

**BEFORE THE UNITED STATES DEPARTMENT OF AGRICULTURE,
FOREST SERVICE DATA QUALITY OFFICIAL**

COLORADO WOOL GROWERS ASSOC.,)	Data Quality Act Challenge to U.S. Department of Agriculture Dissemination of Information Presented in “A Review of Disease Related Conflicts Between Domestic Sheep and Goats and Bighorn Sheep,” General Technical Report RMRS-GTR-209
AMERICAN SHEEP INDUSTRY ASSOC.,)	
ARIZONA CATTLE GROWERS’ ASSOC.,)	
ARIZONA WOOL PRODUCERS ASSOC.,)	
CALIFORNIA CATTLEMEN’S ASSOC.,)	
CALIFORNIA WOOL GROWERS ASSOC.,)	
COLORADO CATTLEMEN’S ASSOC.,)	
COLORADO FARM BUREAU,)	
COLORADO PUBLIC LANDS COUNCIL,)	
F.I.M. CORPORATION,)	
IDAHO FARM BUREAU FEDERATION,)	
IDAHO WOOL GROWERS ASSOC.,)	
IDAHO CATTLE ASSOC.,)	
MONTANA ASS’N OF ST. GRAZING DIST’S,)	
MONTANA PUBLIC LANDS COUNCIL,)	
MONTANA STOCKGROWERS ASSOC.,)	
MONTANA FARM BUREAU FED.,)	
MONTANA WOOL GROWERS ASSOC.,)	
NATIONAL CATTLEMEN’S BEEF ASSOC.,)	
NEVADA FARM BUREAU FED.,)	
NEVADA WOOL GROWERS ASSOC.,)	
NEW MEXICO FEDERAL LANDS COUNCIL,)	
NEW MEXICO STOCKGROWERS’ ASSOC.,)	
NEW MEXICO WOOLGROWERS ASSOC.,)	
NORTH DAKOTA LAMB & WOOL PROD. ASSOC.,)	
OREGON SHEEP GROWERS ASSOC.,)	
PUBLIC LANDS COUNCIL,)	
SOUTH DAKOTA SHEEP GROWERS ASSOC.,)	
TEXAS SHEEP & GOAT RAISERS’ ASSOC.,)	
UTAH FARM BUREAU FED.,)	
UTAH WOOL GROWERS ASSOC.,)	
WASHINGTON STATE SHEEP PRODUCERS,)	
WYOMING FARM BUREAU,)	
WYOMING STOCK GROWERS ASSOC., and)	
WYOMING WOOL GROWERS ASSOC.,)	

Petitioners

v.

U.S. DEPARTMENT OF
AGRICULTURE,

Agency.

**CHALLENGE OF COLORADO WOOL GROWERS ASSOCIATION, ET AL.
PURSUANT TO THE DATA QUALITY ACT**

To: USDA Forest Service
Attention: Data Quality Official
Mail Stop 1143
1400 Independence Ave. SW
Washington, D.C. 20250-1143
Electronic Mail: ritamorgan@fs.fed.us

I. Request and Petitioner

The Colorado Wool Growers Association, *et al.* (“Petitioners”) hereby submit this Challenge for Correction of Information pursuant to the Federal Information Quality Act, (44 U.S.C. § 3516) (“Data Quality Act” or “DQA”), the “Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information disseminated by Federal Agencies” issued by the Office of Management and Budget (67 Fed. Reg. 8452 (Feb. 22, 2002) (“OMB Guidelines”)), as well as the United States Department of Agriculture’s (“USDA”) Information Quality Guidelines available at http://www.ocio.usda.gov/qi_guide/index.html.

In May of 2008, the United States Forest Service (“USFS”) published *A Review of Disease Related Conflicts Between Domestic Sheep and Goats and Bighorn Sheep* by Timothy J. Schommer and Melanie M. Woolever, General Technical Report RMRS-GTR-209 (“USFS Bighorn Report”). As outlined below, Petitioners have reviewed the Bighorn Sheep Report and found it to be inaccurate, unreliable, and biased. Therefore, Petitioners request the USFS retract the USFS Bighorn Report and all reliance thereon in existing and subsequent forest plans and forest plan amendments, as well as decisions on grazing permits and grazing permit renewals. Alternatively, the USFS could issue an amended USFS Bighorn Report that uses sound

analytical methods and the best data available, ensuring transparency and objectivity in the information disseminated.

II. Petitioners Contact Information

The Petitioners primary representatives can be reached at the following addresses:

Bonnie Brown, Executive Director
Colorado Wool Growers Association
8833 Ralston Rd., Ste. 200
Arvada, CO 80002
(303) 431-8310
cwgawool@aol.com

Kent Holsinger
Laura L. Chartrand
Holsinger Law, LLC
104 Broadway, 3rd Floor
Denver, CO 80203
(303) 722-2828
kholsinger@holsingerlaw.com
lchartrand@holsingerlaw.com
Attorneys for Petitioners

III. Description of Information to Correct

A. Background on the USFS Bighorn Report

In July 2003, the Southwest Idaho Ecogroup Land and Resource Management Plan's Final Environmental Impact Statement ("FEIS") and Record of Decision were issued. The Intermountain Region Forester received five appeals of the decision to continue to allow the grazing of domestic sheep within or near the range of bighorn sheep in the Payette National Forest. The appellants claimed that this decision threatened the viability of bighorn sheep through disease transmission from the domestic sheep to the bighorn sheep. On March 9, 2005, the Chief of the Forest Service concurred that the FEIS did not adequately address bighorn viability in the analyses and cumulative effects discussions and instructed the Regional Forester to reanalyze bighorn sheep viability in the Payette National Forest, to amend the FEIS accordingly, and, if necessary, to make changes to the Forest Plans.

