February 10, 2006

Brian Amme
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Nevada State Office
P.O. Box 12000
Reno, Nevada 89520-0006

Dear Mr. Amme:

1 Please accept the following comments on the Bureau of Land Management's (BLM) *Draft Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS* (DEIS) and *Draft Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report* (PER).

2 We are very concerned that, after years of public input and analysis, the BLM has considered neither invasive species management that addresses the root causes of the spread of destructive invasive species, nor integrated systems of passive and active restoration of sites occupied by invasive species. Citizens' organizations (including many of the organizations signed below) previously submitted the Restore Native Ecosystems Alternative ("Restoration Alternative": DEIS App. G) to the BLM during the scoping process in 2002 as an alternative for the proposed vegetation management EIS. The Restoration Alternative prescribed measures to prevent conditions that favor invasive species and hazardous forest fuel loads; and restore invaded sites to native ecosystems with both passive and active treatments. We are disappointed that the Restoration Alternative was not considered as an integrated comprehensive alternative in the DEIS/PER. We incorporate the Restoration Alternative, and all previous communications with the BLM regarding the Restoration Alternative, and associated annotated bibliographies here by reference. These comments also incorporate by reference comments submitted on the DEIS/PER by the California Indian Basketweavers Association, California Native Plant Society, California Oak Foundation, Center for Biological Diversity, National Wildlife Federation and the Natural Resources Defense Council.

3 We are further concerned that the DEIS and PER that BLM has produced are contrary to the National Environmental Policy Act (NEPA). There is a direct link – cause and effect – between some land uses (such as livestock grazing), the spread of invasive species and the need for "vegetation treatments" (e.g., manipulation, burning, herbicide spraying). It is folly not to address these links in the DEIS/PER. Furthermore, splitting out non-chemical vegetation treatments from herbicides (while avoiding the issue of passive restoration altogether) into two separate documents (one of which is an EIS and the other a "report") is "segmentation," which is disallowed under NEPA.

4 The occurrence or non-occurrence of other vegetative treatments (including passive treatments and prevention measures) and activities (e.g., livestock grazing, ORV use) are so inextricably linked to increased or decreased herbicide use that they must be thoroughly aired in a cumulative beneficial and adverse effects analysis. The DEIS fails to do this.

5 We also contend that the PER (if it is to remain a separate document from the DEIS, which it should not) must be analyzed under NEPA. Environmental impact statements and records of decisions in the late 1980s and early 1990s (PER: ES-1; 1-1; 1-7) analyzed the consequences of non-chemical vegetation treatments on 500,000 acres in 14 western states (PER: ES-1, ES-2). The PER describes annual treatments on approximately 6 million acres annually (PER: 1-5) in 17 western states (PER: ES-1). Such an enormous expansion of the BLM vegetation management program, particularly when considered with the more than three-fold increase in proposed herbicide applications (from 300,000 to 932,000 acres annually; PER: ES-1), requires that the agency produce a new environmental impact statement (EIS) to assess all reasonable alternatives and the impacts of preventing and treating unwanted vegetation on 6 million acres of public lands per year. The fact that the BLM believes it was mandated by the President's *National Fire Plan* and *Healthy Forests Restoration Act of 2003* and other policies to "take more aggressive actions to reduce catastrophic wildfire risk on public lands" (PER: 1-1) does not excuse the agency from analyzing the PER pursuant to NEPA.

6 Finally, in addition to the number of states and acres treated, the BLM has proposed a broader vegetation management program with different and greater goals that would employ more active (and no passive) treatment methods on more habitat types and in different combinations than was authorized in previous environmental impact statements and agency records of decision. As the PER (1-1) states, "previous EISs primarily focused on vegetation control of competing and unwanted vegetation for resource enhancement (forestry and rangelands), noxious and invasive weed control related to surface use activities (oil and gas, rights-of-way), and reduction of hazardous fuels to protect resources at risk from wildfire damage." The new BLM vegetation management program as described in the NEPA-less PER is intended to "reduce hazardous fuels, improve rangeland health, and manage and control vegetation <u>affecting other resources</u>." (PER: 1-5, emphasis added) *including wildlife habitat and watersheds. Thus, the BLM seeks to expand* its current program from basic weed and hazardous fuel control to a landscape-scale vegetation management program with significant environmental impacts. This enlarged program requires further analysis under NEPA, particularly as it is linked to major increases in herbicide use.

