Bighorn Sheep/Domestic Sheep-Risk Management Strategy

Wyoming Herds (Bridger-Teton and Caribou-Targhee National Forests)

Revised as of 11/28/2016

In 2011, the Chief of the Forest Service directed national forests with bighorn sheep populations to analyze risks of disease transmission between domestic and bighorn sheep. The agency's goal is to retain opportunities for domestic sheep grazing on the national forests while maintaining the viability of bighorn sheep populations. This document discloses the results of the Risk of Contact assessment (ROC) developed by the Intermountain Regional Office and our strategy for addressing allotment management in areas with various levels of risk. It is intended to guide our management between now and the revision of the Bridger-Teton (BTNF) and Caribou-Targhee (CTNF) Forest Plans. The BTNF anticipates that revision process to begin in 2018 and be concluded within three to five years. The CTNF Forest Plan revision process is scheduled to begin several years after the BTNF. The strategy outlined in this document is not intended to be static, but rather the conclusions and suggestions may change over time with new information and changing conditions.

This strategy was developed with consideration of the recommendations made by the Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group (IWG) in their Final Report dated September 2004. The IWG was commissioned by then- Governor Jim Geringer and then-United States Senator Craig Thomas who asked interested parties to work in a statewide approach to develop collaborative recommendations and actions that would address the ongoing conflict and confrontation relative to interaction between bighorn sheep and domestic sheep. The goal was that these recommendations would lead to long-term stabilization of both wild sheep herds and the domestic sheep industry.

This strategy also aligns with Memorandum of Understanding (MOU) #16-MU-11020000-006 between the State of Wyoming and the Wyoming Game and Fish Department, and the USDA Forest Service Rocky Mountain and Intermountain Regions. That MOU documents the cooperative efforts WGFD and the Forest Service pledge to undertake to manage bighorn sheep herds and their habitats on National Forest System lands in the State of Wyoming.

This document begins by describing the data sources and analysis processes. A description of the risk of contact for each herd is then presented. The document concludes by categorizing grazing allotments as high, medium-high, medium, and low priority for management adjustments to reduce risk of contact between bighorn sheep and domestic sheep grazing allotments.

Data Sources and Analysis

An Intermountain Region Bighorn Sheep/Domestic Sheep Framework was developed to assist the Region's forests in assessing risks to bighorn sheep populations (*Ovis canadensis*, BHS). The framework employs a Risk of Contact (ROC) model that estimates the potential of BHS to foray from a Core Herd Home Range (CHHR) onto nearby domestic sheep allotments. When used in the context of other factors, the model can assist in evaluating risks to BHS populations for a planning unit. This document

provides a brief description of BHS risk considerations including ROC model output and descriptions of Wyoming CHHRs (Figure 1) on the BTNF and CTNF in Wyoming.

Telemetry and observation data were used to create CHHRs for BHS on Intermountain Region Forest lands. Wyoming Game and Fish Department (WGFD) biologists were involved in the identification and review of BHS CHHRs on the BTNF and CTNF and the review of source habitat data as part of an expert review process. Multiple CHHR configurations were evaluated and final CHHR configurations were chosen with population, demographic, and biological input provided by the WGFD. Six BHS herds associated with NFS lands have sufficient data available for home range identification. Data for these herds is displayed in Table 1 and the CHHRs are spatially displayed in Figure 1.

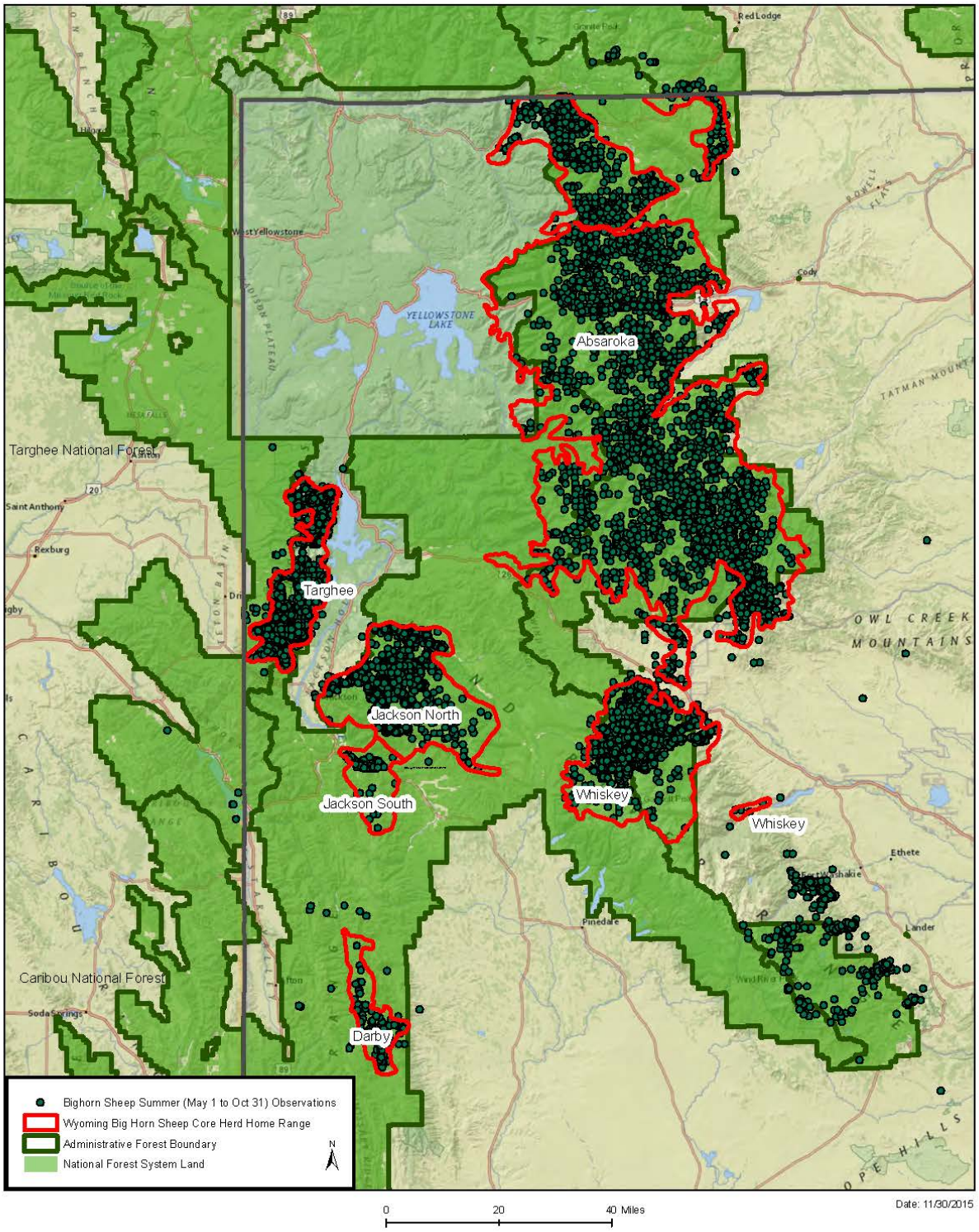
Table 1. Population estimates and demographical characteristics of six BHS populations associated with CHHRs on the BTNF and CTNF in Wyoming

CHHR	Population Estimate	Adult Population	Lambs per 100 Ewes	Rams per 100 Ewes	Ram Ratio	Ewe Ratio
Absaroka[1]	4,500	3,754	23-52*	20-63*	30%	70%
Darby Mtn.	60	46	35	12	11%	89%
Jackson North	310	263	31	75	43%	57%
Jackson South	40	28	60	30	25%	75%
Targhee	125	100	33	35	26%	74%
Whiskey Mtn.	950	821	22	40	29%	71%

*Range of lamb:ewe and ram:ewe ratios for five herds that comprise the Absaroka metapopulation

One additional herd, the Temple Creek population, may be associated with NFS lands on the BTNF. Based on discussions with WGFD staff, it was determined that the data currently available is not sufficient to accurately delineate the Temple Creek CHHR. WGFD is currently collecting additional data using radio marked bighorn sheep. Once collected, this data will be used to understand the status of the Temple Peak population. Delineation of that CHHR and assessment of risk for the Temple herd will be deferred until that time.