As part of this reanalysis, the USFS conducted reviews of the potential for disease transmission from domestic sheep to bighorn sheep. In February 2006, the USFS published a

Risk Analysis of Disease Transmission Between Domestic Sheep and Bighorn Sheep on the Payette National Forest and in 2008, published the USFS Bighorn Report. The Draft Supplemental Environmental Impact Statement (“DSEIS”) that re-analyzes the effects of current and proposed management on bighorn sheep viability within the Payette National Forest was issued in September 2008. See Payette National Forest DSEIS, Background, page ix.

B. Corrections Needed for the USFS Bighorn Report

The USFS Bighorn Report states that its purposes are “to: 1) review the science related to disease, particularly respiratory disease, in sympatric populations of domestic sheep (*Ovis aries*) and goats (*Capra hircus*) and bighorn sheep (*Ovis canadensis*) and 2) provide scientific foundation for the development of agency policy.” Schommer at 1. The USFS Bighorn Report then purports to summarize the “experimental methods and evidence relative to the hypothesis that bighorn sheep have a high likelihood of contracting fatal respiratory disease following contact with domestic sheep, characterized as the ‘contact hypothesis’” and address other hypothesis that are “refinements of the contact hypotheses.” Schommer at 3.

The Petitioners are concerned that the USFS Bighorn Report: (1) was developed with unsound research methods; (2) ignores studies that do not support its thesis; (3) jumps to conclusions that are not scientifically supported but are pure conjecture; and (4) disseminates information that is not objective or reliable and that lacks basic scientific integrity. Therefore, the utility of this information is questionable, and the Petitioners request the USFS retract the USFS Bighorn Report and all management decisions based upon the USFS Bighorn Report in forest plans, forest plan amendments, and grazing permits. Alternatively, the USFS could issue an amended USFS Bighorn Report that incorporates sound analytical methods and the best data available, ensuring transparency and objectivity in the information disseminated.

IV. Noncompliance with OMB and / or USDA Information Quality Guidelines

A. Data Quality Act and OMB Guidelines

The DQA, Section 515 of the Treasury and General Government Appropriations Act of FY 2001 (Public Law 106-554), requires Federal agencies to ensure and maximize the quality, objectivity, utility, and integrity of information, including statistical information, disseminated by Federal agencies on or after October 1, 2002. Agencies are required to review the quality of information before its dissemination and treat information quality as integral to every step. If an agency continues to disseminate information on or after October 1, 2002, that was first disseminated before this date, this information is also to be subject to the DQA.

The OMB government-wide guidelines impose three core responsibilities on the agencies:

- First, the agencies must embrace a basic standard of “quality” as a performance goal, and agencies must incorporate quality into their information dissemination practices. OMB’s guidelines explain that “quality” encompasses “utility” (usefulness to its intended users), “integrity” (security), and “objectivity.” “Objectivity” focuses on whether the disseminated information is accurate, reliable, and unbiased as a matter of presentation and substance.
- Second, the agencies must develop information quality assurance procedures that are applied before information is disseminated.
- Third, the OMB government-wide guidelines require that each agency develop an administrative mechanism whereby affected parties can request that agencies correct poor quality information that has been or is being disseminated. If one is dissatisfied with the initial agency response to a correction request he or she may file an administrative appeal.

B. USDA Information Quality Guidelines

USDA Information Quality Guidelines for Regulatory Information (“USDA Guidelines for Regulatory Information”) apply to “[s]cientific analyses (meaning natural sciences – plant

pathology, animal physiology, etc.) and risk assessments prepared in support of agency rulemaking efforts as well as risk assessments of a non-regulatory nature.” (USDA Guidelines for Regulatory Information 1). Since one of the purposes of the USFS Bighorn Report is to “provide scientific foundation for the development of agency policy,” (Schommer 1) the USFS Bighorn Report clearly falls under the USDA Guidelines for Regulatory Information. The USFS has disseminated the USFS Bighorn Report by posting it on its website at http://www.fs.fed.us/rm/pubs/rmrs_gtr209.html.