Table of Contents

The DEIS Violates NEPA **4**

I. The DEIS Fails to Analyze the "Restore Native Ecosystems Alternative" 4

II. The DEIS Fails to Identify the Primary Issue of Controversy 13

III. The DEIS Fails to Address Cumulative Impacts 14

IV. Increases in Vegetation Treatments and New Goals must be Proposed under NEPA 22

BLM Failed to Analyze the *Causes* of Invasive Species Spread in the DEIS/PER **25**

The DEIS Lacks Required Analysis of Herbicide Risks **27**

***Case Example*: Management of Sagebrush Steppe and Sage Grouse under the DEIS/PER** **29**

References **42**

Appendices

Appendix A. Comments on DEIS/PER by Alaska Inter-Tribal Council 53

Appendix B. Comments on DEIS/PER by Mr. Doug Troutman 54

Appendix C. Comments on DEIS/PER by Oregon Natural Desert Association 57

Appendix D. Comments on DEIS/PER by Mr. Peter Richardson 58

Appendix E. Comments on DEIS/PER by Concerned Friends of Ferry County 59

Appendix F. Comments on DEIS/PER by Siskiyou Project 61

Appendix G. Comments on DEIS/PER by Ms. Pat Rasmussen 83

Appendix H. Comments on DEIS/PER by Soda Mountain Wilderness Council 84

Appendix I. Comments on DEIS/PER by Wild Watershed 87

Appendix J. Comments on DEIS/PER by Western Slope Environmental Resource Council . 101

Appendix K. Comments on DEIS/PER by Dr. Ann McCampbell 115

7 **The DEIS Violates NEPA**

1 "The choice, after all, is ours to make. If, having endured much, we have at last asserted our 'right to now,' and if, knowing, we have concluded that we are being asked to take senseless and frightening risks, then we should no longer accept the counsel of those who tell us that we must fill our world with poisonous chemicals; we should look about and see what other course is open to us."

--- Rachel Carson, *Silent Spring*[1]

I. The DEIS Fails to Analyze the "Restore Native Ecosystems Alternative"

8 The following is the stated Purpose of the DEIS (1-3, emphasis added):

> *The purposes of the proposed action are to provide BLM personnel with the herbicides available for vegetation treatment on public lands and to describe the conditions and limitations that apply to their use.*

9 The following is the stated "Need" to be addressed by the DEIS (1-3, emphasis added):

> *The need for the proposed action is to reduce the risk of catastrophic wildfires by reducing hazardous fuels, restoring fire-damaged lands, and improving ecosystem health by 1) controlling weeds and invasive species, and 2) manipulating vegetation to benefit fish and wildlife habitation, improve riparian and wetlands areas, and improve water quality in priority watersheds.*

10 This DEIS fails to abide by Section 1502.14 of NEPA ("Alternatives including the proposed action"), because it has not considered a reasonable alternative provided to the BLM in 2002. The Restore Native Ecosystem Alternative ("Restoration Alternative"; Appendix G) is a reasonable alternative. The Alternative meets the Purpose and Need by describing

1. Herbicides that should be available for vegetation treatment on public lands; and
2. conditions and limitations that apply to herbicide use

The Restoration Alternative is a comprehensive, reasonable alternative that was originally submitted April 29, 2002 and submitted as a revised alternative on August 26, 2002 in response to comments by Brian Amme (BLM) regarding content and format. This DEIS fails to analyze the Restoration Alternative as a comprehensive alternative.

11 The BLM claims (2-13) that Alternative E (i.e., "No Use of Sulfonylurea and other Acetolactate Synthase-inhibiting Active Ingredients") is "based on" an alternative submitted by American Lands Alliance, "an alliance of several environmental and conservation groups." In fact, the Restoration Alternative was submitted by the Restore Native Ecosystems Coalition of which American Lands Alliance was only one entity that prepared the Alternative. The original

[1] Carson, Rachel. 1962. *Silent Spring*. Boston, MA: Houghton-Mifflin.

alternative was collaboratively developed by numerous organizations and submitted by 43 organizations; the revised version was submitted by 13 organizations.[2])

12 In contrast to Alternative E (i.e., "No Use of Sulfonylurea and other Acetolactate Synthase-inhibiting Active Ingredients"), the central element of the Restoration Alternative is the linkage of prevention, treatment (both passive and active), and restoration to judicious use of herbicides. By contrast, Alternative B, the Preferred Alternative in the DEIS, merely describes the disembodied use or lack of use of herbicides.