Wyoming Bighorn Sheep - Core Herd Home Range



BTNF and CTNF managers carefully considered a variety of qualitative and quantitative factors to evaluate risk to BHS population persistence on these lands. Initial factors considered include resiliency of a herd (larger populations have greater resiliency to extirpation from disease), continued BHS persistence even with continued disease exposure, and redundancy of herds on the planning unit.

The modeled ROC output was a useful starting point for analysis, but was insufficient as a stand-alone metric. Limitations to the model (e.g., availability of data, model precision, and other factors such as topographical barriers that are not modeled) were also considered. The model output estimates a spatial risk of contact between BHS and an allotment area, but it does not incorporate other probabilities such as animal to animal contact, disease transmission, and the total risk of a disease event and BHS population loss. The analysis assumes a ROC level between a CHRR and an allotment using a May 1 to October 31 timeframe. Another important factor considered was the actual dates that domestic sheep are on the allotment, which in most cases is a much shorter time frame

After consideration of these additional factors, Forest managers worked with grazing allotment permittees, state fish and game agencies, tribes, and other entities as appropriate in order to develop the best collaborative response strategies. Response strategies used to lower the overall risk include altering timing and distribution of domestic sheep, application of Best Management Practices aimed at mitigating risk of contact, and other approaches identified in state management plans. Best Management Practices that some domestic sheep producers have already employed include increasing the number of herders, utilizing dogs to assist herders, penning sheep up at night, and communicating with Forest Service staff about wild sheep observations. Mitigations may be implemented as opportunities arise, as practicable, or upon more detailed analysis (e.g., during Forest Plan revision).

Absaroka

The Absaroka CHHR is a meta-population that includes five BHS herd units, some of which occupy lands on the BTNF. The northwestern corner of the BTNF includes habitat and BHS observations that contribute to this CHHR. The southeastern portion of the CHHR includes lands on the Wind River Indian Reservation. The five BHS herd units that contribute to the larger Absaroka Mountain Range meta-population include Clarks Fork, Trout Peak, Wapiti Ridge, Francs Peak and Yount's Peak. .

The Absaroka Range supports the largest Rocky Mountain bighorn sheep herd in the conterminous United States (4500 animals) and is considered a core native BHS population in the IWG Final Report and Recommendations. . Core native herds are Wyoming's largest bighorn sheep populations and only include herds have never been extirpated, then reestablished via transplants. The IWG Report recognizes that domestic sheep may occur within the boundaries of the core, native bighorn sheep herds, however all efforts should be made to prevent contact between bighorn and domestic sheep.

While disease is not currently considered a primary threat for this population, an apparent disease-related event occurred in one population segment from 2011-2013 and resulted in a 40% reduction in the population size of that population segment, to approximately 900 sheep. Lamb:ewe ratios among the five herd units vary from 23-52% (Table 1). Lamb recruitment rates in four of the five herd units are thought to be primarily carry-capacity related. In addition, composition counts for these populations occur in the winter where there is likely mixing of the various herds. Although lamb recruitment rates may be low, they are considered acceptable for a large, stable population.

The analysis indicated there are no domestic sheep allotments on Intermountain Region NFS lands potentially affecting the CHHR. The national forest lands associated with this CHHR are essential in providing habitats that support a viable BHS population on the BTNF.

Whiskey Mountain

The Whiskey Mountain herd occurs on the eastern portion of the BTNF. The Wyoming Bighorn Sheep/Domestic Sheep Interaction Working Group – Final Report and Recommendations (Wyoming Plan), identifies the Whiskey Mountain herd as a Core Native Herd and of high importance. The herd was historically larger than current counts, and served as a transplant source for reestablishing BHS populations in the western U.S. A disease outbreak in 1991 resulted in a loss of 30-40% of the population, and post-outbreak lamb recruitment rates have been as low as 10-17%. Lamb recruitment remains low (22 lambs:100 ewes) for this population. Disease is still a concern within the population, which remains at approximately 2/3 of the pre-outbreak level, estimated at 1500 animals.

Although the CHHR for Whiskey Mountain is near the Absaroka CHHR, a highway is thought to be a barrier between the populations, as there is no documentation that supports interchange between these two populations based on telemetry data or anecdotal observations. These herds may overlap on the winter ranges, off NFS lands. Ongoing genetic sampling of these two populations may provide information on the connectivity between these two populations, but the consistently occupied habitats/core herd home ranges of these two populations do not overlap.

Domestic sheep grazing near the Whiskey Mountain CHHR is complicated by BHS comingling that likely occurs when wolves or grizzly bears scatter the domestic herds and they leave their assigned allotment boundaries.

Table 2 displays the modeled BHS herd-domestic sheep allotment risk of contact by foraying BHS along with circumstances and mitigations that either add to or reduce the modeled risk.

Table 2. Whiskey Mountain CHHR - Evaluation of risk of contact between foraying BHS and domestic sheep allotments.

Allotments	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
BALDY LAKE	BTNF	2.035	Closed	
NORTH FORK	BTNF	1.337	Closed	
PIPESTONE	BTNF	0.792	Closed	
ROCK CREEK	BTNF	0.360	Vacant	Risk in addition to modeled amount includes multi-BHS herd interaction and domestic sheep comingling with BHS after predator scatter. Short season*
MIDDLE FORK	BTNF	0.320	Closed	
LIME CREEK	BTNF	0.284	Vacant	Risk in addition to modeled amount includes multi-BHS herd interaction; and domestic sheep comingling with BHS after predator scatter. Short season*
TOSI CREEK	BTNF	0.147	Vacant	Risk in addition to modeled amount includes multi-BHS herd interaction; and

Allotments	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
				domestic sheep comingling with BHS after predator scatter. Short season*
RAID LAKE	BTNF	0.110	Closed	
ELK RIDGE	BTNF	0.103	Vacant	Risk in addition to modeled amount includes multi-BHS herd interaction; and domestic sheep comingling with BHS after predator scatter. Short season*
CROSS LAKE	BTNF	0.021	Closed	
EAST FORK	BTNF	0.001	Closed	

*The model assumed a six month grazing season. The actual grazing season is shorter which effectively reduces the ROC by reducing the time that domestic sheep are actually on the allotment.

Jackson North and Jackson South

The Jackson population is found to the east and southeast of Jackson, Wyoming. The BTNF contributes to the majority of habitat used by this population. The Wyoming Plan identifies the Jackson herd as a Core Native Herd.

