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EXHIBIT 1

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MONTANA
MISSOULA DIVISION

WESTERN WATERSHEDS PROJECT, et al., Plaintiffs, v. SALAZAR, et al., Defendants.	CV-09-159-M-CCL DECLARATION OF D.J. SCHUBERT

DECLARATION OF D.J. SCHUBERT

Pursuant to 28 U. S. C. § 1746, I, D.J. Schubert, hereby declare under penalty of perjury that the following is true and correct:

1. I am a wildlife biologist employed by the Animal Welfare Institute which is headquartered in Washington, D.C. I graduated cum laude from Arizona State University with a degree in wildlife biology in December, 1983. After graduation, I utilized my wildlife biology training while serving as a United States Peace Corps volunteer in Burkina Faso, West Africa. Upon returning to the United States, I was employed by the U.S. Fish and Wildlife Service in its East Lansing, Michigan Ecological Services field office before moving on to employment for various not-for-profit animal/wildlife protection and conservation organizations.
2. In January 1990, I was employed as a wildlife biologist by The Fund for Animals. That same month I was introduced to and asked to work on a campaign to address the management of bison in Yellowstone National Park. During the next 20 years, I have continued to work on the Yellowstone bison issue while employed by The Fund for Animals, Meyer and Glitzenstein (now Meyer, Glitzenstein & Crystal), Schubert & Associates (my own consulting firm), The Humane Society of the United States, and the Animal Welfare Institute.
3. Over this twenty-year period and continuing to the present time, I have read hundreds of scientific studies relevant to all aspects of this issue (e.g., bison and elk ecology and biology; pathology and epidemiology of *Brucella abortus* in bison, cattle, elk, and other species; bison and elk evolutionary biology; bison and elk genetics; persistence and survival of the *Brucella abortus* bacterium; bison and large ungulate bioenergetics; bison and elk behavior; winter recreation impacts on bison and elk; conservation value of bison and elk), read dozens of books about the history, ecology, and management of bison and elk, attending dozens of meetings of state/federal agencies responsible for bison management in the Greater Yellowstone Ecosystem, attended and presented papers at conferences/workshops on bison management, interfaced with dozens of colleagues and scientific experts from all disciplines related to this issue including state and federal agency officials and experts from academia, and I have participated (though the review of agency documents and

submission of informed and substantive comment) in the majority of planning processes conducted by state and federal agencies involved in the management of bison in the Greater Yellowstone Ecosystem.

4. Though my portfolio of campaigns has expanded, I continue to remain involved in the management of bison in Yellowstone National Park and surrounding public and private lands and am presently, among other projects, reviewing and preparing comments on the National Park Service's Draft Environmental Impact Statement on the Remote Vaccination of Bison in Yellowstone National Park. As a result of my educational background, long-time involvement in this issue, and my extensive research into all issues relevant to the management of bison in the GYE, I qualify as an expert in this subject area and, therefore, provide the following information on the basis of that expertise.
5. The North American bison was nearly extirpated by the late 1880s. The species extinction was avoided through the actions of a handful of individuals who captured and began to raise bison in captivity. In addition to these growing captive herds, a small herd of wild bison survived in the then hard-to-reach wild habitats of Yellowstone National Park. At the turn of the century (1900), it is estimated that only a mere two dozen wild bison may have been left in Yellowstone National Park. Over time, however, and with the introduction of bison from some of the captive herds, Yellowstone's bison population numbers increased to an estimated high of over 4,900 bison in summer 2005.
6. In North America, there are three recognized subspecies of bison presently known to exist; the wood bison (found in Canada), the mountain bison, and the plains bison. While some believe that a small population of mountain bison may still exist in Yellowstone park, the majority of bison in Yellowstone and North America are considered to be plains bison. It is presently estimated that there are approximately 500,000 plains bison in North America. The majority are raised for meat on bison ranches and, therefore, subject to selection and breeding decisions that emphasized and promoted docility and growth over wild traits. Less than 20,000 plains bison are identified as existing within conservation herds (i.e., herds managed by municipal, state, provincial, federal governments or private organization with clear conservation objections or herds) in North America with 90 percent in the United States. Most of these populations are intensively managed either in large fenced parks and/or subject to regular roundups and culls to artificially manage population sizes and only 22

