Parks (MFWP), the HNF strives to complement their efforts by managing elk habitat on the National Forest. The goal has been to provide security habitat that allows a reasonable number of elk to escape hunters so that MFWP does not have to reduce the allowable harvest or shorten the hunting season (USDA 1986). The current 5-week season (much longer than in most states and provinces) "permits a diversity of choice [for hunters] with regard to time, weather conditions, hunter density, and area" (Lonner and Cada 1982 cited in Hillis et al. 1991).

The Forest Plan direction found in the original Helena National Forest Plan is 27 years old and does not reflect the subsequent 27 years of relevant science and data, changing issues with regards to elk, or changing elk numbers and distribution. The original Helena Forest Plan standard for measuring elk vulnerability in the hunting season uses an index that combined open road density and hiding cover (See table f- 1). While this relationship can be informative, it does not account for the spatial arrangement and size of unroaded patches, topography as a mediator of hunter access, the distribution of forage, and other factors that influence the ability of elk to survive the hunting season. Research since the crafting of the Helena Forest Plan emphasizes, among other factors, the effects of open motorized routes on elk security. For example, forest stands that do not meet the definition of hiding cover may prove to be secure areas for elk where local conditions of topography, remoteness, and environmental barriers impede hunter access. Conversely, blocks of hiding cover situated in areas with high levels of motorized use may be

[9] The analysis for Elk Security was run at an elk herd unit rather than at the administrative boundary as is proposed in this amendment; however, it is adequate to discuss the intent of the amendment as proposed, in evaluating the alternatives, and to solicit public comment.

highly insecure. Hiding cover has a role to play but it is not synonymous with security (Lyon and Canfield 1991; Unsworth and Kuck 1991; Lyon and Christensen 1992; Christensen et al. 1993).

The Concept of Elk Security Areas

Since the release of the Helena Forest Plan in 1986, field research in Montana and Idaho has led to the concept of "elk security areas" as a basis for assessing elk vulnerability during the hunting season. The degree to which elk are able to survive the fall hunt is seen, in large part, to be a function of the size and pattern of habitat blocks, amply forested in most cases, to which hunter access is limited. Hillis and others (1991) developed an analysis procedure (generally referred to as the "Hillis method") based on the availability of large non-linear blocks of habitat (equal to or greater than 250 acres) at least 0.50 mile from open roads. Hillis and others recommended that at least 30 percent of the "hunting season home range" within a "standardized habitat analysis unit" be held in security areas (Hillis et al., p. 39). Hillis cautioned, however, that this set of parameters was designed for densely-forested western Montana elk habitat, and—particularly for areas further eastward where forest cover may be limited—security requirements should be evaluated on a site-specific basis and guidelines adjusted so results make biological sense in a local setting (Hillis et al. 1991, p. 40; Christensen et al. 1993, p. 5). The underpinnings of this methodology— i.e., elk tend to avoid open, motorized routes during the hunting season—has been reinforced through the work of Unsworth and others (1991, 1993), Rowland and others (2000, 2005), and Proffitt and others (2011), among others. Furthermore, biologists from MDFWP and the Forest Service recently compiled recommendations for elk habitat management based on the best current available information that includes a consideration of the Hillis method in measuring elk security.

Forest Plan Amendment Analysis for Big Game Security

Security Area Existing Condition

Under the Forest Plan amendment proposed for the Blackfoot Travel Plan—and applicable to future projects in the Travel Plan Area—the "security area" approach replaces the "road density/hiding cover index" as the Forest Plan standard for gauging the vulnerability of elk to hunting. The amendment derives from the Hillis methodology (1991) and adopts specific guidelines for its application from Recommendations for Big Game Habitat Management on the Custer, Gallatin,Helena, and Lewis and Clark National Forests (MFWP/FS Big Game Working Group, 2012).

Table F- 3 summarizes the current contribution of HNF lands to elk security. Security areas range in size from 348 acres in the Ogden Mountain herd unit to 94,938 acres in the Landers Fork herd unit.