Recent disease outbreaks from 2010-2012 reduced the population by approximately 30%. The pre-outbreak population was estimated at 450 animals, and lamb recruitment was suppressed for a few years following the outbreak. The herd appears to be recovering towards pre-outbreak levels.

WGFD managers recommended dividing the Jackson Herd into two distinct populations for this analysis. Although suitable habitat exists between the two populations and there may be some connectivity, there is little or no evidence of interchange between the two groups. The northern population is migratory and represents approximately 360 sheep. The southern population is non-migratory and represents only 40 sheep, and thus may be more susceptible to impacts of a disease outbreak than larger populations. The majority of these sheep originated from a transplant in 1980. Of the 36 ewes that have been GPS-collared in this herd (including 18 collars that are still on sheep), none have moved between the two groups. Also, no sheep have been observed between the two groups during summer bear flights or from outfitter contacts. WGFD will be collecting additional data using radio marked bighorn sheep that will help refine the CHHR of this herd and determine the level of connectivity between the Jackson North and Jackson South population segments. Ongoing genetic sampling may also provide information on the connectivity between these two groups, but the consistently occupied habitats/core herd home ranges of these two population segments do not overlap. Tables three and 4 display the modeled BHS herd-domestic sheep allotment risk of contact by foraying BHS along with factors that either add to or reduce the modeled risk.

Table 3. Jackson North CHHR - Evaluation of risk of contact between foraying BHS and domestic sheep allotments.

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
TOSI CREEK	BTNF	Overlap	Vacant	Risk in addition to modeled amount includes multi-BHS herd interaction and domestic sheep comingling with

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
				BHS after predator scatter. Short season*.
LIME CREEK	BTNF	0.413	Vacant	Risk in addition to modeled amount includes multi-BHS herd interaction and domestic sheep comingling with BHS after predator scatter. Short season*.
DOG CREEK	CTNF	0.355	Active	Topographic/geological barriers*, human development barriers, three month and 5 day grazing season**.
PALISADES	CTNF	0.250	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
PHILLIPS CANYON S&G	BTNF	0.203	Closed	
GRAND BLOWOUT	CTNF	0.202	Active	Topographic/geological, human development barriers*, less than three month grazing season**. Divided allotment; rested intermittently. Units within the allotment will continue to be rested one out of three years.
ROCK CREEK	BTNF	0.198	Vacant	Risk in addition to modeled amount includes multi-BHS herd interaction and domestic sheep comingling with BHS after predator scatter. Short season**
BAILEY LAKE	BTNF	0.185	Active	Short grazing season, rested intermittently; divided allotment. Factors that can increase risk of contact: immediately adjacent to Jackson BHS herd unit boundary; high-elevation, open BHS habitat (BHS can move readily); and abandoned domestic sheep
SOUTH ELK	CTNF	0.184	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
AUSTIN CANYON	CTNF	0.163	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
UPPER GRAYBACK-PHOSPHATE BIGHORN	BTNF	0.145	Closed	

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
ELK RIDGE	BTNF	0.130	Vacant	Risk in addition to modeled amount includes multi-BHS herd interaction and domestic sheep comingling with BHS after predator scatter. Short season**.
SOUTH INDIAN-COTTONWOOD	CTNF	0.090	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
BURBANK	CTNF	0.070	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
ELK MOUNTAIN	BTNF	0.049	Active	Short grazing season, rested intermittently.
PICKLE PASS BIGHORN SHEEP	BTNF	0.047	Closed	
SNAKE RIVER	BTNF	0.031	Active	Short grazing season, rested intermittently. Factors that can increase risk of contact: high-elevation, relatively open BHS habitat (i.e., BHS can move readily); and abandoned domestic sheep.
NORTH MIDDLE RIDGE	BTNF	0.022	Active	Short grazing season, rested intermittently; Topographical barriers and dense conifer forestland that can limit movements of BHS.
GRIZZLY CREEK BIGHORN SHEEP	BTNF	0.014	Closed	
BLIND TRAIL	BTNF	0.007	Vacant	Short grazing season, rested intermittently.
SQUAW CR-WEINER CR	BTNF	0.006	Forage reserve	
STEWART	BTNF	0.005	Vacant	Short grazing season, rested intermittently; topographic barrier and dense conifer forestland.
CORRAL CREEK BIGHORN SHEEP	BTNF	0.004	Closed	
GRAND VALLEY	CTNF	0.001	Active	Topographic/geological barriers*, human development barriers, one month grazing season**.
MULE CREEK S&G	BTNF	<0.001	Forage reserve	
RUSSELL-VAN	CTNF	<0.001	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
ELK FLAT	CTNF	<0.001	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.

* These barriers include features like the Snake River, Palisades Reservoir, and Highways 89 and 26.
** The model assumed a six month grazing season. The actual grazing season is shorter which effectively reduces the ROC by reducing the time that domestic sheep are actually on the allotment.

Table 4. Jackson South CHHR - Evaluation of risk of contact between foraying BHS and domestic sheep allotments. *Allotments are administered by the CTNF.

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
UPPER GRAYBACK-PHOSPHATE BIGHORN	BTNF	Overlap	Closed	
BAILEY LAKE	BTNF	0.127	Active	Short grazing season, rested intermittently. Factors that can increase risk of contact: adjacent to Jackson BHS herd; high-elevation, open BHS habitat (i.e., BHS can move readily); and abandoned domestic sheep. Also: high potential impact to Jackson-South herd segment if transmission occurs due to low #s in Jackson-South herd segment.
PICKLE PASS BIGHORN SHEEP	BTNF	0.098	Closed	
GRIZZLY CREEK BIGHORN SHEEP	BTNF	0.045	Closed	
DOG CREEK	CTNF	0.037	Active	Topographic/geological barriers*, human development barriers, less than three month 5 day grazing season**.
GRAND BLOWOUT	CTNF	0.029	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**, divided allotment, rested intermittently. Units within the allotment will continue to be rested one out of three years.
ELK MOUNTAIN	BTNF	0.028	Active	Short grazing season, rested intermittently. Factors that can increase risk of contact: high-elevation, relatively-open BHS habitat

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
				(i.e., BHS can move readily); and abandoned domestic sheep. Also: high potential impact to Jackson-South herd segment if transmission occurs due to low #s in Jackson-South herd segment.
BLIND TRAIL	BTNF	0.026	Vacant	Short grazing season, rested intermittently. Factors that can increase risk of contact: high-elevation, open BHS habitat with low potential for human disturbance (i.e., BHS can move readily); and abandoned domestic sheep. Also: high potential impact to Jackson-South herd segment if transmission occurs due to low #s in Jackson-South herd segment.
SOUTH ELK	CTNF	0.026	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
NORTH MIDDLE RIDGE	BTNF	0.025	Active	Short grazing season; rested intermittently; and dense conifer forestland.
STEWART	BTNF	0.023	Vacant	Short grazing season; and dense conifer forestland.
MULE CREEK S&G	BTNF	0.016	Forage reserve	
GRIZZLY BASIN	BTNF	0.015	Vacant	Short grazing season, rested intermittently.
CORRAL CREEK BIGHORN SHEEP	BTNF	0.014	Closed	
SNAKE RIVER	BTNF	0.012	Active	Short grazing season, rested intermittently. Factors that can increase risk of contact: high-elevation, relatively open BHS habitat (i.e., BHS can move readily); and abandoned domestic sheep. Also: high potential impact to Jackson-South herd segment if transmission occurs due to low #s in Jackson-South herd segment.
BIRCH CREEK-STAR PEAKS	BTNF	0.011	Forage reserve	
DEADMAN	BTNF	0.011	Vacant	Short grazing season, rested intermittently. Factors that can