The USDA Guidelines for Regulatory Information require USDA agencies, like USFS, to do the following:

C. Objectivity of Regulatory Information

- Use sound analytical methods in carrying out scientific and economic analyses and in preparing risk assessments.
- Use reasonably reliable and reasonably timely data and information (e.g., collected data such as from surveys, compiled information, and/or expert opinion).
- When using the best available data obtained from or provided by third parties, ensure transparency in its dissemination by identifying known sources of error and limitations in the data.
- Evaluate data quality and, where practicable, validate the data against other information when using or combining data from different sources.
- Ensure transparency of the analysis, to the extent possible, consistent with confidentiality protections, by
 - Presenting a clear explanation of the analysis to the intended audience.
 - Providing transparent documentation of data sources, methodology, assumptions, limitations, uncertainty, computations, and constraints.
 - Explaining the rationale for using certain data over other data in the analyses.
 - Presenting the model or analysis logically so that the conclusions and recommendations are well supported.
- Clearly identify sources of uncertainty affecting data quality.

- For quantitative assessments, clearly state the uncertainty of final estimates to the extent practicable. Data and data collection systems should, as far as possible, be of sufficient quality and precision that uncertainty in the final estimates is appropriately characterized.
- For qualitative assessments, provide an explanation of the nature of uncertainty in the analysis.

D. Utility of Regulatory Information

- Clearly state the purpose of the exercise and the intended recipients.
- Ensure, to the extent practicable, that the final product meets the needs of the intended recipients.

E. Integrity of the Regulatory Information

- Ensure that the information is secure and protected from manipulation and/or falsification.
- Protect against unauthorized internal and external access to the information.
- Protect the confidentiality of individually identifiable information, in accordance with statutory requirements and Departmental directives.

V. The USFS Bighorn Report Lacks Objectivity

The USFS Bighorn Report fails to comply with OMB and USDA Guidelines for Regulatory Information by presenting non-objective information that is not accurate, not reliable, and not unbiased. Since the USFS Bighorn Report fails to provide objective information, the Report's utility to its intended users – those creating management plans for grazing of domestic sheep in National Forests – is questionable. The intended users include USFS, domestic sheep producers, forest managers, and the general public.

The USFS Bighorn Report demonstrates immediate bias against domestic sheep when it states:

Although efforts to identify organisms causing pneumonia in bighorn sheep following contact with domestic sheep **have identified multiple bacteria species**, the complete range of mechanisms/causal agents leading to epizootic disease events are not completely understood. (Emphasis added) (Schommer i).

The USFS Bighorn Report, thus, leads a reader to assume that “multiple bacteria strains” from domestic sheep have been identified as the cause for pneumonia in bighorn sheep. Yet, the same USFS Bighorn Report acknowledges that “the complete range of mechanisms/causal agents leading to epizootic disease events **are not completely understood.**” (Emphasis added) Schommer at i.

The inference that science has proven that domestic sheep transfer fatal diseases to bighorn sheep comes into direct conflict with the findings of the Council for Agricultural Science and Technology (“CAST”) report entitled *Pasteurellosis Transmission Risks between Domestic and Wild Sheep* (“CAST Report”) published in August 2008. After a complete review of all literature and science regarding disease transmission between the two species, the CAST scientific committee and its reviewers found that:

Indeed, a common Pasteurellaceae strain or other agent directly linking bighorn epidemics to either domestic sheep interactions or to emergence of endemic pathogens **has not been demonstrated to date, and thus unequivocal evidence for either process remains elusive.** (Emphasis added) Miller *et al.* at 4.

After more than 80 years of research, scientists have never documented the transmission of disease from domestic sheep to bighorn sheep in the wild. The CAST Report states:

[R]elationships between the onset of some pneumonia epidemics in wild sheep and the concurrent presence of domestic sheep on bighorn ranges have been described (George *et al.* 2008; Monello, Murray, and Cassirer 2001). Whether introduced Pasteurellaceae strains, introduced virulence factors, or other introduced pathogens contribute to precipitating these epidemics **remains unclear** (Besser *et al.* 2008; George *et al.* 2008; Kelley *et al.* 2008). (Emphasis added) *Id.*

The USFS Bighorn Report states that “[t]he following is a review and summary of the experimental methods and evidence relative to the hypothesis that bighorn sheep have a high likelihood of contracting fatal respiratory disease following contact with domestic sheep.” (Schommer). The science, however, does not support this hypothesis. To quote Marie S. Bulgin

DVM, Dip ACVM, MBA, Coordinator, University of Idaho, Caine Veterinary Teaching and Research Center, “There is just **NO** scientific basis for this premise.” She then states in her comment concerning the *Risk Analysis of Domestic Sheep and Bighorn Sheep on the Payette National Forest* that:

Myth, defined as a notion based more on tradition or convenience than on fact, (American Heritage Dictionary) seems to fit the Wildlife Biologists’ clinging to the notion that contact with or the nearby presence of domestic sheep on the range will automatically result in the demise of bighorn sheep. Seventeen years plus of research by numerous researchers has not been able to prove that such is the case. Bulgin, *Comment Concerning the Risk Analysis of Disease Transmission Between Domestic Sheep and Bighorn Sheep on the Payatte National Forest*, (2006).¹