13 As illustrated by the title BLM has given its Alternative E substitute for the Restoration Alternative (i.e., "No Use of Sulfonylurea and other Acetolactate Synthase-inhibiting Active Ingredients"), the BLM describes Alternative E only in terms of what it does not do (e.g., doesn't use ALS-inhibiting/sulfonyl urea herbicides, doesn't rely exclusively on active vegetation treatments[3] to (1) control invasive species establishment and/or spread and/or (2) to restore native ecosystems so they will subsequently resist invasive species). The BLM fails to analyze the active, positive control of invasive species that has been and can be accomplished with (1) prevention of the conditions that favor the introduction, establishment, and/or spread of invasive

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[2] Northwest Coalition for Alternatives to Pesticides
Science And Environmental Health Network
Wildlands Center for Preventing Roads
Committee for Idaho's High Desert
American Lands Alliance
Biodiversity Conservation Alliance
Oregon Natural Resources Council
Pacific Rivers Council
Wyoming Outdoor Council
Colorado Environmental Coalition
Western Watersheds
Wilderness Watch
California Indian Basketweavers Association

[3] **Active Restoration Treatments** (DEIS: G-2)
Actions other than suspension of activities to restore ecological integrity or native species populations. Includes, but is not limited to
1. Road and off-road vehicle route removal
2. Culvert removal
3. Prescribed burning
4. Use of biological control introductions, cultural methods, mechanical methods, chemical methods, and prescribed fire to directly act on invasive exotic species
5. Fish and wildlife habitat rehabilitation
6. Reintroduction of extirpated species
7. Planting and care of native seeds and plants
8. Reintroduction of soil biota required by native species, when necessary
9. Other necessary activities based on priorities established in the ecological restoration assessment.

species, and (2) passive treatments[4] in conjunction with, or sometimes obviating the need for, use of (3) herbicides.

14 Additionally, the DEIS "cumulative analysis" fails to analyze the cumulative results of linking herbicide use with prevention, other passive and active treatments and/or native seedings on BLM and other sites. When prevention is linked with herbicide treatments, for instance, the beneficial cumulative results could be both less weed invasion and less subsequent herbicide use. Although at times the BLM has administratively ordered passive restoration (e.g., route closures, temporary or permanent cattle exclusion) in conjunction with herbicide use, the combination of these is not analyzed in the cumulative effects analysis.

15 In contrast, the Restoration Alternative prioritizes vegetation treatments based on scientific evidence of efficacy as follows:

1. cessation of activities that impede natural recovery (i.e., passive restoration)
2. active treatments that incorporate passive restoration
3. active treatments (at G-5).

16 Thus, the Restoration Alternative, by giving highest priority to passive treatments and second highest priority to passive treatments linked to active treatments (which sometimes and sometimes do not employ herbicides) (1) provides "conditions and limitations" that apply to the use of herbicides for "controlling weeds and invasive species", and (2) "manipulate[es] vegetation to benefit fish and wildlife habitation, improve riparian and wetlands areas, and improve water quality in priority watersheds." The Restoration Alternative thus fully meets the Purpose and Need of the EIS and should have been fully analyzed. It was not analyzed in the DEIS.

17 The scientific literature consistently warns (and observations on ground throughout the West confirm) that herbicide treatments in the absence of eliminating or reducing the causes of conditions favoring invasive species almost always are doomed to failure. Likewise, integrated (1) prevention; (2) passive and active non-chemical and/or chemical treatments; and (3) restorative actions following treatments are explicitly linked cumulatively to reductions in

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[4] **Passive Restoration Treatments** (DEIS: G-2)
Suspension of activities that cause the loss of ecological integrity or native species populations in a specific area Passive restoration treatments may include:
1. Area , road, and off-road vehicle route closures
2. Voluntary livestock permit retirement
3. Retirement of vacant livestock allotments
4. Livestock grazing exclosures (e.g., in aggressive weed infestations, uplands "at risk" of weed infestation, riparian areas, habitat of threatened or endangered species, springs, wetlands)
5. Restrictions of logging activities
6. Restrictions of oil and gas and mineral development, including allowing expired leases to remain expired
7. Restrictions on other human activities, as relevant
8. Prescribed natural fire (i.e., allowing fires to burn under predefined circumstances)

herbicide use. This integration is the essence of "integrated pest management" (invasive species being "pests") and "integrated weed management", widely used throughout agricultural, roadside, parks, aquatic, and wildlands management in the U.S. and worldwide.