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
				increase risk of contact: high-elevation, relatively open BHS habitat (i.e., BHS can move readily); and abandoned domestic sheep. Also: high potential impact to Jackson-South herd segment if transmission occurs due to low #s in Jackson-South herd segment.
PROSPECT PEAK S&G	BTNF	0.010	Forage reserve	
SOUTH INDIAN-COTTONWOOD	CTNF	0.009	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**
BLIND BULL	BTNF	0.008	Vacant	Short grazing season, rested intermittently.
VIRGINIA PEAK	BTNF	0.008	Active	Short grazing season, rested intermittently.
BLACK CANYON	BTNF	0.008	Vacant	Short grazing season, rested intermittently.
TOSI CREEK	BTNF	0.008	Vacant	See Jackson North herd
SQUAW CR-WEINER CR	BTNF	0.007	Forage reserve	
NORTH HORSE CREEK S&G	BTNF	0.006	Forage reserve	
AUSTIN CANYON	CTNF	0.004	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
WHITE CR-MAN PEAK	BTNF	0.004	Forage reserve	
PALISADES	CTNF	0.004	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
CABIN CREEK	BTNF	0.002	Vacant	Short grazing season, rested intermittently; topographic barriers and dense conifer forestland.
PHILLIPS CANYON S&G	CTNF	0.002	Closed	
BEAR CREEK	CTNF	0.002	Active	Short grazing season, rested intermittently; topographic barriers and dense conifer forestland.
SOUTH FORK SHEEP CREEK	BTNF	0.001	Forage reserve	
LIME CREEK	BTNF	0.001	Vacant	None.
MARTEN CREEK	BTNF	0.001	Forage reserve	

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
BURBANK	CTNF	<0.001	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
ELK RIDGE	BTNF	<0.001	Vacant	None.
ROCK CREEK	BTNF	<0.001	Vacant	None.
THREE FORKS	BTNF	<0.001	Active	None.
WILLIAMS CREEK	CTNF	<0.001	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
GRAND VALLEY	CTNF	<0.001	Active	Topographic/geological barriers*, human development barriers, one month grazing season**.
TROUT CREEK	CTNF	<0.001	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**.
TRIPLE PEAK S&G	BTNF	<0.001	Forage reserve	

* These barriers include features like the Snake River, Palisades Reservoir, and Highways 89 and 26.
** The model assumed a six month grazing season. The actual grazing season is shorter which effectively reduces the ROC by reducing the time that domestic sheep are actually on the allotment.

Targhee

The Targhee population is located on the west side of the BTNF along the Idaho-Wyoming border. The Wyoming Plan, identifies the Targhee herd as a Core Native Herd. Grand Teton National Park contributes the majority of habitat in the generated CHHR, however the BTNF and CTNF also contribute habitat, as well as a substantial portion of the foray habitat.

Disease involvement of this herd is considered low, and there have been no recent disease epizootics. Highway 22 may provide a barrier between the CHHR and domestic sheep allotments. Table 5 displays the modeled BHS herd-domestic sheep allotment risk of contact by foraying BHS along with circumstances and mitigations that either add to or reduce the modeled risk.

Table 5. Targhee CHHR - Evaluation of risk of contact between foraying BHS and domestic sheep allotments.

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
PHILLIPS CANYON S&G	BTNF	Overlap	Closed	
BURBANK	CTNF	0.317	Active	Topographic barrier***, Less than three month grazing season**
PALISADES	CTNF	0.258	Active	Topographic barrier***, Less than three month grazing season** Only

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
				use the portion of the allotment north of WY Highway 22/Idaho 33 to access corral.
AUSTIN CANYON	CTNF	0.162	Active	Topographic barrier***
SOUTH ELK	CTNF	0.084	Active	Topographic barrier***, Less than three month grazing season**
ELK FLAT	CTNF	0.023	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**
PINEY PEAK	CTNF	0.019	Active	Topographic/geological barriers* human development barriers, less than three month grazing season**
DOG CREEK	CTNF	0.016	Active	Topographic barrier***. Less than three month grazing season**
GRAND BLOWOUT	CTNF	0.012	Active	Less than three month grazing season**. Units within the allotment will continue to be rested one out of three years.
SOUTH INDIAN-COTTONWOOD	CTNF	0.005	Active	Less than three month grazing season**
RUSSELL-VAN	CTNF	0.002	Active	Topographical/Geographical barriers*. Less than three month grazing season**
CAMP CREEK-WHITE SPRINGS	CTNF	0.001	Vacant	Topographic/geological barriers*, human development barriers, less than three month grazing season**
HOME RIDGE-RED PEAK	CTNF	0.001	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**
POKER PEAK	CTNF	<0.001	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**
GRAND VALLEY	CTNF	<0.001	Active	Topographic/geological barriers*, human development barriers, less than three month grazing season**

* These barriers include features like the Snake River, Palisades Reservoir, and Highways 89 and 26.

** The model assumed a six month grazing season. The actual grazing season is shorter which effectively reduces the ROC by reducing the time that domestic sheep are actually on the allotment.

***Highway 22 may provide a barrier between the CHHR and this domestic sheep allotment.

Darby Mountain

The Darby population is located on the southwestern portion of the BTNF in the Wyoming Range. The population is the result of a single transplant in the late 1980s. The population is not monitored regularly.

Given the current status and CHHR of the Darby herd, protection of this herd may not be essential to meeting planning unit population requisites. Appendix M of the State-wide Bighorn/Domestic Sheep Interaction Working Group Final Report identifies the Darby herd as a herd within a bighorn sheep non-emphasis area. These areas are the lowest priority areas where existing bighorn sheep populations will not be protected at the expense of domestic sheep grazing. The Forest Service does not anticipate addressing risks that domestic sheep may represent to this herd by means that would involve adverse permit actions. However, the 1990 Bridger-Teton Forest Plan states that on Darby Mountain and fish Creek in the Big Piney Ranger District where bighorn sheep have been reintroduced, domestic sheep will not be restocked. It is not clear to current forest managers whether this forest plan standard was intended to apply to just the area where introduction occurred or the area where the bighorn sheep population became established over time. Forest managers are currently working to determine the best way to clarify or update this direction to meet the needs of both domestic and bighorn sheep in this area.

Table 6 displays the modeled BHS herd-domestic sheep allotment risk of contact by foraying BHS along with circumstances and mitigations that either add to or reduce the modeled risk.

Table 6. Darby CHHR - Evaluation of risk of contact between foraying BHS and domestic sheep allotments.