percent of these herds were deemed to be increasing in size. Of the less than 20,000 bison within conservation herds, only approximately 8,000 bison, including bison occupying Yellowstone National Park, are considered to show no evidence of hybridization with cattle making them of significant value in the restoration of wild bison. Though efforts are being made to restore wild bison to their natural habitats, at present wild bison are considered to be ecologically extinct across its former range with significant implications to grassland ecosystems.

7. It is widely accepted that bison used to number some 30-60 million in North America. The immense migratory populations of bison occupied vast stretches of the United States and provided life-giving sustenance and supplies to many Native American tribes. The near extirpation of bison from the continent represents one of the most substantial reductions in any species of wildlife in the world that was largely human-caused or induced. Today's less than 20,000 bison in conservation herds represent less than .03 to .07 percent of the bison that used to inhabit North America and they exist on far less than 1 percent of the range that bison once occupied. Bison were and, despite their population decline, remain a keystone species. A keystone species is simply defined as a species that, irrespective of its dominance in an ecosystem, has a significant top-down impact on the vertical and horizontal structure, heterogeneity, and diversity within an ecosystem.
8. Indeed, bison are a textbook example of a keystone species. They are, in effect, the architect of the ecosystems that they inhabit. Through their grazing, hoof action, horning, wallowing, trampling, rubbing against trees, and through their death they are instrumental in repressing the expansion of forests and maintaining more open rangelands/grazing lands including mixed-grass prairie and sagebrush ecosystems, in creating microhabitats that increase species diversity, create depressions that may serve as ephemeral water sources, and, upon death, provide sustenance to a wide variety of other species including small mammals, wolves, and grizzly bears.
9. Indeed, considering the decline in cutthroat trout and whitebark pine seeds in Yellowstone, winter-killed bison carcasses may be of particular importance to federally protected grizzly bears, especially for females with cubs of the year immediately upon den emergence in the spring.

10. The value of bison in creating and maintaining sagebrush and mixed-grass prairie ecosystems cannot be overstated given the importance of these ecosystems to a whole host of species including invertebrates, small mammals, birds, and large ungulates. Sagebrush ecosystems have, in fact, been described in one Forest Service study as the "mother of biodiversity" providing habitat for dozens of species (e.g., Merriam shrew, pygmy rabbit, Brewer's sparrow, sagebrush lizard, pronghorn, sharp-tailed grouse, golden eagle, loggerhead shrike, burrowing owl) including federally protected species and Forest Service designated sensitive species. Examples of high-profiles species directly benefited by bison include prairie dogs, pronghorn, and sage grouse each of which provide cascading benefits to other species (e.g., prairie dogs are of significant importance to the critically endangered black-footed ferret). People who use public lands, including Forest Service lands, for recreation also benefit from the presence of these species.
11. While Yellowstone National Park has benefited ecologically from the continual presence of bison on the park landscape (recognizing that the ecological role of bison has varied depending on population numbers), surrounding lands, including the Gallatin National Forest, have not due to restrictions placed upon bison occupation and use of those lands made by the U.S. Forest Service based on the Interagency Bison Management Plan (IBMP). As a result, the ecological matrix of the Gallatin National Forest is not as diverse or complete as it could be if bison were permitted – as they should be – to occupy suitable habitat within the forest. Indeed, bison are indispensable to creating habitat conditions to increase species diversity, including the number and diversity of sensitive species such as sage grouse, loggerhead shrikes, and burrowing owls, on the Gallatin National Forest.
12. Existing sagebrush habitat on the Gallatin National Forest is not managed sufficiently, in my opinion, due in part to the lack of standards or guidelines in the Gallatin National Forest plan, to benefit sage grouse and other sagebrush ecosystem obligate species. Indeed, sage grouse numbers are estimated to be declining in southwestern Montana as a consequence of loss of winter range, habitat degradation, livestock grazing, habitat conversion, and drought. Livestock grazing adversely impacts sage grouse by reducing cover important for the concealment of sage grouse chicks thereby increasing predation risk and reducing the suitability of habitat to support sage grouse populations.