Currently, three EHUs meet the recommended 30 percent threshold for security—Arrastra Creek, Landers Fork, and Nevada Creek. Three other EHUs comprise at least 25 percent security—Beaver Creek-Lincoln, Flesher Pass, and Keep Cool. As previously mentioned, elk numbers in the Beaver Creek-Lincoln EHU are above population objectives for HD 281 while there are no elk population objectives for HD 284. This is the same situation for the Keep Cool herd unit since it is located within HDs 281 and 284. Elk population objectives are met for three out of four HDs in the Flesher Pass herd unit. The remaining two herd units – Ogden Mountain and Poorman Creek – comprise 17 percent and 18 percent security, respectively. Elk population objectives are met for half of the HDs within which these herd units occur. It is important to note that elk numbers are calculated through aerial surveys conducted by MDFWP biologists during the winter. While these surveys provide sound trend data, there are occasions whereby survey

results have been confounded due to a variety of factors such as weather conditions at the time of flight. It is also important to note that there are several factors at play in determining elk numbers that are not necessarily tied to habitat conditions. These include increased predation as a result of an expanding wolf population and other predator populations (see http://fieldguide.mt.gov/displayClasses.aspx?Kingdom=Animalia).

Table F- 3. Elk security during big game rifle season (Oct. 15 – Dec. 1) by elk herd units

Elk Herd Units	EHU Acres	Acres in Security Areas	Percent of EHUs in Security Areas
Arrastra Creek	27,738	8,796	32%
Beaver Creek- Lincoln	32,406	8,493	26%
Flesher Pass	91,093	26,486	29%
Keep Cool	44,325	11,828	27%
Landers Fork	136,516	95,390	70%
Nevada Creek	38,824	13,569	36%
Ogden Mountain	56,310	9,809	19%
Poorman Creek	67,425	12,250	19%

In the Blackfoot landscape (as on much of the HNF), elk security/vulnerability during the hunting season is a primary determinant of elk abundance and population structure. While the ability of elk to survive the hunting season is influenced by a number of environmental circumstances, the status of the local Forest Transportation System—and subsequent hunter access —is often the key factor (Proffitt et al. 2008). Several studies have documented the effect of roads on elk security, population structure, and hunter success (Edge and Marcum 1991; Leptich and Zager 1991; Unsworth and Kuck 1991; Gratson and Whitman 2000, Guckinski et al. 2001, Grigg 2007). While most studies demonstrate that open roads influence elk distribution during the hunting season and that road closures can lower the kill rate in a given area, at least one study indicates that in certain circumstances road closures do not alter hunter success (Burbridge and Neff 1976 cited in Gratson and Whitman 2000). In some cases, displacement of elk from roaded public land into more remote terrain (or to inaccessible private land) early in the hunting season can serve to depress the kill rate throughout the remainder of the season.

Elk Populations

The Blackfoot Non-winter Travel Plan area comprises four elk management units (EMU) and their respective hunting districts (HD) as defined by the state-wide Montana Elk Plan (MDFWP 2004):

- Granite Butte EMU (HDs 284, 293, 339 and 343)
- Bob Marshall Wilderness Complex EMU (HDs 280 and 281)
- Garnet EMU (HD 298)
- Birdtail Hills EMU (HD 423)

For the most part, the existing levels of elk security have been yielding elk populations and bull/cow ratios that are in the range of MDFWP objectives for total elk numbers in the respective EMU (See table f- 6). There are a few hunting districts, however, for which there are no or very little, trend data (i.e., HDs 280, 284, and 298).

Each EMU and associated HD has its unique primary challenges that relate to management of elk. Although varied by HD, overall challenges include the impacts of predation on elk populations, restricted hunting access, and extensive motorized use. Refer to the Montana Elk Plan (2004) for more information.