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
BARE MOUNTAIN S&G	BTNF	Overlap	Forage reserve	
BLACK CANYON	BTNF	Overlap	Vacant	Short grazing season, rested intermittently.
MARTEN CREEK	BTNF	Overlap	Forage reserve	
MINK CREEK	BTNF	Overlap	Active	Short grazing season, rotation among units. Short distance between BHS and domestic sheep, and no barriers.
MT DARBY BIGHORN SHEEP	BTNF	Overlap	Closed	
NORTH PINEY S&G	BTNF	Overlap	Forage reserve	
SOUTH FORK SHEEP CREEK	BTNF	Overlap	Forage reserve	
TRIPLE PEAK S&G	BTNF	Overlap	Forage reserve	

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
TWIN PEAKS BIGHORN SHEEP	BTNF	Overlap	Closed	
THREE FORKS	BTNF	0.146	Active	Short grazing season; rotation among units.
SOUTH PINEY BIGHORN SHEEP	BTNF	0.078	Closed	
CORRAL CREEK	BTNF	0.071	Active	Short grazing season, rotation among units
BEAR CREEK	BTNF	0.061	Active	Short grazing season; rotation among units; rested intermittently.
CABIN CREEK	BTNF	0.055	Vacant	Short grazing season; rested intermittently.
COTTONWOOD	BTNF	0.055	Active	Short grazing season; rotation among units.
BUCKSKIN KNOLL	BTNF	0.047	Active	Short grazing season; rotation among units.
VIRGINIA PEAK	BTNF	0.046	Active	Short grazing season; rotation among units; rested intermittently.
SOUTH SALT RIVER	BTNF	0.043	Active	Short grazing season; rotation among units; rested intermittently.
MULE CREEK S&G	BTNF	0.031	Forage reserve	
LAKE MOUNTAIN	BTNF	0.030	Active	Short grazing season; rotation among units.
BLIND BULL	BTNF	0.028	Vacant	Short grazing season; rotation among units; rested intermittently.
PROSPECT PEAK S&G	BTNF	0.023	Forage reserve	
NORTH HORSE CREEK S&G	BTNF	0.022	Forage reserve	
LAKE ALICE	BTNF	0.021	Active	Short grazing season; rotation among units.
WHITE CR-MAN PEAK	BTNF	0.019	Forage reserve	
GRIZZLY CREEK BIGHORN SHEEP	BTNF	0.017	Closed	
DEADMAN	BTNF	0.017	Vacant	Short grazing season; rested intermittently.
DEVILS HOLE	BTNF	0.017	Active	Short grazing season; rotation among units.
SMITHS FORK	BTNF	0.016	Active	Short grazing season; rotation among units.
BLIND TRAIL	BTNF	0.016	Vacant	Short grazing season; rested intermittently.

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
BIRCH CREEK-STAR PEAKS	BTNF	0.014	Forage reserve	
PICKLE PASS BIGHORN SHEEP	BTNF	0.014	Closed	
NORTH SALT RIVER	BTNF	0.013	Active	Short grazing season; rotation among units; rested intermittently.
GRIZZLY BASIN	BTNF	0.013	Vacant	Short grazing season; rotation among units; rested intermittently.
PORCUPINE CREEK	BTNF	0.010	Active	Short grazing season; rotation among units.
CORRAL CREEK BIGHORN SHEEP	BTNF	0.008	Closed	
INDIAN CREEK	BTNF	0.006	Active	Short grazing season; rotation among units.
STEWART	BTNF	0.006	Vacant	Short grazing season; rotation among units.
SOUTH FONTENELLE	BTNF	0.005	Active	Short grazing season; divided allotment.
UPPER GRAYBACK-PHOSPHATE BIGHORN	BTNF	0.004	Closed	
LITTLE WHITE CREEK	BTNF	0.004	Active	Short grazing season; rotation among units.
SAMS ALLEN CREEK	BTNF	0.003	Active	Short grazing season; rotation among units.
NORTH MIDDLE RIDGE	BTNF	0.003	Active	Short grazing season; rotation among units; rested intermittently.
LOWER SALT CREEK	BTNF	0.003	Active	Short grazing season; rotation among units.
BAILEY LAKE	BTNF	0.002	Active	Short grazing season; rotation among units; see Jackson herd.
SQUAW CR-WEINER CR	BTNF	0.002	Forage reserve	
GREEN KNOLL	BTNF	0.002	Active	Short grazing season; rotation among units.
ELK CREEK	BTNF	0.002	Active	Short grazing season; rotation among units.
GIRAFFE CREEK	BTNF	0.001	Active	None.
TYGEE RIDGE-1	BTNF	0.001	Active	None.
SMITH CREEK S&G	CTNF	<0.001	Active	None.
ELK MOUNTAIN	BTNF	<0.001	Active	None.
BASIN CREEK	BTNF	<0.001	Active	None.
SPRUCE CREEK	BTNF	<0.001	Active	None.
BECHLER CREEK S&G	CTNF	<0.001	Active	None.

Allotment	Forest	Modeled Risk of Contact	Allotment Status	Other Factors Considered
DEER CREEK S&G	CTNF	<0.001	Active	None.
POLE CREEK	BTNF	<0.001	Active	None.
SO FORK TINCUP CREEK S&G	CTNF	<0.001	Active	None.
WHITE CREEK S&G	CTNF	<0.001	Active	None.
SNAKE RIVER	BTNF	<0.001	Active	None.
POLE DRANEY S&G	CTNF	<0.001	Active	None.

Management Response

As stated in the previously mentioned MOU, it is the mutual desire of the Forest Service, the State of Wyoming, and the WGFD to cooperate in maintaining healthy bighorn sheep populations while sustaining an economically viable domestic sheep industry in Wyoming. Zero risk of disease interchange is unattainable, but management can reduce the risk and reduce other stressors. Best Management Practices that some domestic sheep producers have already employed include increasing the number of herders, utilizing dogs to assist herders, penning sheep up at night, and communicating with Forest Service staff about wild sheep observations.

Management priority is assigned to all active and vacant domestic sheep allotments as displayed in Table 7. Allotments that have been closed or converted to forage reserves are not assigned a priority. Priorities include: high, moderately high, medium, and low. As previously stated, these strategies are not intended to be static, but rather may change over time with new information and changing conditions.

These strategies describe interim management between now and the completion of the BTNF and CTNF Forest Plan Revisions. The BTNF anticipates that revision process to begin in 2018 and be concluded within three to five years. The CTNF Forest Plan revision process is scheduled to begin several years after the BTNF.

High Priority Allotments are active or vacant allotments that:

- Have a modeled high risk of contact between bighorn sheep and domestic sheep allotments in one or more core native herds
- Have not had sufficient mitigation identified, nor is it likely that sufficient mitigation will be identified to adequately lower risk of contact

Response Strategies/Disposition for High Priority Allotments: No additional response strategies could be identified to address the relatively high modeled risk and other circumstances that add to the modeled risk for these allotments.

- Future restocking with domestic sheep is highly unlikely; consideration of closure to domestic sheep would require appropriate analysis and a subsequent decision-making process.
- Decisions to stock with cattle or close these allotments would be based on appropriate analysis.
- Active allotments are subject to BMPs (see appendix A) and mitigation measures identified by the Forest Officer.

Moderately High Priority Allotments are defined as active or vacant allotments that:

- Have a modeled high risk of contact between bighorn sheep and domestic sheep allotments in one or more core native herds, or
- Have adegree of uncertainty about risk due to the separation of the Jackson herd into two herds (north and south), and
- Have had mitigation identified, but monitoring and analysis needs to occur in order to determine if this adequately lowers risk of contact

Response Strategies/Disposition for Moderately High Priority Allotments: WGFD will be collecting additional data using radio marked bighorn sheep that will help refine the CHHR of this herd and determine the level of connectivity between the Jackson North and Jackson South population segments

- These allotments would be subject to Best Management Practices (BMPs) listed in Appendix A for Bridger-Teton Allotments or Appendix C for Caribou-Targhee Allotments and Mitigation Measures listed in Appendix B for Bridger-Teton Allotments or Appendix D for Caribou-Targhee Allotments.
- These allotments may not be restocked with domestic sheep if vacated, but this depends on the expected effectiveness of response strategies, and on risks posed by other allotments with which the applicable core native herd interacts. Consideration of closure to domestic sheep would require appropriate analysis and a subsequent decision-making process.