The USFS Bighorn Report relies upon earlier studies that are mostly outdated, including an evaluation of the importance of different factors contributing to bighorn sheep disease by Monello, Murray, and Cassierer. (*Ecological correlates of pneumonia epizootics in bighorn sheep herds. Can. J. Zool.* 2001; 79: 1423-1432.) . The Monello, Murray, and Cassierer report states that herds found in proximity to domestic sheep **tended** to be more susceptible to die-off. Monello R.J.; Murray D.L.; Cassierer E.F., Canadian Journal of Zoology, Volume 79, Number 8, 1423-1432(10) (2001). However, the most striking finding of their analysis is not discussed by the USFS Bighorn Report. The Monello, Murray, and Cassierer report found that 88% of pneumonia-induced die-offs occurred at or within three (3) years of peak population numbers. This finding suggests that density-dependent forces such as food shortage or stress are a principal contribution to bighorn sheep susceptibility to pneumonia. This information does not appear in the USFS Bighorn Report. Rather, the data presented in the USFS Bighorn Report has been cherry-picked to support the questionable hypothesis proposed – that “bighorn sheep have a high likelihood of contracting fatal respiratory disease following contact with domestic sheep.”

¹ Submitted to Pattie Soucek, Forest Planner, Payette National Forest.

The USFS Bighorn Report fails to comply with both OMB and USDA Regulatory Information Guidelines. Nowhere does the USFS Bighorn Report explain the rationale for selecting certain data and deciding not to refer to other data, such as that referenced herein, in the analyses. In fact the existence of significant data highlighting the uncertainty of USFS Bighorn Report's hypothesis is not even mentioned. The USFS Bighorn Report does not ensure transparency in its dissemination of information by identifying known sources of error and limitations in the data. The statement that multiple bacteria species from domestic sheep have been identified as causing pneumonia in bighorn sheep is wrongfully presented as fact. The limitations of this data, as evidenced by multiple other studies, is not identified. The USFS Bighorn Report, thus, lacks transparency and objectivity.

A. Scabies

The information disseminated regarding scabies does not comply with the Data Quality Act, OMB Guidelines, or USDA Guidelines for Regulatory Information. All scientific documentation contradicts the assertion that domestic sheep transfer scabies to bighorn sheep. The USFS Bighorn Report relies upon mere speculation by some researchers decades ago that scabies outbreaks in bighorn sheep may have followed the introduction of domestic sheep. The USFS Bighorn Report states:

[T]he first large-scale population losses in the nineteenth century were principally attributed to scabies introduced by domestic sheep. This conclusion was based largely on clinical evidence of scabies in bighorn sheep during die-offs and the fact that these scabies outbreaks closely followed the introduction of domestic sheep (Buechner 1960; Honess and Frost 1942; Jones 1950; Smith 1954). (Schommer 2).

The only quantified and reviewed scientific study involving the transmission of scabies between domestic and bighorn sheep was conducted in 1980 and 1981. Scientists found that the

scabies mite found on bighorn sheep was host specific. F.C. Wright, F.S. Guillot, and W.P. Meleney in their paper, *Transmission of Psoroptic Mites from Bighorn Sheep (Ovis Canadensis mexicana) to Domestic Sheep, Cattle and Rabbits* [Journal of Wildlife Disease Vol. 17, No. 3, July 1981] concluded:

The length of the outer opisthosomal setae suggested that these psoroptic mites from bighorn sheep are *P. ovis*, but our transmission studies indicate that these mites **are not adapted to cattle or domestic sheep** and could transfer to cattle only with great difficulty. (Emphasis added).

This study has been presented to the authors of the USFS Bighorn Report; however, they chose to ignore it and instead perpetuate the falsehood that domestic sheep can transmit scabies to bighorn sheep. The USFS Bighorn Report states:

Although respiratory disease resulting in pneumonia is the most serious and devastating disease at a population level that is shared by domestic and bighorn sheep, other diseases and parasites, including but not limited to scabies, anaplasma, babesia, ovine parapox (contagious ecthyma), and infectious keratoconjunctivitis (pink eye), may be communicable (Jessup and Boyce 1993). Schommer at 3.

In addition to ignoring transmission studies involving scabies, the USFS Bighorn Report ignores the fact that scabies is not present in any domestic sheep in the United States. Scabies was eradicated in domestic sheep in the United States in 1973 [Journal of Medical Entomology Vol. 13, pages 629-658, 1977, *Eradication Programmes for Arthropod Parasites of Livestock*, O.H. Graham and J.L. Hourrigan]. The USFS Bighorn Report's discussion of scabies is misleading, not accurate, and not reliable. The USFS Bighorn Report wrongfully suggests that domestic sheep infest bighorn sheep with a mite that is host specific and with a disease that has not been present in the United States for more than thirty years! Thus, the objectivity of the USFS Bighorn Report is questionable when it contains and disseminates this type of false information.