13. By amending the plan to ensure that bison are permitted to occupy the Gallatin National Forest, their mere presence, over time, would aid in restoring the benefits of a fully functional sagebrush ecosystem. Restricting or eliminating domestic livestock grazing, a known impediment to improving and restoring sage grouse habitat, would also be helpful and advisable in restoring species diversity on the Gallatin National Forest.
14. The IBMP, which was implemented in 2000, was based on the concept of adaptive management which, simply put, means that as new information was learned about bison both as a result of the plan's implementation and based on ongoing research into all aspects of bison ecology, biology, behavior, disease epidemiology, the IBMP was to be amended to reflect that new information and to ensure that bison would be managed consistent with the best available scientific evidence. The IBMP was also constructed to, over time, reduce restrictions on bison use of lands outside of Yellowstone National Park as the plan graduated from Step 1 to Step 2 and then to Step 3.
15. The IBMP, after ten years of implementation and despite significant changes in the circumstances and information pertaining to bison management (including on-the-ground changes and the availability of new and compelling scientific information), has yet to be substantially amended or adapted to reflect this new information. The only adaptation of the IBMP occurred in December 2008 when the state/federal agencies agreed to relatively minor alterations to on-the-ground bison management, including bison hazing practices when bison were outside of Yellowstone National Park. These changes were prompted largely by a Government Accounting Office report severely critical of the IBMP and, even after a few months of implementation, were requested to be weakened, by the Montana Department of Livestock which had previously agreed to the adaptive changes.
16. In short, despite including an adaptive management provision in the IBMP and contrary to provisions of the National Environmental Policy Act (NEPA) which requires the supplementation of environmental documents under specific conditions – including conditions present in this case – neither the federal nor state governments involved in bison management have substantively amended the IBMP or, preferably, agreed to prepare a supplemental environmental impact analysis.

17. The federal/state agencies responsible for the management of bison in the Greater Yellowstone Ecosystem are well aware of the changed circumstances and significant new information since 2000 that should have triggered the development of a supplement to the environmental impact statement prepared to evaluate the environmental impacts of the IBMP.
18. For example, I was primary author of a rulemaking petition submitted to the Department of the Interior and National Park Service in April 2008 which sought the immediate promulgation of emergency rules to protect the genetic diversity of bison in Yellowstone National Park. This petition, which was filed on behalf of several of the plaintiffs in the present litigation, was based on new scientific information documenting that Yellowstone's bison, unlike most other plains bison, did not demonstrate evidence of hybridization with domestic cattle, that there were at least two genetically distinct bison populations within Yellowstone National Park, that a minimum of 2000 bison would have to be protected in each subpopulation in order to have a 95 percent chance of protecting the populations over the next 200 years, that the non-random lethal removal of bison through management actions was damaging the genetic health of the park's bison populations, and that the National Park Service had not considered this information during previous planning efforts including when preparing the IBMP. The National Park Service denied this petition for rulemaking in May 2008. In doing so it conceded that the genetic information presented in the petition was new, that the NPS was aware of the information, that it would discuss the information with its agency partners but, nevertheless, that the petition was not warranted. Instead of agreeing to the petition and implementing regulations to protect the genetic diversity and health of Yellowstone's bison populations, the National Park Service preferred to allow other adaptive management changes, including allowing bison access to private lands beyond the northern border of the park, to take place before considering emergency rulemaking.
19. In a series of comment letters I submitted to the state and/or federal agencies responsible for bison management in the Greater Yellowstone Ecosystem after 2003 on behalf of The Fund for Animals, The Humane Society of the United States, or the Animal Welfare Institute, I repeatedly asked the agencies to prepare a supplemental environmental impact analysis based on the changed circumstances and significant new information. These changed