18 For instance as BLM employee R. Anthony Chavez notes in his paper, "Integrated Weed Management: Concept and Practice" (1996):

> The concept of [Integrated Weed Management] IWM... refers to the "classic" understanding of IWM: the integrated use of cultural, physical, biological and chemical control strategies to contain or eradicate a population of noxious weeds. There are "other" aspects of IWM which may have been overlooked in the previous discussion, especially those related to weed infestation on open rangelands. Planning is the process by which problems and solutions are identified and prioritized, and an economic plan of action is developed to provide direction for implementing the control program. Implementing an IWM plan includes: 1) preventing weed encroachment into uninfested rangeland; 2) detecting and eradicating new weed introduction; 3) containing large-scale weed infestations; 4) controlling large-scale infestations using an integrated approach; 5) revegetation of control sites when and where appropriate; 6) Adoption of the proper range management practices (cultural control) in conjunction with the development of a weed management program; and 7) Monitoring and evaluation of the IWM plan itself. Monitoring and evaluation are the keys to determining if weed and/or grazing management plans are meeting plan objectives and are the prime determining factors used in altering IWM plans. [Emphases added.]

19 An explicit commitment to integrated weed management (e.g., as in the Restoration Alternative) constitutes a "condition and limitation" applying to herbicide use. Alternative B (the BLM's preferred alternative) makes no such commitment and is thus a different alternative than the Restoration Alternative. The two must be analyzed side-by-side in light of on-ground BLM evidence as well as evidence in the scientific literature. The cumulative impacts of the Restoration Alternative versus Alternative B must likewise be analyzed across the 17 states.

20 In order to analyze these two different alternatives, the BLM needs to examine what has happened to invasive species and lands threatened with invasive species throughout the 17 western states and elsewhere in the world when the following two approaches have been used:

(a) linking prevention-focused management, invasive species treatment and restoration of ecosystems; versus

(b) employing herbicide treatments without altering conditions that have favored invasive species.

21 Importantly, the DEIS fails to analyze the results, on its own lands, of where a combination of chemical and non-chemical methods, including passive restoration have been used (see Appendix H for such an example on Jenny Creek in the Cascade-Siskiyou National Monument), compared to results of where herbicide use alone has been used. If the DEIS had analyzed the Restoration Alternative, it would have been forced to use its own experiences in comparing herbicide use alone versus herbicide use combined with passive restoration, seeding with native species, and/or other treatments.

22 When preventive actions and restorative treatments (potentially including passive treatments) are linked to the judicious use of herbicides., the herbicide use will have far more lasting, positive results (i.e., efficacy) than spraying invasive species while leaving intact the activities that fostered the introduction, establishment and spread of invasive species. This is, in popular parlance, a "no-brainer." Yet this DEIS insists on disconnecting herbicide use from any other management on BLM lands and then purports to estimate the benefits of herbicide spraying apart from other preceding or subsequent non-chemical treatments.. The benefits/costs of herbicide use alone versus herbicide use limited and conditioned by priorities for prevention and non-chemical passive and/or active restoration must be analyzed in the EIS.

23 Proposing an increase of herbicide use from 300,000 to 930,000 acres is akin to planning to increase punishment of one's child for misbehavior without altering any circumstances that are contributing to the "misbehavior." (e.,g., lack of parental presence or support). Similarly, it is akin to requesting public money for numerous new flood control dams while refusing to question how much acreage upstream has been channelized, disturbed, paved, denuded, or otherwise rendered unstable.

24 In its summary of its Alternative E (i.e., Table 2-8, at 2-26 through 2-39), the BLM focuses on Alternative E's (a) lack of use of ALS-inhibiting/sulfonyl urea herbicides, even though such herbicides account for less than 17% of BLM's projected herbicide use in their preferred Alternative B (Table 2-4 at 2-11), and (b) reduced use of active treatments (i.e., emphasis on passive restoration). The BLM has failed to analyze the Restoration Alternative's active reliance on integrating herbicide use with positive management for prevention and non-chemical active treatmemts and/or passive restoration actions.

25 Thus the BLM is entirely failing to consider a valid approach to the stated purpose of controlling invasive species and enhancing wetlands, native species habitat, and water quality in multiple-use lands.

26 **Example 1: Prevention Treatments for Invasive Species-Resistant Vegetation**: The DEIS fails to analyze the consequences for herbicide use of preventing conditions favoring introduction, establishment, and spread of invasive species..

27 [*Note: "Prevention" does not mean merely preventing the introduction of invasive species into an area. It means preventing the conditions that favor not only the introduction of invasive species into an area, but also the establishment of invasive species; and also the spread of already-established invasive species. Such invasive species-encouraging conditions include soil disturbed by machines, hooves, or boots; denudation, e.g., by livestock, elk, or other species that "harvest" the vegetation; ready sources of invasive species propagules, such as ORV tires and pans*].