Medium Priority Allotments are defined as active or vacant allotments that:

- Have a modeled risk of contact between bighorn sheep and domestic sheep allotments in one or more core native herds but do not have a high degree of uncertainty about risk due to the separation of the Jackson herd into two herds (north and south), or this uncertainty is adequately addressed by “other factors considered” and or mitigation.

Response Strategies/Disposition for Medium Priority Allotments:

- These allotments would be subject to Best Management Practices (BMPs) listed in Appendix A for Bridger-Teton Allotments or Appendix C for Caribou-Targhee Allotments. Permits for these allotments would be modified to require Best Management Practices.
- No other actions are anticipated unless additional issues are identified.

Low Priority Allotments are active or vacant allotments that:

- Have a modeled risk of contact between bighorn sheep and domestic sheep allotments in one or more core native herds that is inconsequential, and do not have a high degree of uncertainty about risk due to the separation of the Jackson herd into two herds (north and south), or
- Have a modeled risk of contact that only relates to the Darby herd, which is within a bighorn sheep non-emphasis area.

Response Strategies/Disposition for Low Priority Allotments:

- No additional management provisions will be required in these allotments unless additional issues are identified, or (in the case of closed, vacant, or Forage Reserve status allotments) action is taken to authorize domestic sheep grazing.

Table 7. Management Priority for Domestic Sheep Grazing Allotments (Allotments Listed in Alphabetical Order)

Allotment	Forest	Management Priority	Allotment Status
AUSTIN CANYON	CTNF	Moderately High	Active
BAILEY LAKE	BTNF	Moderately High	Active
BALDY LAKE	BTNF	Closed	Closed
BARE MOUNTAIN S&G	BTNF	Forage reserve	Forage reserve
BASIN CREEK	BTNF	Low	Active
BEAR CREEK	CTNF	Medium	Active
BECHLER CREEK S&G	CTNF	Low	Active
BIRCH CREEK-STAR PEAKS	BTNF	Forage reserve	Forage reserve
BLACK CANYON	BTNF	Low	Vacant
BLIND BULL	BTNF	Moderately High	Vacant
BLIND TRAIL	BTNF	Moderately High	Vacant
BUCKSKIN KNOLL	BTNF	Low	Active
BURBANK	CTNF	Medium	Active
CABIN CREEK	BTNF	Low	Vacant
CAMP CREEK-WHITE SPRINGS	CTNF	Low	Vacant
CORRAL CREEK BIGHORN SHEEP	BTNF	Closed	Closed
COTTONWOOD	BTNF	Low	Active
CROSS LAKE	BTNF	Closed	Closed
DEADMAN	BTNF	Moderately High	Vacant
DEER CREEK S&G	CTNF	Low	Active
DEVIL'S HOLE	BTNF	Low	Active
DOG CREEK	CTNF	Moderately High	Active
EAST FORK	BTNF	Closed	Closed
ELK CREEK	BTNF	Low	Active
ELK FLAT	CTNF	Medium	Active
ELK MOUNTAIN	BTNF	Moderately High	Active
ELK RIDGE	BTNF	High	Vacant
GIRAFFE CREEK	BTNF	Low	Active
GRAND BLOWOUT	CTNF	Medium	Active
GRAND VALLEY	CTNF	Low	Active
GREEN KNOLL	BTNF	Low	Active
GRIZZLY BASIN	BTNF	Moderately High	Vacant
GRIZZLY CREEK BIGHORN SHEEP	BTNF	Closed	Closed
HOME RIDGE-RED PEAK	CTNF	Low	Active
INDIAN CREEK	BTNF	Low	Active
LAKE ALICE	BTNF	Low	Active
LAKE MOUNTAIN	BTNF	Low	Active
LIME CREEK	BTNF	High	Vacant

Allotment	Forest	Management Priority	Allotment Status
LITTLE WHITE CREEK	BTNF	Low	Active
LOWER SALT CREEK	BTNF	Low	Active
MARTEN CREEK	BTNF	Forage reserve	Forage reserve
MIDDLE FORK	BTNF	Closed	Closed
MINK CREEK	BTNF	Low	Active
MT DARBY	BTNF	Closed	Closed
MULE CREEK S&G	BTNF	Forage reserve	Forage reserve
NORTH FORK	BTNF	Closed	Closed
NORTH HORSE CREEK S&G	BTNF	Forage reserve	Forage reserve
NORTH MIDDLE RIDGE	BTNF	Moderately High	Active
NORTH PINEY S&G	BTNF	Forage reserve	Forage reserve
NORTH SALT RIVER	BTNF	Low	Active
PALISADES	CTNF	Moderately High	Active
PHILLIPS CANYON S&G	BTNF	Closed	Closed
PICKLE PASS BIGHORN SHEEP	BTNF	Closed	Closed
PINEY PEAK	CTNF	Medium	Active
PIPESTONE	BTNF	Closed	Closed
POKER PEAK	CTNF	Low	Active
POLE CREEK	BTNF	Low	Active
POLE DRANEY S&G	CTNF	Low	Active
PORCUPINE CREEK	BTNF	Low	Active
PROSPECT PEAK S&G	BTNF	Forage reserve	Forage reserve
RAID LAKE	BTNF	Closed	Closed
ROCK CREEK	BTNF	High	Vacant
RUSSELL-VAN	CTNF	Medium	Active
SAMS ALLEN CREEK	BTNF	Low	Active
SMITH CREEK	CTNF	Low	Active
SNAKE RIVER	BTNF	Moderately High	Active
SOUTH FORK TINCUP	CTNF	Low	Active
SOUTH ELK	CTNF	Moderately High	Active
SOUTH FONTENELLE	BTNF	Low	Active
SOUTH FORK SHEEP CREEK	BTNF	Forage reserve	Forage reserve
SOUTH INDIAN-COTTONWOOD	CTNF	Medium	Active
SOUTH PINEY	BTNF	Closed	Closed
SOUTH SALT	BTNF	Low	Active
SPRUCE CREEK	BTNF	Low	Active
SQUAW CR-WEINER CR	BTNF	Forage reserve	Forage reserve
STEWART	BTNF	Moderately High	Vacant
THREE FORKS	BTNF	Low	Active
TOSI CREEK	BTNF	High	Vacant

Allotment	Forest	Management Priority	Allotment Status
TRIPLE PEAK S&G	BTNF	Forage reserve	Forage reserve
TROUT CREEK	CTNF	Low	Active
TWIN PEAKS	BTNF	Closed	Closed
TYGEE RIDGE	BTNF	Low	Active
UPPER GRAYBACK-PHOSPHATE BIGHORN	BTNF	Closed	Closed
VIRGINIA PEAK	BTNF	Medium	Active
WHITE CR-MAN PEAK	BTNF	Forage reserve	Forage reserve
WHITE CREEK S&G	CTNF	Low	Active
WILLIAMS CREEK	CTNF	Low	Active

Appendix A

Best Management Practices for Reducing Risk of Contact between Bighorn and Domestic Sheep on the Bridger-Teton National Forest