circumstances and significant new information included studies on bison genetics, changes in land use (e.g., public lands livestock grazing) within the Greater Yellowstone Ecosystem, new information on the epidemiology and pathology of *Brucella abortus* as well as the risk of bacteria transmission, and changes in bison management practices (i.e., hazing methodologies, captive bison testing methodologies). In some cases, these letters were also submitted on behalf of plaintiffs in the present litigation, namely the Buffalo Field Campaign.

20. I have also read the letters submitted by some or all of the plaintiff organizations and individuals in October 2008 and January 2009 explicitly requesting that the state/federal agencies responsible for bison management in the Greater Yellowstone Ecosystem agree to the preparation of a supplemental environmental impact analysis based on changed circumstances and significant new information. These letters identified a number of changed circumstances and significant new information to justify the request for supplemental impact analysis including, but not limited to, bison genetics, bison movements, bacteria transmission risk, and hazing operations. Each of the changed circumstances and the significant new information, identified above and discussed in more detail below, has implications to bison management, the management of bison habitat, bacteria management, and the health, vitality, and well-being of bison and other animals, wild and domestic, within the Greater Yellowstone Ecosystem.
21. The National Park Service had been cautioned well before 2000 that the non-random lethal removal of bison from the borders of the park by federal and state agents and, in some years, by hunters could adversely impact the genetic diversity and health of the park's bison population. Despite these concerns, the National Park Service continued to promote and permit such removals which, in some years, have included over 1,500 animals. In 1999, it was first determined that Yellowstone bison were among a handful of bison managed on public lands who demonstrated no evidence of hybridization with cattle (i.e., there were no cattle genes detected in Yellowstone bison).
22. A few years later, in 2003, it was disclosed that the Yellowstone bison population may actually consist of two or more genetically distinct bison populations based on DNA testing conducted. The evidence for the existence of genetically distinct populations of bison within the park then expanded based on additional DNA testing and other evidence, including tooth wear, revealed by other scientists. Since the

IBMP was premised on the existence of a single, genetically non-distinct population of bison in the park, this new scientific evidence, which is currently the best available evidence and has not been disputed, completely alters the impacts of the IBMP on the short and long-term survival and genetic health and diversity of the bison in Yellowstone National Park.

23. Of particular importance is the fact that the non-random lethal removal of bison at or near the park's borders is no longer impacting a single population but, rather, is causing impacts to at least two, genetically distinct populations. Moreover, the lethal management removals of bison that have occurred routinely since 1985 compromise the heterozygosity and allelic diversity of the remaining animals thereby threatening the long-term genetic health of the populations and their ability to adapt to changing environmental and ecological conditions (e.g., climate change).

24. Neither the National Park Service nor the other state/federal agencies responsible for the management of bison in the Greater Yellowstone Ecosystem have ever amended, adapted, or modified the IBMP or developed a supplement to the IBMP to reflect this significant new information about bison genetics. The existing IBMP and its underlying environmental analysis did not consider the fact that Yellowstone bison represent one of the few populations of bison who demonstrate no evidence of hybridization with cattle which, in turn, makes them of significant value for the long-term conservation and restoration of the species. Nor did the IBMP analyze the impact of bison management actions, particularly, lethal removal on the two or more genetically distinct populations in the park. This deficiency is of particular concern since it completely and substantively changes how any lethal removals permitted under the IBMP may impact the short and long-term genetic diversity, health, and survival of the park's bison populations. Instead of, for example, assessing the impact of killing 300 bison against a single, genetically non-distinct population of 3000 animals, the agencies would have had to assess the impacts in relationship to two or more genetically distinct populations that would contain significantly fewer animals. Had such a new analysis been done or, when it is done, new strategies presumably would have been or will be necessary for bison management at or near park borders, including strict limitations on the lethal removal of bison, in order to protect the genetic diversity, including allelic diversity, of all genetically distinct bison populations in the park and to ensure that the

number of bison in all populations was sufficient to protect their long-term survival.