Comparison of Alternatives

Table F- 4 displays total acres of elk security within each elk herd unit in the Blackfoot landscape for the period October 15 through December 1 by alternative. Technically, security is delineated only for fall (hunting season) elk range, which in this case, the entire herd unit is considered to be potential fall elk range given the wide amplitude in weather among years that determines elk use of a particular area. Table F- 5 converts the acreages from table f- 4 to the percentage of each herd unit occupied by elk security areas.

Table F- 4. Total acres of elk security area within each of the Blackfoot elk herd units

Elk Herd Unit	Elk Security Acres		
	Alternative 1	Alternative 2	Alternative 3
Arrastra Creek	8,796	8,528	8,525
Beaver Creek- Lincoln	8,493	9,459	10,154
Flesher Pass	26,486	28,035	33,427
Keep Cool	11,828	14,222	18,186
Landers Fork	95,390	95,505	95,561
Nevada Creek	13,569	13,897	16,811
Ogden Mountain	9,809	10,770	11,912
Poorman Creek	12,250	12,586	18,759

Security areas range in size from 348 acres to 94,938 acres. Among the three alternatives, security areas in alternative 1, existing condition, are more numerous due to their smaller size. Both action alternatives serve to consolidate security areas into larger contiguous blocks resulting in an increase in total overall acres of security and a larger average size of security areas as compared to the existing condition.

Table F- 5. Percentage of fall range within each elk herd unit occupied by elk security areas

Elk Herd Unit	Elk Security Percentages		
	Alternative 1	Alternative 2	Alternative 3
Arrastra Creek	32%	31%	31%
Beaver Creek- Lincoln	26%	29%	31%
Flesher Pass	29%	31%	37%
Keep Cool	27%	32%	41%
Landers Fork	70%	70%	70%

Elk Herd Unit	Elk Security Percentages		
	Alternative 1	Alternative 2	Alternative 3
Nevada Creek	35%	36%	43%
Ogden Mountain	17%	19%	21%
Poorman Creek	18%	19%	28%

Hillis et al. have recommended at least 30 percent of the fall range in each analysis area, such as a herd unit or larger management area, be maintained as elk security areas if elk vulnerability is to be effectively tempered during the hunting season. Herd units with security above the 30 percent threshold allow for considerably more flexibility in the management of forest vegetation and the road/motor trail network than those that remain below the 30 percent security level.

Effects of Alternative 1 (Existing Condition)

Alternative 1 is the no-action scenario, which reflects current conditions. Under this alternative, three EHUs (Arrastra Creek, Landers Fork, and Nevada Creek) are above the recommended 30 percent security level. The other five EHUs are below the recommended threshold.

Currently, MDFWP population objectives for elk are being met in five of the hunting districts that cover the Blackfoot landscape (HD 281, HD 298, HD 339, HD 343, and HD 423). This coincides with the following EHUs: Arrastra Creek, Beaver Creek-Lincoln, Keep Cool, and portions of Poorman Creek, Landers Fork, Flesher Pass, and Ogden Mountain. There are no MDFWP objectives for HDs 280 and 284. HD 293 is below MDFWP objectives that includes Nevada Creek EHU and portions of Ogden Mountain and Poorman Creek. High rates of predation have been considered a challenge in portions of this HD rather than deficiency in security habitat. Forestwide, elk population numbers continue to exceed those identified in the Forest Plan ensuring that viable populations of elk are being maintained.

Effects of Alternative 2

All of the EHUs under alternative 2 would undergo an increase in security habitat with the exception of Arrastra Creek. Arrastra Creek, although it would experience a 1 percent decline in security as a result of opening Forest Road (FR) 4106-J2, would still remain above the recommended 30 percent security threshold. The largest improvement in security habitat would be in the Keep Cool EHU as a result of converting the status of FR 418 from a motorized trail in the existing condition to a non-motorized trail in alternative 2. This change would move the EHU from 27 percent to 32 percent.