B. Unplanned Pen Experiments

The USFS Bighorn Report purports to “1) review the science related to disease, particularly respiratory disease, in sympatric populations of domestic sheep (*Ovis aries*) and goats (*Capra hircus*) and bighorn sheep (*Ovis canadensis*) and 2) provide scientific foundation for the development of agency policy” Schommer at 1. Yet, the “Unplanned Pen Experiment” discussed on pages 3 - 4 lacks experimental design and scientific evidence. The USFS Bighorn Report relies on the 1982 Foreyt and Jessup paper which Dr. C. S. Ward of the Caine Veterinary, Research and Teaching Center discusses in depth in his comments regarding the 2006 USFS *Risk Analysis of Disease Transmission Between Domestic Sheep and Bighorn Sheep on the Payette National Forest*. In his comments, Dr. Ward states:

One of the most frequently cited articles (cited in the Risk Analysis document and other publications concerning respiratory disease in bighorn sheep) used to support the concept that die-offs in bighorn sheep populations is because of transmission of *Pasteurella* sp from domestic sheep is that of Foreyt and Jessup (1982). In that article it is clearly stated that the assumption of transmission was based on circumstantial evidence. No bacteria were isolated from the bighorn sheep that died in the Washington group of bighorn sheep discussed in that article and *Pasteurella multocida* was isolated from one and a nonspecieated *Pasteurella* organism was isolated from another of the California bighorn sheep that died in that enclosure. The authors did not indicate that tests of samples from any of the domestic sheep had been done and provided no scientific evidence that the domestic sheep were the source of those bacteria. In addition, *P. multocida* strains are ubiquitous in both wild and domestic animal populations; (including mule deer [Jaworski et al., 1998; and pronghorn [Dunbar et al., 2000]), therefore it is naive to assume that isolation from lung, bronchial lymph node and serum of one bighorn sheep resulted from presence of domestic sheep. Such a claim was not and cannot be substantiated. (Emphasis is that of the author) Ward, *Comments from Alton C. S. Ward regarding the 2006 Risk Analysis of Disease Transmission Between Domestic Sheep and Bighorn Sheep on the Payette National Forest* (2006).²

² Submitted to Pattie Soucek, Forest Planner, Payette National Forest.

The USFS Bighorn Report also fails to discuss incidences where penned bighorn sheep encountered die-offs without exposure to domestic sheep. Dr. Marie Bulgin in her 2006 comments on the Payette National Forest Risk analysis cites three of these examples:

Furthermore, there are many documentations of pneumonia and die-offs in [bighorn sheep] that have no reported contact with domestic sheep. Attempts to confine bighorns, even in large areas, have not been particularly successful as disease appears to cause large losses. For example, 18 of 20 desert [bighorn sheep] were lost within a 3 month period in 1971 in the Black Gap area in Texas from severe pneumonia. No domestic sheep contact was reported. (Hailey, Marburger, Robinson and Clark. Disease Losses in desert bighorn sheep in the Black Gap Area, *Desert Bighorn Council, 1972 Transactions*).

In Nevada, The Dutch Creek enclosure was established in 1967-1968 to hold desert [bighorn sheep] for the purpose of providing progeny for transplanting. Sheep numbers in the enclosure did not increased [sic] despite additions to the original stocking. Most losses were considered to be caused by disease. No contact with domestic sheep was reported. (Taylor, Disease losses in Nevada Bighorn, *Desert bighorn Council Transactions 1973*).

California bighorns were returned to the lava beds of California. Two rams and 8 ewes were introduced in 1972 and increased to 22 head by 1975. Then the herd was suddenly reduced to 15 due to bluetongue virus (and most likely *Pasteurella*, a squeala of Bluetongue) that fall. No contact with domestic sheep was reported. (Blaisdell, Lava Beds Bighorn Project—So who Worries?, *Desert Bighorn Council Transactions, 1976*).

The USDA Regulatory Information Guidelines require USFS to use the best data available and ensure transparency “by identifying known sources of error and limitations in the data.” Yet, the underlying information on unplanned pen experiments was based purely on circumstantial rather than scientific evidence, and the limitations of relying upon circumstantial evidence are not addressed in the USFS Bighorn Report.

C. Planned Pen Experiments

The planned pen experiments reviewed in the USFS Bighorn Report lacked the scientific tools necessary to evaluate the organisms present within the animal or the possibility of transmission to bighorn sheep. Again Dr. C. S. Ward of the Caine Veterinary, Research and

Teaching Center discusses the Foyet 1989, Onderka and Wishart 1988 and the Callan 1991 studies cited in depth by the USFS in this section. In his comments regarding the *USFS Risk Analysis of Disease Transmission Between Domestic Sheep and Bighorn Sheep on the Payette National Forest* (July 14, 2006), Dr. Ward states:

Experimental exposure of bighorn sheep to domestic and exotic sheep breeds and inoculation of bighorn sheep with *Pasteurella* strains isolated from domestic sheep have been reported to result in respiratory disease and death of bighorn sheep (Foreyt, 1989; Onderka and Wishart, 1988; Onderka et al., 1988; Callan et al., 1991). In some of those studies it was concluded that the bighorn sheep used in the experiments were free of *Pasteurella* because cultures conducted on nasal swab samples were negative for those organisms. Nasal swab samples have been demonstrated to be less reliable for detection of *Pasteurella* species than oropharyngeal swab samples. Another common cause for failing to isolate *Pasteurella* species from nasal samples is excessive ageing of the samples prior to inoculation of bacterial culture media. In another of the studies a beta-hemolytic *P. haemolytica* biotype T (currently identified as *P. trehalosi*) was isolated from tissues of a bighorn that died after contact with domestic sheep. Like organisms were subsequently isolated from tonsil samples of domestic sheep which had not tested positive for these organisms prior to contact with the bighorn sheep. Considering that information, it could have been concluded that the beta hemolytic strain was transmitted from the bighorn to the domestic sheep. However it was concluded that transmission from domestic sheep to bighorn sheep had occurred although it was not scientifically validated.