25. Significant changes in land use have also occurred since 2000 both to the north and west of Yellowstone National Park. These are the areas where nearly all bison killed since 1985 have been removed. On the west boundary, the family that maintained private grazing land and a U.S. Forest Service grazing allotment on Horse Butte (near West Yellowstone, Montana) was prevented from grazing cattle on their public allotment through legal action, was persuaded to eventually accept alternative public lands to maintain their cattle during the summer, and eventually sold their private lands. The land was purchased by a conservation-minded buyer who has made clear to the state and federal agencies that bison are welcome on the newly acquired land.
26. The U.S. Forest Service subsequently permanently closed the Horse Butte grazing allotment thereby removing cattle, permanently, from this allotment – which is located in a key area traditionally used by bison in the spring.
27. On the north side, the Royal Teton Ranch entered into a 30-year agreement with state and federal agencies that removes cattle from their lands for the duration of the agreement in exchange for several million dollars. While the agreement is controversial and, in my opinion, provides little benefit for bison, it does remove cattle from these lands directly adjacent to the northern border of Yellowstone National Park for a period of time, but not permanently.
28. When the IBMP was implemented in 2000, its associated environmental analysis indicated that as few as 2,400 cow-calf pairs could be affected by the plan. Today, due to these and other land use changes, the number of cattle potentially affected by bison has been reduced significantly.
29. The IBMP did not contemplate nor was it based on any presumption that the Horse Butte peninsula would ever be permanently devoid of cattle. While the IBMP did anticipate the removal of cattle from the Royal Teton Ranch, it presumed that transition would occur in 2002 (when an existing cattle grazing lease agreement expired) not in 2008. Admittedly, the minimal changes to bison management on the western boundary of the park were, in part, due to the changes in land use in that area, the state/federal agencies responsible for bison management in the Greater Yellowstone Ecosystem have not substantively or

permanently modified or amended the IBMP or engaged in any new or supplemental analysis in light of these new circumstances.

30. Considering that the presence of cattle on public and private lands surrounding Yellowstone National Park and the presumption that bison can transmit *Brucella abortus* to cattle under free-ranging conditions are the entire basis for the IBMP, the permanent removal of cattle from key public and private lands adjacent to the park and the significant reduction in the number of cattle in the project area provides a compelling opportunity for the agencies to substantively amend the IBMP to provide increased flexibility in managing bison on public and private lands beyond Yellowstone's border including allowing bison to occupy those lands seasonally or permanently depending on their movement patterns.
31. Improved information about bison movement and distribution patterns has also been collected since the IBMP was implemented in 2000. When the IBMP was prepared it was presumed that bison from Yellowstone central herd would emigrate largely to the west crossing the park's western border north of West Yellowstone, Montana where the animals were subject to trapping, testing, and slaughter, lethal removal by state or federal agents, or, more recently, hunting.
32. Yellowstone's northern range bison population was believed to emigrate to the northwest of their traditional wintering area taking them past Mammoth, WY, into the Gardiner Basin, and eventually crossing the park's northern boundary either east of Gardiner, Montana onto U.S. Forest Service lands or north of Gardiner onto the private Royal Teton Ranch. Bison nearing or crossing the park's northern boundary are, as called for in the IBMP, subject to capture, testing, slaughter, lethal removal by state/federal agents, or hunting.
33. As a result of studies of bison movements since 2000, including studies involving a number of radio-collared bison, it is now known that bison from Yellowstone's central herd move north primarily utilizing the snow-packed road surface from Madison Junction through Norris and into Mammoth, Wyoming which provides the bison with an energy-efficient travel corridor leading directly to the lower elevation lands near and beyond the park's northern boundary.
34. As a result, though bison from both the central and northern herds have been subject to lethal control at the northern boundary, including some years when more than 1,000 bison have been removed from this boundary alone, the bison from Yellowstone's central herd have likely borne the brunt of the lethal removals and, consequently, this