Security habitat would increase by 2 percent in the Flesher Pass and Ogden Mountain EHUs and by 3 percent in the Beaver Creek–Lincoln EHU (although they would still remain under 30). The improvement in security is largely the result of converting motorized trails to a non-motorized status (FR 401 and 404 in the Ogden Mountain EHU and 485 in the Beaver Creek-Lincoln EHU) and closing currently open roads yearlong (FR 1819 and 4090-B1, F1, and G1 among others in the Flesher Pass EHU).

Security habitat within the Landers Fork EHU would remain the same (70 %) between the existing condition and alternative 2. Both the Nevada Creek and Poorman Creek EHUs would undergo a 1 percent increase in security in alternative 2, although Poorman Creek EHU would still remain below the 30 percent security threshold. Improvements in security are a result of

converting open roads to closed roads in this alternative (FR 601-K2, K3, and K4 in the Poorman Creek EHU and FR 296-A2 and 4047-B1 and C1 in the Nevada Creek EHU).

As previously stated, elk are within MDFWP objectives for most of the hunting districts associated with the Blackfoot Non-winter Travel Plan area. Since implementation of alternative 2 would result in increases in security habitat in all but one EHU, it is fair to assume that this trend will continue and potentially improve.

Effects of Alternative 3

Implementation of alternative 3 would result in a substantial improvement in security habitat for most of the EHUs. The most significant gains would be realized in the Flesher Pass and Nevada Creek EHUs with an 8 percent increase in security, Poorman Creek with a 10 percent increase in security, and Keep Cool with a 14 percent increase. Improvements in security are the result of converting motorized trails to non-motorized (FR 440 in the Flesher Pass EHU, 487 in the Poorman Creek EHU, and 418 in the Keep Cool EHU), decommissioning existing roads (FR 1819 in the Flesher Pass EHU and 1825-B1 in the Poorman Creek EHU), closing roads currently open (FR 4047-B2, among others, in the Nevada Creek EHU), and imposing a seasonal restriction that includes the hunting season on FR 417 in the Keep Cool EHU.

Security habitat would increase in the Ogden Mountain EHU and Beaver Creek-Lincoln EHU by 4 percent and 5 percent respectively, primarily as a result of converting FR 401 and 404 in the Ogden Mountain EHU from a motorized trail to a non-motorized trail and by putting FR 1824-I1 into storage in the Beaver Creek-Lincoln EHU as well as imposing a seasonal restriction during the hunting season on FR 4106-002.

Security habitat in the Arrastra Creek EHU remains the same as alternative 2 at 31 percent in all alternatives; security would remain unchanged in the Landers Fork EHU.

MDFWP elk objectives are expected to be at least similar to the current condition if not improving due to the substantial increases in security habitat in this alternative.

Application of the Security Area Standard

As can be seen in table f- 4 and table f- 5, elk security areas provide a means of gauging elk vulnerability/ security that is sensitive to changes in open, motorized route configuration. This allows a more realistic assessment as to potential impacts of travel management proposals in different herd units than the previous HFP Standard (the big game security index), which shows no difference between any of the alternatives in terms of Forest Plan compliance. The difference between the two methods is largely a function of eliminating hiding cover as a primary determinant of elk security and focusing on the size and distribution of large habitat blocks to which hunter access is limited. This is particularly appropriate in this case, as Travel Plan alternatives deal with changes in open road patterns and have no impact on hiding cover.

The key relationship in table f- 5 is the degree to which security approaches or exceeds the 30 percent threshold. Table F- 5 shows that under the Travel Plan proposed action (alternative 2), three herd units would be above the 30 percent security level, four approach the 30 percent threshold, and one decreases by 1 percent but remains above 30 percent. Of these, the Keep Cool EHU would see a substantial improvement in security and the Beaver Creek-Lincoln, Flesher Pass, Nevada Creek, Ogden Mountain, and Poorman Creek EHUs would experience a more modest increment. Security would hold steady in the Landers Fork EHU and decline in the

Arrastra Creek EHU. Under alternative 3, six of the eight EHUs would comprise more than 30 percent security habitat.