We have also isolated beta-hemolytic *P. trehalosi*, like that described by Onderka and Wishart (1988), from samples collected from free-ranging bighorn sheep in central Idaho. Using biochemical utilization and DNA fingerprinting test procedures it was demonstrated that the organism isolated from transtracheal samples collected from caesarian derived lambs that developed pneumonia following exposure to their dams was identical to that previously isolated from adult sheep at the time of capture (Jaworski et al., 1993). *Pasteurella trehalosi* with the identical biochemical and DNA fingerprints have subsequently been isolated from samples collected a decade later from bighorn sheep in Central Idaho (unpublished laboratory records) and bighorn sheep in Hells Canyon (Rudolph et al., in print). It is this kind of testing based on genetic markers that is required for scientific validation of transmission. (Emphasis is that of the author) Ward, *supra*.

In summary, some of the advances in bighorn sheep research noted by Dr. Ward include the following:

- It was demonstrated that oropharyngeal swab or tissue samples were superior to nasal swab samples for detection of Pasteurellaceae organisms (Dunbar et al., 1990; Wild and Miller, 1991; Queen et al., 1994).
- It was recognized that Pasteurellaceae organisms were quite fastidious and viability was rapidly lost when samples were exposed to temperatures below or above the tolerable range. This was confirmed by Wild and Miller (1991).
- It was also recognized that the viability of Pasteurellaceae organisms were markedly reduced as samples aged and that the type of collection system and transport medium was critical (Ward et al., 1990; Wild and Miller, 1991; Ward et al., 1997).
- Evidence was accumulated indicating that *Pasteurella* species can be isolated from essential 100% of appropriate samples collected from the upper respiratory tract of bighorn sheep and guidelines for sample collection and submission were distributed.
- Since multiple genera of bacteria colonize upper respiratory mucosa, some of which are inhibitory to the growth of Pasteurellaceae, different types of media were developed, tested and finally adopted to enhance isolation of these organisms from the upper respiratory tract (Ward et al., 1986; Jaworski et al., 1998).
- Serotyping procedures previously used to identify and differentiate types of Pasteurellaceae, e.g. *Pasteurella haemolytica* and *P. trehalosi* from domestic livestock were found to be inadequate for differentiation of most isolates from wild ruminants (Ward et al., 1990, Ward et al., 1997).
- Procedures were developed and applied to differentiate isolates by biochemical utilization procedures into >100 different biovariants thus greatly increasing the ability of other test systems, such as serotyping, to detect differences between and similarities of isolates (Jaworski et al., 1998).
- In addition DNA fingerprinting procedures used in human epidemiological studies were developed and applied to detect transmission of specific strains of *Pasteurella* species (Snipes et al., 1992; Jaworski et al., 1993; Ward et al., 1997; Rudolph et al., 2003; Weiser et al., 2003).

The studies reviewed and noted in the USFS Bighorn Report did not utilize these advances and did not, then, reflect the best available data. Moreover, the best available data concludes that transmission of disease from domestic sheep to bighorn sheep in the natural environment has not been scientifically proven. The USFS Bighorn Report does not clearly identify sources of uncertainty affecting data quality, i.e., the failure to employ scientific

advances in sample collection and disease identification, but instead bases its conclusion that domestic sheep can transmit disease to bighorn sheep upon unsound science used in the planned pen experiments study.

D. Planned Pen Experiments With Other Species

The USFS Bighorn Report states:

Recently, however domestic goats have been implicated in fatal disease transmission to bighorn sheep. Some goats carry *Mannheimia* and *Pasteurella* species that have been identified in bighorn disease events. DNA analysis conducted during a 1995 to 1996 Hells Canyon bighorn die-off revealed that a feral goat and two bighorn sheep shared a genetically identical *P. multocida* and *M. haemolytica*.

This statement biases the reader into believing this goat caused the bighorn sheep die-off. In the paper *Microorganisms Associated with a Pneumonic Epizootic in Rocky Mountain Bighorn Sheep (Ovis Canadensis Canadensis)* by Rudolph, Hunter, Rimler, Cassirer, Foreyt, DeLong, Weiser and Ward, *Journal of Zoo and Wildlife Medicine* 38(4), pages 548-558, 2007, the authors conclude that “this epizootic resulted from a complex of factors including multiple potential respiratory pathogens, none of which were identified as a primary pathogen and possible stress factors.”