population's genetic diversity, health, and long-term survival has likely been compromised. Unfortunately, since this information about bison movement patterns and the influence of packed snow roads on bison movements particularly from Madison Junction to Mammoth is relatively new, since the number of radio-collared bison has been limited in some years, and since DNA testing is not done on bison captured and sent to slaughter or killed near the northern boundary of the park to determine animal origins, the precise number of central versus northern range bison killed as a result of management actions taken near the northern boundary since 1985 is unknown. Nevertheless, based on what is now known, it is irrefutable that animals from both populations have been killed near the northern park boundary and, it is likely, that animals from the central herd have been particularly hard hit since they are susceptible to removal at both the western and northern boundaries.

35. Central herd bison tend to begin movements to the west and north earlier than northern range bison due to learned movement patterns, the availability and accessibility of packed snow roads, and due to more severe winter climatic conditions which can affect bison accessibility to food. Use of the energy efficient packed road system expedites bison movements allowing bison to traverse longer distances in shorter amounts of time. Though northern range bison tend to move to the west and north later during the year than central herd bison, they can be affected by the unnatural movements of the central herd bison to the north using the snowpacked roads. If, for example, northern range bison have moved early, the arrival of central herd bison may push them toward the boundary and trigger their removal through management actions. Or, if central herd bison are moving toward the northern boundary this may provide incentive for northern herd bison to also move toward the boundary given the overall gregariousness of the species. Finally, since central herd bison likely move to the west and north throughout the winter (recognizing that there tends to be a spike in movements toward park boundaries in the spring prior to green-up in the park), at some point it is inevitable that there will central herd and northern range bison will be present on the northern range and will both move toward the boundary and, likely, lethal removal.
36. Bison from Yellowstone's northern and central populations must be considered vulnerable to adverse impacts from the implementation of the IBMP. Central herd bison are equally, if not more, vulnerable

since they move both towards the western and northern boundaries and can be subject to lethal removal at both sites. Moreover, even if the NPS elects, as it has done in the past, to capture and hold bison in the Stephens Creek bison trap for release back into the park in the spring, this is not done until later in the year. Bison who move toward the boundaries earlier in the year, which may include a preponderance of central herd bison, therefore are more likely to be captured, slaughtered, or otherwise killed compared to animals that move later in the season.

37. Despite this significant new information on bison movements, the agencies have not amended or modified the IBMP or engaged in any new analysis to adjust management practices in light of the best available scientific information and to ensure that management actions, particularly lethal control actions, are not unduly jeopardizing the short or long-term genetic health, diversity, or survival prospects for any of the park's bison populations. Had such an analysis been completed or if the agencies were to engage in such an analysis, management strategies, including the use of lethal management techniques, would have to be altered to take into consideration their impact on the individual populations. In recent years, though the estimated number of bison in the central and northern herds has been close to equal, this has not always been the case. To sufficiently monitor impacts from management action on different populations within the park, a mechanism would have to be developed to assess the origins of each bison removed and perhaps, if lethal control were permissible at all, to control how many bison from each population were removed. The current management strategy fails to even contemplate the differential impact of removals on the bison populations potentially leading to unforeseen adverse impacts on one or more of the park's bison populations.