28 Following are examples of how the DEIS fails to analyze the Restoration Alternative's conditions and limitations on herbicide use which, by preventing the conditions that favor invasive species, reduce the amount of herbicides that will be "needed":

a. Linkage of Passive and Active Treatments

29 The Restoration Alternative conditions herbicide or other treatments on a prior consideration of whether passive treatments can replace, avoid, or augment herbicide use to attain vegetation goals (DEIS: G-4):

> Action-PLAN 6
> Prior to implementing site-specific vegetation treatments, prepare goals based on:
> 1. vegetation conditions, including invasive species concentrations
> 2. vulnerable wildlife and plant species and habitats
> 3. habitat important for threatened, endangered, and sensitive species and carnivores: connectivity for habitat-specialist wildlife
> 4. past and present activities within the watershed leading to vegetation problems
> 5. passive and active restoration needs
> 6. feasible restoration goals

Thus, the Restoration Alternative looks at the whole invasive species problem, not merely what herbicide to spray where. Neither the BLM's Alternative E (a fatally truncated version of the Restoration Alternative) nor Alternative B (their Preferred Alternative) include the above planning steps.

30 The approach adopted in Alternative B of merely considering which herbicide to apply on how many acres fails to include the consideration of passive treatments (where they would be likely to help) when planning herbicide treatments. As noted in Attachment H (Comments on this DEIS and PER by Soda Mountain Wilderness Council), the BLM is successfully using passive restoration to reduce non-native vegetation on the former Box-O ranch property that is now within the Cascade-Siskiyou National Monument. The following is an excerpt from the Soda Mountain Wilderness Council comment regarding (1) the role of passive treatment; and (2) the role of linking active and passive treatments:

> 31 In fact, the Monument Manager stated that "[r]eintroducing livestock could impede the recovery of plant communities which have been dominated by non-native annual species, slowing the recovery of native perennial species . . . . Reduction in abundance of these species through grazing would further allow for the advancement of weed species already known to be present."
>
> The passive treatment utilized on the former Box-O crucially included, but was not limited solely to, the elimination of livestock grazing. The BLM utilized other active restoration efforts such as burning and reseeding, removal of man-made berms along Jenny Creek, and tree planting in riparian areas which, in conjunction with the elimination of grazing, contributed to the restoration benefits that have been achieved so far....

b. Prevention of Invasive Species – Two Examples: Livestock and ORVs

32 The Restoration Alternative conditions herbicide use on avoidance of unnecessary invasive species spread by livestock (DEIS: G-8):

> Action- PREVENTION 3
>
> Reduce spread of invasive weeds caused by domestic livestock grazing:
>
> 1. retire domestic livestock grazing permits at earliest opportunity where grazing has been found to promote invasion or persistence of invasive species
> 2. prioritize invasives prevention and restoration activities for areas where domestic livestock grazing has been permanently ended
> 3. manage livestock movement patterns to insure animals are not moving seeds of invasive species from infested to uninfested areas
> 4. suspend livestock grazing on non-cohesive soils in perennially saturated meadows
> 5. manage livestock grazing to favor native species
> 6. avoid grazing in systems still containing a strong component of native perennials, biological soil crusts, or other features known to act as natural barriers to invasion or increase of invasive exotic species.

Perhaps the BLM politically does not want to rein in livestock grazing in this manner, but it is under a NEPA obligation to consider how reductions in the need for herbicide use might directly, indirectly, or cumulatively result from such constraints on livestock grazing.

33 As another example, the DEIS does not estimate how control of invasive species (a Purpose of the EIS) might be increased by following the Restoration Alternative's conditioning of herbicide use on prevention of off-road vehicle use that results in invasive species (DEIS: G-9), e.g.:

> Action- PREVENTION 5
>
> Precede all road or off-road vehicle route reconstruction, and any consideration of adding existing or illegal user-created roads and off-road vehicle routes to the transportation system, by NEPA analyses of their impacts, including potential to facilitate the spread of invasive species into native ecosystems.
>
> Action- PREVENTION 6
>
> Close or restrict non-essential, designated routes for motorized vehicle travel in areas of high risk for spread of invasive species.

The DEIS admits (2-13) that Alternative E (the BLM's version of the Restoration Alternative) would "place greater emphasis on passive restoration…where…activities [e.g., livestock grazing and ORV driving] have promoted a less desirable vegetation community [e.g., invasive species] or increased erosion [i.e., a condition associated with invasive species]," but avoids analyzing the meaning of this for herbicide use, stating:

33 cont.