In their six month scientific evaluation of 92 bighorn sheep involved in the die-off, forty (40) head had scabies and four (4) had serious horn fractures. The researchers found 14 biovariants of *P. haemolytica*, three biovariants of *P. trehalosi*, and five biovariants of *P. multocida*. In terms of viruses, they found eighteen (18) bighorn sheep with BRS, fourteen (14) with BVD, eleven (11) with IBR, and nineteen (19) bighorn sheep with PI-3. Anyone of these organisms could have caused disease and death in the Hells Canyon bighorn sheep herd. The researchers also concluded that:

Between 1971 and 1995, 22 translocations of 329 bighorn sheep were conducted to augment the Hells Canyon bighorn sheep population. The bighorn sheep were translocated from nine different areas including sites in Canada, Colorado, Idaho, Montana, Washington, and Wyoming. The bighorn sheep from each of those sites would have carried distinct biological packages that could have included multiple bacteria strains, viruses and parasites with the potential to compromise the health of the translocated and/or resident bighorn sheep at the release site.

While the goat and two of the bighorn sheep carried the same *P. multocida* and *P. haemolytica* organism, this was not determined to be the organism causing the large-scale die-off, and transmission of the organism was not demonstrated in the research (Ward Payette Comments 1996, Weiss et. al., 2008). The USFS Bighorn Report focuses upon the presence of the goat near the bighorn sheep prior to the die-off and ignores the actual scientific findings. Once again the USFS Bighorn Report demonstrates a bias against domestic sheep and goats and cherry-picks the information presented to support its hypothesis.

E. Inoculation Experiments

The inoculation experiments discussed in the USFS Bighorn Report serve no utility other than to bias the reader. In the CAST Study, the reviewers found that:

Wild sheep experience high morbidity and mortality after being intratracheally or intradermally inoculated with relative high doses (10^4 organisms) of field strains or attenuated strains of *M. haemolytica* from domestic sheep or cattle, or with *B. trehalosi* strains originating from other wild sheep (Foreyt, Silflow and Lagerquist 1996, Foreyt, Snipes and Kasten 1994; Onderka, Rawluk, and Wishart 1998). The resulting pathology from experimental inoculations of wild sheep varied among strains used, but all strains caused some form of pneumonia. Miller, *et al.* at 3.

The CAST Study found that early inoculation studies by Foreyt, Onderka and others used doses 10,000 or more times the levels needed to cause disease not only in bighorn sheep but cattle and other species as well. The peer reviewed and published CAST Study also found that ALL strains of *haemolytica* including those originating from wild sheep caused some form of pneumonia, in direct contrast to the USFS Bighorn Report.

Dr. Anette Rink in her comment regarding the Payette National Forest risk analysis came to same conclusion as CAST about the inoculation studies cited by the USFS. Dr. Rink states:

One of the most frequently cited studies on disease transmission in most papers (Foreyt et al., 1994) used 5.3×10^8 to 8.6×10^{11} colony forming units to inoculate [bighorn sheep]. Seven of eight inoculated bighorn sheep died from acute pneumonia within 48 hr of inoculation. The infectious dose for the majority of bacterial pathogens lies somewhere in the order of 1×10^1 to 10^4 .

In other words, Dr. Foreyt inoculated the bighorn sheep with colonies of *Pasteurella* 10,000 to 10,000,000 times the level necessary to cause disease. Death was inevitable.

F. Microbial Transmissibility

The USFS Bighorn Report states that domestic sheep and bighorn sheep did not co-evolve together; therefore, bighorn have a reduced capacity to kill bacteria compared to domestic sheep. In his 2006 comment discussing the Payette National Forest risk analysis, Dr. Glenn Weiss addresses similar comments as follows:

I conducted a PubMed (the National Institutes of Health scientific publication service) search of the referenced scientific literature using the key words “sheep pneumonia *Pasteurella*.” There were 136 journal articles in the PubMed database, 21 dealing with bighorn sheep, leaving 115 dealing with domestic sheep pneumonia *Pasteurella*. Fifty-eight (58%) of these 115 journal articles were published from 1990 to present. Therefore, respiratory disease in domestic sheep has apparently not demonstrated many resistances or the need for these scientific studies would not exist. Weiss, *Risk Analysis of Disease Transmission Between Domestic Sheep and Bighorn Sheep on the Payette National Forest* (2006).³

The USFS Bighorn Report downplays the effects of respiratory disease in domestic sheep to support its hypothesis that contact with domestic sheep devastate bighorn sheep.

G. Demographic

The USFS Bighorn Report notes that Gross and Clifford quantitatively evaluated the degree of risk between domestic and bighorn sheep for Sierra Nevada bighorn and found

³ Submitted to Pattie Soucek, Forest Planner, Payette National Forest.

proximity of domestic sheep a major negative factor bighorn restoration. What the USFS Bighorn Report fails to discuss is the fact that domestic and Sierra Nevada sheep have grazed the same region for 300 years, and no study has documented a respiratory related die-off in these bighorn sheep to date.