38. New and improved information has been published as well on the risk of *Brucella abortus* transmission from bison to cattle. It has long been known that there has never been a confirmed case of *Brucella abortus* transmission from any Yellowstone bison to cattle in the Greater Yellowstone Ecosystem, that bacterial transmission is nearly always associated with susceptible animal contact with contaminated birth products (meaning bison bulls can't transmit the bacteria), and that recent disease outbreaks in domestic cattle in Montana, Idaho, and Wyoming have not been linked to bison.

39. Despite these facts, the National Park Service and its federal and state partners have routinely killed or slaughtered bison bulls, calves, yearlings, and open (non-pregnant) female bison even though they pose no risk of bacteria transmission.
40. Furthermore, the agencies frequently send untested bison to slaughter with full knowledge that the vast majority of those bison have not been exposed to the bacteria, are not infected, or are not infectious. Even when they do test captured bison, they send all pregnant bison (regardless of test results) and all seropositive bison to slaughter even though the majority of these animals may not be exposed, infected, or infectious and that many of the seropositive bison may have developed an immunity to the disease making them far less likely of acting as a vector for disease transmission.
41. Indeed, data collected from years of study of the epidemiology and pathology of *Brucella abortus* in Yellowstone bison – data that was either not considered in the IBMP or had not yet been analyzed and published when the IBMP was completed – demonstrates that the majority of bison over 5 years of age, if they do test seropositive, no longer test culture positive meaning that they have cleared the bacteria but continue to test positive for exposure to the organism at some time in their lives. These animals have, more than likely, developed immunity to the bacteria as a result of exposure but no longer pose a risk of bacteria transmission.
42. Recently published studies have taken this transmission risk data and other information and have created models to examine the risk of bacterial transmission. These models have demonstrated, as has been conceded by all of the agencies involved in this debate, that the risk of transmission is exceedingly small under all circumstances and that, from an economic perspective, the agencies would be better off paying the few ranchers who continue to graze cattle on public lands in the vicinity of the park's northern and western borders not to graze their cattle versus shelling out millions of dollars each year to maintain separation between bison and cattle largely through hazing and lethal removal.
43. In addition, since the IBMP was implemented, new research has been conducted into the persistence of the *Brucella abortus* bacterium in the Greater Yellowstone Ecosystem. This research demonstrated that the bacteria can only survive for approximately three weeks in the spring months with direct sunlight and warmer temperatures killing

the bacteria altogether. Since these studies only considered whether the bacteria was present or absent, in reality the ability of the bacteria to persist in sufficient quantity to result in a transmission event is probably measured in only days or even hours.

44. Other studies documented that the carcass of an aborted bison fetus or stillborn or dead bison calf, whether or not contaminated with *Brucella abortus*, persists for only days in the Greater Yellowstone Ecosystem further reducing any chance for the indirect transmission of *Brucella abortus* to domestic livestock.

45. These new studies – which constitutes significant new information – has never been used by the agencies in amending or modifying the IBMP and/or in preparing a new or supplemental analysis. Indeed, while the risk of direct or indirect transmission of the bacteria from bison to cattle under free-ranging conditions is known to be very small, any new evidence, such as the carcass disappearance and bacteria persistence studies, that further reduce the risk of transmission should and could be used to justify substantive changes, including the consideration of new alternatives in the IBMP, to allow bison to remain outside the park, both seasonally and year-round on private and public lands, without the need for hazing, capture, slaughter, or shooting. Such changes would, in turn, afford greater protections for the short and long-term survival of the park's bison population while also conserving and improving the genetic health and diversity of the bison populations.

46. Moreover, since the IBMP was implemented data collected on the bison populations (i.e., seroprevalence rates, age structure, reproductive rates) have apparently changed compared to levels measured pre-IBMP. The available data suggest that park bison age structure is now skewed toward younger-aged individuals as older-aged animals are lethally removed from the populations as a result of management actions. Considering that younger-aged bison are more likely to be infected and infectious (i.e., more capable of representing a vector for bacteria transmission) this could contribute to a theoretical increase in the risk of bacteria transmission.