These herd units are thus all in line with the proposed Helena Forest Plan amendment for elk security for both action alternatives. Security areas either exceed 30 percent or are moving in that direction.

Table F- 6 summarizes how these herd units comply with the proposed Forest Plan standard as well as the status of elk population objectives, according to the 2004 Elk Management Plan, in the respective HDs associated with a given herd unit. It is important to keep in mind that the Forest Plan big game security standard (4a) was designed to address MDFWP elk objectives in place at the time of Forest Plan development. These objectives were tallied up to a Forestwide level with the intent to provide habitat sufficient for 6,400 elk. The standard addressed the need for distribution of elk across the landscape by setting the standard at the herd unit level; however, the objectives were intended to be realized Forestwide. Also noteworthy is the fact that many of the HDs that comprise the Helena National Forest are at or above population objectives set forth in the 2004 Elk Management Plan.

Table F- 6. Criteria for compliance of Blackfoot landscape elk herd units with the proposed amended Forest Plan standard for elk security

Elk Herd Units by Alternative	Security Status of Elk Herd Unit (EHU)		Status of Elk Population Objectives in Associated Hunting Districts*			EHU meets proposed HFP Standard?
	Percent Security	Security Trend	Meets Objective for Elk Numbers in the HD?**	Meets Objective for Bull/Cow Ratio?	Issues with Objectives are Primarily Habitat Related?	
Alternative 1						
Arrastra Creek	32%	Static	Yes	Objective is 15:100; survey data indicate 13:100 for HD 281	Partly related to lack of forage (HD 281)	Yes
Beaver Creek-Lincoln	26%	Static	Yes for HD 281/No objectives for HD 284***	Objective is 15:100; survey data indicate 13:100 for HD 281/No objectives for HD 284***	Partly related to lack of forage (HD 281)	Yes
Flesher Pass	29%	Static	No for HD 293/Yes for HDs 339, 343, and 423	No for HD 293 /Yes for HDs 339, 343, 423	Partly related to motorized use and past timber harvest (HDs 293, 339, 343)	Yes
Keep Cool	27%	Static	Yes for HD 281/No objectives for HD 284***	Objective is 15:100; survey data indicate 13:100 for HD 281/No objectives for HD 284***	Partly related to lack of forage (HD 281)	Yes
Landers Fork	70%	Static	Yes for HD 281/No objectives for	Objective is 15:100; survey data indicate	Partly related to lack of forage (HDs	Yes

Elk Herd Units by Alternative	Security Status of Elk Herd Unit (EHU)		Status of Elk Population Objectives in Associated Hunting Districts*			EHU meets proposed HFP Standard?
	Percent Security	Security Trend	Meets Objective for Elk Numbers in the HD?**	Meets Objective for Bull/Cow Ratio?	Issues with Objectives are Primarily Habitat Related?	
			HD 280***	13:100 for HD 281/No objectives for HD 280***	280 and 281)	
Nevada Creek	35%	Static	No (HD 293)	No (HD 293)	Partly related to motorized use and past timber harvest (HD 293)	Yes
Ogden Mountain	17%	Static	No for HD 293/Yes for HD 298	No for HD 293/Yes for HD 298	Partly related to motorized use and past timber harvest (HD 293)	Yes
Poorman Creek	18%	Static	No for HD 293 /Yes for HD 343/No objectives for HD 284***	No for HD 293/Yes for HD 343/No objectives for HD 284***	Partly related to motorized use and past timber harvest (HD 293 and 343)	Yes
Alternative 2						
Arrastra Creek	31%	-1%	Yes	Objective is 15:100; survey data indicate 13:100 for HD 281	Partly related to lack of forage (HD 281)	Yes
Beaver Creek-Lincoln	29%	+3%	Yes for HD 281/No objectives for HD 284***	Objective is 15:100; survey data indicate 13:100 for HD 281/No objectives for HD 284***	Partly related to lack of forage (HD 281)	Yes
Flesher Pass	31%	+2%	No for HD 293/Yes for HDs 339, 343, and 423	No for HD 293 /Yes for HDs 339, 343, 423	Partly related to motorized use and past timber harvest (HDs 293, 339, 343)	Yes
Keep Cool	32%	+5%	Yes for HD 281/No objectives for HD 284***	Objective is 15:100; survey data indicate 13:100 for HD 281/No objectives for HD 284***	Partly related to lack of forage (HD 281)	Yes
Landers Fork	70%	Static	Yes for HD 281/No objectives for HD 280***	Objective is 15:100; survey data indicate 13:100 for HD 281/No objectives	Partly related to lack of forage (HDs 280 and 281)	Yes