The USFS Bighorn Report also states that the authors have not found any published reports where fenced or free-ranging bighorn sheep herds remained healthy with domestic sheep in the region. This is false. The study by Ward AC, Hunter DL, Jaworski MD, Benolkin PJ, Dobel MP, Jeffress JB, Tanner GA (1997) *Pasteurella spp. in sympatric bighorn and domestic sheep*. Journal of Wildlife Diseases, 33(3): pages 544-57, reviewed several instances where the presence of domestic sheep did not adversely affect bighorn sheep. For example, in October 1992 a single castrated male lamb that commingled and stayed with bighorn sheep on the Granite Range did not cause a die-off of the bighorn sheep. The entire bighorn herd and the domestic lamb were captured and tested for pasteurella. Although the bighorn and domestic sheep tested positive for Biotype 3 P organisms, the bighorn herd has increased rather than dying-off. In fact the herd has tripled in size. A similar event in the Desatoya Range was documented in 1992. Contact among a domestic ewe, her lamb, and a bighorn herd was witnessed. The entire bighorn herd and the domestic sheep were tested and found to have Biotype 3 pasteurella organisms. The bighorn herd, however, has continued to thrive.

Current studies are looking at over 300 desert bighorn in Arizona that have co-mingled for generations without ill-effect. The suggestion in the USFS Bighorn Report that bighorn sheep will not remain healthy after contact with domestic sheep is not supported by the evidence. Yet, it is presented in the USFS Bighorn Report as a fact supporting “the hypothesis that bighorn

sheep have a high likelihood on contracting fatal respiratory disease following contact with domestic sheep.” Schommer at 3.

VI. Conclusion

The USFS Bighorn Report clearly violates the Data Quality Act of 2002, the OMB Guidelines, and the USDA Regulatory Information Guidelines. Much of what the USFS Bighorn Report presents as “science” has no basis in scientific design or scientific evidence. According to both the OMB Guidelines and the USDA Regulatory Information Guidelines, the term “objectivity” includes whether disseminated information is presented in an accurate, reliable and unbiased manner. This also involves whether the information is presented within a proper context. The USFS Bighorn Report clearly fails on these points. The USFS Bighorn Report cherry-picked what scientific papers it wished to discuss, presented misleading information, and presented some information out of context.

There is no scientific evidence that the severity of wild sheep die-offs are more pronounced after association with domestic sheep. Only in captive studies did bighorn sheep react more severely, and much of this severity can be explained by the extremely high doses of bacteria used in the inoculations and with the stress of confinement itself.

“Objectivity” also focuses on the information cited within the document. These sources also need to be accurate, reliable and unbiased. Much of the information contained in the USFS Bighorn Report is not accurate, not reliable, and not unbiased. The USFS Bighorn Report fails to address the limitations of the data used to reach its conclusions and fails to acknowledge that circumstantial evidence rather than scientific evidence underlies most of the information presented.

According to the USDA Regulatory Information Guidelines, the USFS Bighorn Report should rely upon the “best available data,” yet studies using advanced scientific sampling and disease identification techniques were not included in the USFS Bighorn Report. Because the information disseminated in the USFS Bighorn Report is not objective, it also fails to have any utility for those persons making management decisions regarding grazing of domestic sheep and goats in National Forests.

VI. Effect of the Aforementioned Errors

The errors contained in the USFS Bighorn Report are mistakenly influencing the USFS’s decisions about management of domestic sheep in all national forests. Moreover, reliance on this biased and faulty information in the USFS on forest plans or amendments thereto, as well as modifications or cancellations of grazing permits, has and will continue to harm the Petitioners and their members. The Petitioners and their membership have been negatively impacted by the dissemination of this false information regarding domestic sheep’s capabilities to spread numerous diseases, including scabies, anaplasma, and babesia.

The Petitioners cannot adequately assess the USFS’s justifications or rationale for proposing changes to management plans when based upon this misinformation. The Petitioners and their members will continue to be harmed if management decisions are based upon this unreliable, inaccurate, and biased information. In addition to the damage to the Petitioners and their members if there are reductions or changes to grazing permits based upon the false information in the USFS Bighorn Report, the local economies will negatively impacted, as well as hurting the local social and economic stability of these areas by reducing or removing sheep producers.

VII. Recommendation and Justification for How the Information Should Be Corrected

The Petitioners respectfully request the USFS retract the USFS Bighorn Report, General Technical Report RMRS-GTR-209, and all reliance thereon in existing and subsequent forest plans and forest plan amendments, as well as decisions on grazing permits and grazing permit renewals. Alternatively, the USFS could, as required by the OMB Guidelines, and the USDA Regulatory Information Guidelines, issue an amended USFS Bighorn Report that uses sound analytical methods and the best data available and ensures transparency and objectivity. An amended USFS Bighorn Report should incorporate all reliable information, not just the data supporting its false hypothesis; should identify the limitations of data used; should not state assumptions as fact; and should include the best available data as discussed herein.

Respectfully submitted this 23rd day of January, 2009.

Holsinger Law, LLC

A handwritten signature in black ink, appearing to be the names of Kent Holsinger and Laura L. Chartrand, written in a cursive style.

Kent Holsinger, No. 33907
Laura L. Chartrand, No. 39220
Attorneys for Petitioners