47. The proportion of the bison testing seropositive to bacteria exposure is also apparently rising which could mean that a larger proportion of park bison at any one time may be infected or infectious compared to the number of infected/infectious bison in the populations ten or more

years ago. This would suggest, again, that there is an increased theoretical risk of bacteria transmission now, compared to what existed before the IBMP was implemented. While the actual risk of transmission remains extremely remote due to a number of factors related to abortion rates, timing of abortions, absence of cattle during bison reproductive failures caused by *Brucella abortus*, cattle vaccination, bison and cattle behaviors, and the inability of the bacteria or of bison fetuses/carcass to persist for long in the environment, particularly as temperatures increase in the spring, an increase in seroprevalence is entirely antithetical to any effort to reduce the risk of bacteria transmission.

48. Finally, considering the large number of bison lethally removed through management action during certain winters and given the estimated carrying capacity of the park for bison, it is not at all surprising that bison reproductive rates (i.e., the proportion of bison pregnant each year) may be increasing compared to the rates documented historically. Again, any increase in bison reproductive rates increase the number of births which, while desirable in terms of increasing bison numbers in response to lethal management actions, increases the number of calves that may be born infected and could, theoretically, represent a vector for transmission.
49. In reality, the risk of transmission from an infected calf to a susceptible domestic cow is remote due to a number of factors but the changes in this key demographic characteristic due to the IBMP is not consistent with the broader goal of the IBMP to prevent disease transmission. Indeed, the changes to all of these demographic characteristics may be theoretically increasing the risk of bacteria transmission providing the agencies with increased incentive to employ lethal means to reduce this theoretical risk. If these data were reevaluated in a supplement to the IBMP, not only would the implications of these changes, including to the risk of bacteria transmission, be required to be disclosed but new strategies or alternatives for bison management could be considered to ensure that these measures return to levels more consistent with historical data.
50. The impacts of the IBMP and subsequent changes to practices permitted under the IBMP are not limited to bison. Bison hazing activities, utilized by the agencies generally in the fall and spring, can have significant impacts on other wildlife including moose, pronghorn, bighorn sheep, mule deer, bald eagles, trumpeter swans, coyotes, and a variety of small mammals and bird species.

51. While the IBMP anticipated the use of hazing, the hazing methodologies to be used were not disclosed and, consequently, the impacts were not evaluated. It is my understanding that, in the past, bison hazing activities largely occurred on or over public and private lands outside of Yellowstone National Park (particularly on the western side of the park) with hazing effort ending at or near the park's western border. On the north side, hazing occurred both off and on park lands as necessary either to drive bison to the Stephens Creek trap or to move them further into the park and away from the park's northern border.
52. More recently, I understand that the hazing methods on the west side of the park have changed to include both hazing outside of the park and extensive hazing of bison from the park's western boundary into the park's interior. This change was not contemplated in the IBMP and the environmental impacts of hazing, particularly within the park near its western border, have never been analyzed even though these changes represent a new circumstance that should have triggered a new or supplemental analysis.
53. Based on my long-term involvement in this issue, my education, and my expertise in this issue, it is my professional opinion that bison are a keystone species of immense ecological value to those landscapes that they occupy and that the presence of bison is of substantial direct and indirect benefit to a smorgasbord of wildlife species, including protected and sensitive species. Because bison have been prevented from occupying the Gallatin National Forest – except for a limited number allowed to use forest lands for short periods of time only seasonally, the diversity and health of the forest's lands have been impaired and compromised.
54. In addition, considering the changed circumstances and significant new information relevant to bison, bison management, the risk of bacteria transmission between bison and cattle in the Greater Yellowstone Ecosystem, the National Park Service and its partner agencies now have the data to prepare a supplement to the IBMP in order to ensure that bison management is consistent with the best available scientific evidence, is humane, and is based on facts and not politically or economically motivated presumptions.

Executed this 1st day of July, 2010.

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D.J. Schubert