Since these activities [e.g., livestock grazing and ORV driving] are allowed under FLPMA, however, restrictions on their use would only be considered to the extent they are consistent with BLM vegetation and land use management practices (e.g., excluding grazing animals from recently seeded areas) [emphasis added].

34

But annual herbicide use prescribed for 900,000 acres by the DEIS is itself a "vegetation and land use management practice." So, given the EIS Purpose (i.e., to describe the conditions and limitations that apply to herbicide use), this EIS is the appropriate place in which to analyze the Restoration Alternative's approach to conditioning and limiting the use of herbicides, including linking prevention to herbicide use, for its direct, indirect, and cumulative beneficial impacts.

35

Consider the following failure to include prevention in livestock management:

Continue to graze livestock where grazing has been found to promote invasion or persistence of invasive species
→ more invasive species (i.e., a greater number of invasive species and/or increased introduction, establishment and/or spread of invasive species)
→ more herbicide treatments
→ more forage for cattle
→ *continued or increased cattle grazing*
→ more invasive species
→ more herbicide treatments , and so on.

36

The DEIS does estimate that more herbicide use will mean more livestock grazing potential (4-123): "In cases where herbicide treatments are able to reduce the cover of noxious and unpalatable weeds on grazed lands, this would create short- and long-term benefits to livestock by increasing the quality of forage" [emphasis added].

However, the DEIS then claims that analyzing whether more livestock grazing will mean more herbicide use is beyond the scope of the DEIS (2-12: "... restrictions on [livestock grazing] would only be considered to the extent they are consistent with BLM vegetation and land use management practices").

Thus, the DEIS discusses the linkage of herbicide use to increased livestock forage, but refuses to consider the link of livestock grazing to increased herbicide use.

37

The BLM must analyze the consequences for herbicide use of herbicide treatments being linked to prevention. The DEIS has not done this, and then the BLM expects the public to fund and acquiesce each year to toxic applications on 930,000 acres of the land the BLM is charged with managing each year, even though much of the toxic applications will be doomed to failure because of the BLM's failure to explicitly link their applications of toxic chemicals to prevention of the need for at least some of those toxic applications..

38

Example 2: Revegetation. The DEIS fails to analyze the consequences for reduced future herbicide use of proactive management to consolidate successes of passive and active prevention and direct treatments of invasive species

39 The Restoration Alternative proposes that revegetation may be needed, and that the revegetation use native seeds/plants (DEIS: G-16):

> Action-REVEGETATION 1
> In revegetation efforts, whenever it is possible to do so, use native seed and seedlings that have been grown from seeds of locally adapted populations.
>
> Action- REVEGETATION 2
> If native seeds/plants are not available, revegetation projects will rarely be undertaken until native plant seed or plants become available. Non-native plant species will be used only in extremely degraded/severely altered systems as an intermediate step toward/placeholder for native restoration, accompanied by a full commitment to complete restoration of native species. This commitment must include funds set aside as part of the project, with specific deadlines for accomplishment.
>
> Action- REVEGETATION 3
> When reseeding with non-native species, certification must be provided that only species that have been documented as non-persistent are present in the seeding mixture.
>
> Action- REVEGETATION 4
> Assure availability of native seed and plants:
> 1. establish BLM contracting systems that will provide growers the necessary assurance their native, locally-adapted seed/plants will be purchased if grown
> 2. establish sufficient storage facilities for native seeds for major revegetation efforts.

The DEIS does not include these revegetation considerations in its Alternative E (2-13), which is supposedly "based" on the Restoration Alternative. Alternative B (BLM's Preferred Alternative; 2-11) does not mention use of native vegetation for reseeding/revegetation linked to herbicide use.

40 The DEIS needs to examine the results of where revegetation with and without native seeds has been linked to herbicide use on BLM lands or in the scientific literature in order to compare Alternative B with the Restoration Alternative for its cumulative consequences for subsequent herbicide use.

41 In the DEIS section titled "Standard Operating Procedures" for mitigating herbicide treatments, the BLM describes ten Standard Operating Procedures that "can be implemented at local level according to specific conditions" [emphasis added]. One of the "Standard Operating Procedures" is:

- *Use native or sterile species for revegetation and restoration projects*

The DEIS states, "These [standard operating] procedures [i.e., including using native or sterile species for revegetation] would help minimize impacts to plants and ecosystems on public lands…associated with herbicide use" (4-42; emphasis added).