Revised as of 11/23/2016

The following best management practices (BMPs) will be implemented starting the 2016 grazing season for all allotments on the Bridger-Teton National Forest where domestic sheep graze and the risk of contact with bighorn sheep is high, moderately high, or medium. The BMPs are designed to limit livestock losses and interactions between domestic and bighorn sheep. They are consistent with the Final Report and Recommendations from the Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group.

a) Do not turn out sick or diseased domestic sheep onto the grazing allotment/trailing route(s). Any domestic sheep which becomes ill while grazing on the allotment should be promptly treated to ensure it does not infect other animals.
b) Do not allow contact between domestic and bighorn sheep. If bighorn sheep are sighted in a particular area then do not enter that area with domestic sheep. As necessary promptly move your domestic sheep to an area where they will not come into contact with the bighorn sheep. Contact the Authorized Forest Officer to adjust the grazing rotation.
c) Promptly report all sightings of bighorn sheep during the grazing season to the Wyoming Game & Fish Department and the local USFS Ranger District. Sightings should be reported the same day they occur or as soon as possible thereafter. Reports to include number of bighorn sheep observed, sex of animals (if it can be determined), location, and distance from domestic sheep.
d) All livestock losses are to be reported each year using an Actual Use Record provided by the Authorized Forest Officer. Report the number of livestock lost and the reason(s) (cause of death) for the loss(s). If the cause of death is unknown or the carcass(s) is not found, this information should be included in the Actual Use Record.
e) All domestic sheep are to be counted upon exiting the National Forest. This will assure all domestic sheep are accounted for when exiting the allotment and trailing routes. The number of sheep that entered the National Forest should equal the recorded livestock losses, plus the number that exits. Any differences to result in further riding/searching for any potential stray sheep.
f) If you are missing domestic sheep upon exiting the National Forest, re-ride the allotment and trailing routes and remove any sheep found.

Appendix B
Risk Response Strategies for Moderately-High Priority Allotments – Bridger-Teton National Forest

Revised as of 11/28/2016

Harold Selman Inc. – A meeting with Harold Selman Inc. via Brett Selman occurred on March 30th, 2016. Harold Selman Inc. currently is permitted to graze up to two bands within either the Snake River; Elk Mountain, N. Middle Ridge, or Bailey Lake-Bear Wallow allotments. Aspects of their operations were discussed and the following voluntary mitigation measures were identified at this meeting.

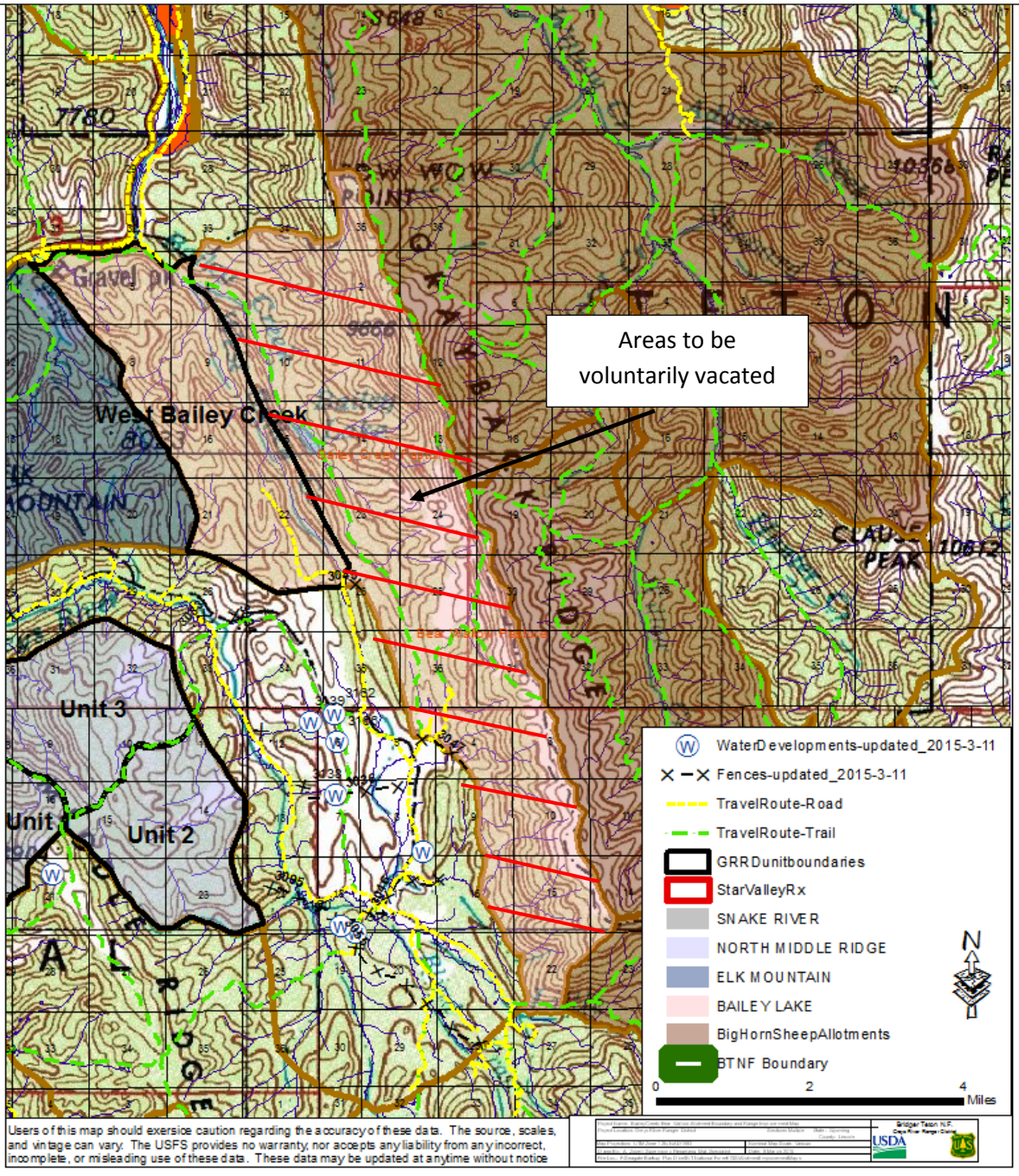
- Will voluntarily change from running 2 band of sheep to only 1 band of sheep into the foreseeable future. If this is implemented the 1 Band of Sheep Option rotation schedule shown below would be implemented (see Appendix A for a map of areas to be grazed by year). If graze two bands of sheep in any given year, then this would be followed by complete rest as shown in 2 Bands of Sheep Option.
    - 1 Band of Sheep Option
        - Year 1 – West Bailey Creek (June 17th – July 28th); Elk Mountain (July 29th – August 30); Snake River (Aug 31 – Sept 13). North Middle Fork Rested.
            - Actual dates of moves between Units/Allotments to be refined in future grazing seasons.
            - Turn on date to be no earlier than June 17th and in many years later due to range readiness concerns.
            - Permittee allowed flexibility of moving three days either way between moves dependent upon resource conditions and other needs.
            - Sheep are typically shipped onto N.F. lands via the Greys River road where they are moved directly onto the allotment to be grazed. Sheep are typically offloaded just east of Whiskey Creek. Sheep are typically shipped off of N.F. lands via the Greys River road. Shipping occurs using temporary corrals within the Trail Creek or Skull Creek area.
        - Year 2 - North Middle Fork (July 1 – Sept. 13). Rotation schedule Unit 1 (6/28 – 7/28); Unit 2 (7/29 – 8/21); Unit 3 (8/22 – 9/11). Bailey Creek-Bear Wallow; Elk Mountain; Snake River Rested
            - Livestock are typically shipped onto N.F. lands via the Greys River road. Livestock are typically shipped off of N.F. lands via the Greys River road using temporary corals.
    - 2 Bands of Sheep Option
        - Year 1 - 1st Band – West Bailey Creek (June 17th – July 28th); Elk Mountain (July 29th – August 30); Snake River (Aug 31 – Sept 13).
            - Actual dates of moves between Units/Allotments to be refined in future grazing seasons.
            - Turn on date to be no earlier than June 17th and in many years later due to range readiness concerns.
            - Permittee allowed flexibility of moving three days either way between moves dependent upon resource conditions and other needs.
            - Sheep are typically shipped onto N.F. lands via the Greys River road where they are moved directly onto the allotment to be grazed. Sheep