Elk Herd Units by Alternative	Security Status of Elk Herd Unit (EHU)		Status of Elk Population Objectives in Associated Hunting Districts*			EHU meets proposed HFP Standard?
	Percent Security	Security Trend	Meets Objective for Elk Numbers in the HD?**	Meets Objective for Bull/Cow Ratio?	Issues with Objectives are Primarily Habitat Related?	
				for HD 280***		
Nevada Creek	36%	+1%	No (HD 293)	No (HD 293)	Partly related to motorized use and past timber harvest (HD 293)	Yes
Ogden Mountain	19%	+2%	No for HD 293/Yes for HD 298	No for HD 293/Yes for HD 298	Partly related to motorized use and past timber harvest (HD 293)	Yes
Poorman Creek	19%	+1%	No for HD 293 /Yes for HD 343/No objectives for HD 284***	No for HD 293/Yes for HD 343/No objectives for HD 284***	Partly related to motorized use and past timber harvest (HD 293 and 343)	Yes
Alternative 3						
Arrastra Creek	31%	-1%	Yes	Objective is 15:100; survey data indicate 13:100 for HD 281	Partly related to lack of forage (HD 281)	Yes
Beaver Creek-Lincoln	31%	+5%	Yes for HD 281/No objectives for HD 284***	Objective is 15:100; survey data indicate 13:100 for HD 281/No objectives for HD 284***	Partly related to lack of forage (HD 281)	Yes
Flesher Pass	37%	+8%	No for HD 293/Yes for HDs 339, 343, and 423	No for HD 293 /Yes for HDs 339, 343, 423	Partly related to motorized use and past timber harvest (HDs 293, 339, 343)	Yes
Keep Cool	41%	+14%	Yes for HD 281/No objectives for HD 284***	Objective is 15:100; survey data indicate 13:100 for HD 281/No objectives for HD 284***	Partly related to lack of forage (HD 281)	Yes
Landers Fork	70%	Static	Yes for HD 281/No objectives for HD 280***	Objective is 15:100; survey data indicate 13:100 for HD 281/No objectives for HD 280***	Partly related to lack of forage (HDs 280 and 281)	Yes

Elk Herd Units by Alternative	Security Status of Elk Herd Unit (EHU)		Status of Elk Population Objectives in Associated Hunting Districts*			EHU meets proposed HFP Standard?
	Percent Security	Security Trend	Meets Objective for Elk Numbers in the HD?**	Meets Objective for Bull/Cow Ratio?	Issues with Objectives are Primarily Habitat Related?	
Nevada Creek	43%	+8%	No (HD 293)	No (HD 293)	Partly related to motorized use and past timber harvest (HD 293)	Yes
Ogden Mountain	21%	+4%	No for HD 293/Yes for HD 298	No for HD 293/Yes for HD 298	Partly related to motorized use and past timber harvest (HD 293)	Yes
Poorman Creek	28%	+10%	No for HD 293 /Yes for HD 343/No objectives for HD 284***	No for HD 293/Yes for HD 343/No objectives for HD 284***	Partly related to motorized use and past timber harvest (HD 293 and 343)	Yes