42 However, at 4-61, under "Impacts by Alternative", the DEIS proposes no plan to revegetate with native vegetation:

> Herbicides would be used on rangelands dominated by annual grasses, such as downy brome and medusahead, followed by revegetation with perennial grasses and forbs.

The DEIS doesn't state whether the perennial grasses and forbs will be exotic or native.

43 Elsewhere, the DEIS (4-45) does note that merely poisoning invasive species may not result in native vegetation returning:

> Some treatments are very successful at removing weeds over the short term, but are not successful at promoting the establishment of native species in their place. In such cases, seeding of native plant species would be beneficial. Weeds may resprout or reseed quickly, outcompeting native species, and in some cases increasing in vigor as a result of treatments. The success of treatments would depend on numerous factors, and could require the use of a combination of methods to combat undesirable species.

Although the above passage refers to the need to "use a combination of methods to combat undesirable species", the DEIS in fact gives only the example of seeding species as an example of combining methods. For example, the DEIS never mentions combining herbicide use with removal of livestock grazing or ORV use.

44 The above passage (and DEIS) fails to note a major reason herbicide activity may not result in native vegetation: Often there are virtually no native seed sources remaining in a large, highly-invaded site (e.g., where cheatgrass or star thistle form a near-monoculture over hundreds or thousands of acres) DEIS fails to analyze on what proportion of the estimated 900,000 acres of annually sprayed acres revegetation might be needed <u>based on its own experience of the failure of herbicide use to promote the establishment of native species.</u>

45 Regardless, the DEIS never analyzes the consequences of using "a combination of methods to combat undesirable species," let alone the consequences of herbicide use with and without native seedings in a range of settings.

46 The DEIS fails to analyze the Restoration Alternative's explicit commitment to seeding with native species and its commitment to developing an institutional availability/storage of native seeds for revegetation. The Restoration Alternative's use of native species for revegetation as a condition/limitation on use of herbicides must be examined.

II. The DEIS Fails to Identify the Primary Issue of Controversy

47 The BLM falsely identifies the "primary issue of controversy" to be BLM's "continuing and proposed increase in the use of herbicides in vegetation treatment problems needed to implement the *National Fire* Plan and related initiatives" (1-2). In fact, the primary issue of controversy that

47 cont.

the Restore Native Ecosystems Coalition raised in person with Brian Amme of BLM as early as 2002, and which we have raised throughout our development and transmittal to the BLM of the Restoration Alternative is that the BLM:

a. refuses to acknowledge BLM management that is causing vegetation problems via their other, "stand-alone" land management practices (e.g., ORV use managed by recreation managers; livestock use managed by livestock managers; tree-cutting managed by "fuels reduction" managers);
b. refuses to consider and utilize passive restoration as a non-toxic approach proven to be effective in many sites experiencing invasive species problems; and
c. refuses to link (1) prevention of invasive species, (2) "control" of invasive species, and (3) maintenance and restoration of native vegetation habitat as a valid, integrated approach to controlling invasive species that is different than the BLM's current practice and preferred alternative.

III. The DEIS Fails to Address Cumulative Impacts

48

The DEIS notes (4-1) that cumulative impacts are:

> Those effects that result from the incremental impact of the action when it is added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. For this PEIS, potential cumulative effects include those that could occur on other federal and non-federal lands. [Emphasis added]

49

First and foremost, the DEIS fails to analyze the beneficial and adverse cumulative impacts of when herbicide use has and has not been

a. linked to management that prevents the conditions that favor invasives species
b. linked with non-chemical treatments; or
c. linked with native species revegetation.

50

Such examples are rife throughout the Integrated Weed Management literature (both experimental and practical); and exist on BLM lands where management has or has not removed livestock (see, e.g., the Jenny Creek example cited in Attachment H to these comments, i.e., the comments of Soda Mountain Wilderness Council), or closed ORV roads as well as spraying with herbicides; where BLM has or has not followed herbicide use with native revegtetation; or where BLM has or has not followed one or the other of the Restoration Alternative's proposed prevention practices.

51

The cumulative impacts section (4-194 through 2-246) is riddled with unreferenced conclusions, false assumptions, and failure to consider impacts of present and reasonably foreseeable future actions, as well as the different cumulative impacts that would result from implementing the Restoration Alternative..

52 • Since the DEIS fails to analyze the Restoration Alternative, it fails to analyze the cumulative effects of the class of actions of combining prevention treatments, active and passive direct treatments, and revegetation with native species.