are typically offloaded just east of Whiskey Creek. Sheep are typically shipped off of N.F. lands via the Greys River road. Shipping occurs using temporary corrals within the Trail Creek or Skull Creek area.

- Year 1 - 2nd Band - North Middle Fork (July 1 – Sept. 13). Rotation schedule Unit 1 (6/28 – 7/28); Unit 2 (7/29 – 8/21); Unit 3 (8/22 – 9/11).
    - Livestock are typically shipped onto N.F. lands via the Greys River road. Livestock are typically shipped off of N.F. lands via the Greys River road using temporary corals.
- Year 2 – Rest for all allotments (i.e. Bailey Creek-Bear Wallow; Elk Mountain; Snake River; North Middle Fork).

- Will voluntary vacate the Bailey Creek-Bear Wallow allotment into the foreseeable future excluding the West Bailey Creek unit (see attached map) regardless whether the one band or two bands option is selected. Recommend leaving this portion of the allotment vacant as a buffer between domestic and big horn sheep.
- BMPs and/or Other Practices occurring and willing to commit to into the foreseeable future.
    - Band to be herded by one to two individuals full-time.
    - Band to have consistent weekly counts with any stray sheep to be promptly found and moved back to the herd.
    - Should any sheep not be found when removed from National Forest system lands, the permittee will fly over area to aid in identifying and removing any potential domestic sheep within the area.
    - Two alpacas to be used in place of guard dogs
- Other
    - West Bailey Creek: Natural topography of area makes movement of domestic sheep east of this line very unlikely. Need to determine likelihood of Big Horn Sheep crossing this line.
    - Time of Big Horn Sheep forays: Typical time of forays are of interest and as they relate to Year 1 of grazing as sheep are progressively moved away from areas of higher risk as the grazing season progresses.

Figure 1. Bailey Creek-Bear Wallow Allotment – Areas to be voluntarily vacated for the foreseeable future.



Appendix C

Best Management Practices for Reducing Risk of Contact

Between Bighorn Sheep and Domestic Sheep on the Caribou-Targhee National Forest

Revised as of 11/23/2016

The following Best Management Practices (BMPs) will be implemented on allotments in the Palisades Range and Bigholes Range on the Caribou-Targhee National Forest with a moderately high or medium risk of contact with any of the bighorn sheep herds located in Wyoming. They are designed to limit stray sheep and interactions between domestic and bighorn sheep. They are consistent with the Final Report and Recommendations from the *Final Report and Recommendations from the Wyoming State-wide Bighorn/Domestic Sheep Interaction Working Group September 2004* and *2010 Idaho Bighorn Sheep Management Plan.* These BMPs were drafted with input from grazing permittees.

BMPs for Permittees using the Austin Canyon, Burbank, Dog Creek, Elk Flat, Grand Blowout, Palisades, Piney Peak, South Elk, and South Indian-Cottonwood S&G allotments are:

- Permittees explain to their herders the importance of the BMPs and give them good direction on how to follow the BMPs
- Educate herders on bighorn sheep identification
- Translate the BMPs into Spanish or other languages as necessary for herders
- Do not turn out sick or diseased domestic sheep onto the grazing allotment/trailing route(s). Any domestic sheep which becomes ill while grazing on the allotment should be promptly treated to ensure it does not infect other animals.
- Instruct herders to not leave sick domestic sheep behind when trailing or moving to different areas.
- Use guard dogs with each band of sheep
    - Guard dogs may deter bighorn sheep from commingling with the domestics
- Count the "counters" (black sheep) 3 times per week.
    - If sheep are missing preform a search for the missing sheep.
    - Herders contact the permittee for more help if the missing sheep are not found quickly.
- Have herders camp near the sheep at night
- Supply herders with a communication device to contact the permittee. (cell phones are fairly effective in the Palisades Range. Most herders know which areas have service.)
- Run yearling bands of domestic sheep only on allotments with lower risk of contact.
- When available use two herders on each allotment
    - Two herders will allow for better management if a bighorn is found near the domestic sheep.
    - One herder can watch the domestics while the other hazes away the bighorn or goes to a location where there is cell service to contact the permittee
    - If counts are off one herder can manage the sheep while the other goes in search of the missing sheep.
- If bighorn sheep are spotted near the domestic sheep:
    - Report the sighting to the permittee who will contact the Forest Service and appropriate state game department (Wyoming Game and Fish or Idaho Fish and Game)
        - The report should include
            - Exact location (lat. long would be best. Consider GPS or phone apps)
            - Number of bighorn sheep and descriptions (ewe/ram, pairs etc.)

        - Contact information for the observer
    - Take pictures if they are able to
    - Maintain separation between the domestics and bighorns if they have not comingled this can include
        - Hazing of the bighorn sheep by people or dogs
        - Moving the domestic sheep to a new areas if possible.
- All livestock losses are to be reported each year on the Actual Use Record. Report the number of livestock lost and the reason(s) (cause of death) for the loss(s). If the cause of death is unknown or the carcass(s) is not found, this information should be included in the Actual Use Record.
- If sheep are missing upon exiting the National Forest, re-ride the allotment and trailing routes and remove any sheep found.
- Continually look for stray sheep while managing the allotment during the permitted season and move strays back with the herd.

Forest Service Responsibilities

- Provide the permittee with a simple effective calling list to contact the Forest Service and State Game Departments. List should include:
    - Numbers to reach people at odd hours and weekends
    - back up contacts
- Make sure employees receiving calls know the importance of passing on the information to the proper person or agency quickly and accurately
- Assist state agency's with communications between the herder/permittee and field going personnel
- Work with the permittee to find a place to move the domestic sheep if possible (Change rotations, use rest units or vacant allotments)

Appendix D
Caribou-Targhee Risk Response Strategies

Revised as of 11/23/2016

Palisades Allotment

The Hungry Creek Unit of the Palisades Allotment is geographically the closest permitted sheep grazing to the core range of the Targhee bighorn sheep herd. The Hungry Creek unit is the portion of the Palisades Allotment located north of Wyoming Highway 22 and Idaho Highway 33. Until good mitigation can be implemented to ensure a low risk of contact, this unit will only be used by permitted livestock to trail across to reach private land where their shipping corrals are located along Moose Creek. The permittee will also be allowed to use alternative shipping sites and if those sites are used the sheep will not use the Hungry Creek unit at all. Currently the permittee has agreed to ship sheep from a portable corral on Pine Creek pass instead of their corral in Moose Creek on private land.