*Arrastra Creek is located within the Bob Marshall Complex EMU (HD 281); Beaver Creek-Lincoln is within the Bob Marshall EMU (HDs 281 and a minor portion of 284); Flesher is within the Granite Butte EMU (HDs 293, 343, 339, and 423); Keep Cool is primarily within the Bob Marshall EMU (HD 281) with a small portion in the Granite Butte EMU (HD 284); Landers Fork is within the Bob Marshall EMU (HDs 280 and 281); Nevada Creek is within the Granite Butte EMU (HD 293); Ogden Mountain is within the Granite Butte EMU (HD 293) and the Garnet EMU (HD 298); and Poorman Creek is within the Granite Butte EMU (HDs 284, 293, and 343)

**Forward slash indicates multiple HDs. For example, the Beaver Creek-Lincoln EHU is located with two HDs and its respective cell is populated with 'yes/no objectives' which equate to the first HD meets objectives, the second one has no identified MDFWP objectives

*** MDFWP population objectives have not been identified for HDs 280 and 284 (See MDFWP 2004).

Table F- 6 illustrates the relationship of the proposed security standard with the status of local elk populations. Six out of eight EHUs (75 %) improve between the no action alternative and the action alternatives. One EHU remains the same at 70 percent security across all alternatives and one drops by 1 percent but still remains above 30 percent. MDFWP elk population objectives are met in five of the hunting districts that comprise the EHUs; one HD does not meet population objectives, and two HDs have no objectives. Management challenges in these HDs are partially related to habitat issues that include lack of forage, which is outside the scope of the travel plan —and excessive motorized use, which is being addressed by this plan. Issues associated with the HD that do not meet MDFWP objectives (HD 293) are related primarily to high levels of predation (bears, lions, wolves) and do not appear to be a function of inadequate habitat security on National Forests System land. Elsewhere, natural predation is substantially lower and security is apparently sufficient to keep elk population size and structure on a relatively even keel.

In the Travel Plan Area as a whole, security is improving. These changes should result in measurable benefits to elk security.

Comparison of Existing and Proposed Standards

Table F- 7 provides a comparison of the current Big Game standard (HFP #4a) and the proposed new standard in terms of how these two methods classify elk herd units for compliance with the Forest Plan under different Travel Plan alternatives.

Table F- 7. Comparison of two methodologies for determining compliance of elk herd units with elk security requirements in the Helena Forest Plan

Elk Herd Units	Complies with Current Big Game Standard #4a?			Complies with Proposed Elk Security Area Standard?		
	alt. 1	alt. 2	alt. 3	alt. 1	alt. 2	alt. 3
Arrastra Creek	no	no	no	yes	yes	yes
Beaver Creek- Lincoln	no	no	no	yes	yes	yes
Flesher Pass	yes	yes	yes	yes	yes	yes
Keep Cool	yes	yes	yes	yes	yes	yes
Landers Fork	no	no	no	yes	yes	yes
Nevada Creek	yes	yes	yes	yes	yes	yes
Ogden Mountain	no	no	no	yes	yes	yes
Poorman Creek	yes	yes	yes	yes	yes	yes

Classification of elk herd units by the proposed Forest Plan standard indicates that all herd units comply with the big game security standard under all alternatives. Under the current Forest Plan standard, only two of the eight herd units are in compliance. Annual survey data from MFWP indicate that many of the elk herds associated with these herd units are meeting population objectives laid out in the Montana Elk Management Plan (2004). Those elk populations below MDFWP objectives are only partially related to habitat; more pressing challenges include predators, housing development, and disposition of private timber land (much of which has already been resolved). Given that these elk populations must withstand a rigorous hunting season that, with the bow season, stretches from the first of September into late November each year, it is reasonable to conclude that hunting season elk security is adequate. Results produced by the proposed Forest Plan standard support this conclusion; a majority of results produced by the current standard contradict it.

Summary and Conclusions

One of the objectives of the Blackfoot Travel Plan is to avoid imposing outdated management direction contained in the Helena Forest Plan (USDA 1986) on the road and trail system of the Blackfoot landscape. The argument for doing so with regard to big game security standards has been made in previous sections. This section condenses the rationale into a more compact format.

The Travel Plan is designed to maintain a road and trail system that provides the public with reasonable access to the national forest and allows the Forest Service to manage the landscape with some efficiency, while at the same time, buffering as much of the wildlife resource as possible from problems generated by motor vehicles and disruptive human presence in general.

Part of the process of balancing the need for road access with the security requirements of big game animals entails developing a system of habitat assessment and management guidance that can accurately depict the security status of elk in a given area and appropriately address any problems detected. Experience with the Forest Plan over the last couple decades has led HNF wildlife biologists to conclude that elk security standards in the Plan—particularly big game standard 4a (HFP, pp. II/17 – II/18)—do not accurately reflect the habitat needs of elk during the hunting season and have required road closures that restrict travel but often do not improve elk security.

In particular:

- Forest Plan standard #4a (the big game security index) indicates that six of the 8 elk herd units in the Blackfoot landscape are deficient in elk security to the point that they do not meet the standard.
- Elk numbers have been steadily increasing since the crafting of the Forest Plan in 1986. Aerial survey data collected by Montana Department of Fish, Wildlife, and Parks staff through 2011 indicate that there are at least 13,075 elk within the hunting districts that comprise the Helena National Forest. This is well above the 6,400 benchmark identified in the Forest Plan.
- Montana Department of Fish, Wildlife, and Parks data indicate that elk populations in the Blackfoot landscape are either at or near population objectives of the Montana Elk Plan (2004) for the last several years for most of the HDs; or that management challenges are only partially habitat related. That is, elk security is adequate in many HDs. The FP standard is not an accurate indicator of elk security.
- In spite of the fact that the Travel Plan Decision closes several miles of roads to vehicle access during the hunting season, HFP standard #4a indicates that there is no improvement in elk security in any unit.
- This counterintuitive result is, in part, a function of the hiding cover portion of the index: hiding cover has declined to levels that cannot be counterbalanced by any degree of road closures. In several herd units, not even the closure of all roads managed by the Forest would be enough to meet standard #4a. In another herd unit approximately 36 miles of roads would need to be closed if the standard is to be met. These requirements are impractical on a grand scale. And the HNF is put in the position of never being able to meet standard #4a in these herd units in the foreseeable future (especially with hiding cover continuing to decline from massive beetle kill).
- It should be noted that the Blackfoot Travel Plan would have no effect on hiding cover.
- The alternative methodology proposed in the Forest Plan amendment—the percentage of an elk herd unit occupied by elk security areas—indicates that overall elk security in the Blackfoot landscape is adequate. This measure of security, unlike the Forest Plan standard, is sensitive to changes in open road configuration—pointing out where management is effective and where it needs to improve.
- By introducing reasonably measurable criteria as part of the formula for gauging the level of security needed in a given herd unit, the new standard provides a more realistic means of guiding travel management on the National Forest.

In conclusion, Forest Plan big game standard #4a, inaccurately depicts the nature of elk security in the Blackfoot landscape, is insensitive to changing road densities, and places unnecessary and impractical constraints on travel management. Meanwhile, the more recently developed elk security area methodology provides a reasonably accurate picture of elk security across the

landscape, is responsive to proposed changes in open road patterns, and correctly directs management to areas that need further attention. The elk security area methodology should replace big game standard 4a as the means of determining the status of elk security in the Blackfoot Travel Planning Area.

Elk are a management indicator for commonly hunted species. As such, they are intended to be a bellwether of the effects of management activities on representative wildlife habitats with the objective of ensuring that viable populations of existing native and desirable non-native animal species are maintained. Current elk numbers are well above those established as benchmarks in the 1986 Forest Plan, benchmarks intended to ensure that elk remain viable on the Helena National Forest.