53 At 4-194, the DEIS states that the class of actions that will be analyzed are "all vegetation treatment methods used by the BLM." This is inappropriate, as the BLM should be analyzing all treatment methods they could reasonably be using (e.g., as in the Restoration Alternative), not just those that they are currently using.

54 For instance, the DEIS notes (4-199) that grazing and ORV use cause cumulative impacts to soils and notes the lack of inventory and monitoring data available to determine the status of soil condition. However, the DEIS fails to analyze the comparative cumulative effects on soil of the Restoration Alternative's linkage of prevention treatments, active and passive direct restoration treatments, and native revegetation.

55 • The cumulative impacts analysis falsely represents the relationship of the Preferred Alternative to passive restoration.

56 At 4-203, the DEIS states with regard to cumulative effects on hydrologic function and water quality:

> Alternative E places greater emphasis on passive restoration than the other alternatives. Passive restoration is often an important first step in improving watershed health because the anthropogenic activities that are causing degradation or preventing recovery are reduced or eliminated. Livestock grazing and OHV use are often cited as factors that cause loss of wetland and riparian habitat function and watershed degradation; by prohibiting livestock from entering wetland and riparian areas, and placing limits on OHV activity, improvement in watershed function can be expected (Kauffman et al. 1997). However, the BLM would have to balance watershed protection with the multiple use requirements under FLPMA. As discussed in Chapter 2, Vegetation Treatment Programs, Policies, and Methods, passive restoration[5] would be considered first when developing

[5] The unanalyzed Restoration Alternative, defines "passive restoration treatments" as (DEIS: G-2):

> Suspension of activities that cause the loss of ecological integrity or native species populations in a specific area. Passive restoration treatments may include:
> 1. Area , road, and off-road vehicle route closures
> 2. Voluntary livestock permit retirement
> 3. Retirement of vacant livestock allotments
> 4. Livestock grazing exclosures (e.g., in aggressive weed infestations, uplands "at risk"of weed infestation, riparian areas, habitat of threatened or endangered species, springs, wetlands)
> 5. Restrictions of logging activities
> 6. Restrictions of oil and gas and mineral development, including allowing expired leases to remain expired
> 7. Restrictions on other human activities, as relevant

restoration management plans, and would be used to the extent possible within the constraints of FLPMA.

57 The DEIS repeats a similar statement with regard to cumulative effects on resource function and scenic quality (4-228; emphases added):

> 58 Alternative E places greater emphasis on passive restoration than the other alternatives. Passive restoration is often a critical first step in successful restoration of degraded areas since anthropogenic activities that are causing degradation or preventing recovery are halted. OHVs are often cited as a factor contributing to loss of resource function and degradation of scenic quality. By controlling OHV use, improvement in recreational values can be expected (Kauffman et al. 1997). However, the BLM would have to balance resource protection with the multiple use requirements under FLPMA. As discussed in Chapter 2 of the PER, Vegetation Treatment Programs, Policies, and Methods, passive restoration would be considered when developing restoration management plans, and would be used to the extent possible within the constraints of FLPMA.

59 The above is false. Chapter 2 of the Programmatic Environmental Report does not indicate that passive restoration treatments would be considered "first" when developing restoration management plans, nor does it indicate that it would be used "to the extent possible within the constraints of FLPMA." It doesn't even use the words passive restoration.

60 Chapter 1 of the PER indicates (1-6) that passive restoration treatments are not a focus of the proposed vegetation treatments:

> Although this PER refers to activities consistent with the authorities under FLPMA and other statutes that may contribute, in some cases, to land and resource degradation (e.g., livestock grazing, OHV use, recreation), its focus is on proactive vegetation treatments to maintain and restore ecological conditions. The focus of the PER is not to restrict, limit, or eliminate FLPMA-authorized activities as a means to restore land health.

61 That FLPMA allows livestock grazing or ORV use is not debated. However FLPMA does not prevent restrictions on livestock grazing, ORV use or other activities where such restrictions would contribute to ecosystem health or restoration.

62 The unanalyzed Restoration Alternative, defines "passive restoration treatments" as (G-2):

> Suspension of activities that cause the loss of ecological integrity or native species populations in a specific area. Passive restoration treatments may include:

---

8. Prescribed natural fire (i.e., allowing fires to burn under predefined circumstances)

62 cont.

1. Area , road, and off-road vehicle route closures
2. Voluntary livestock permit retirement
3. Retirement of vacant livestock allotments
4. Livestock grazing exclosures (e.g., in aggressive weed infestations, uplands "at risk" of weed infestation, riparian areas, habitat of threatened or endangered species, springs, wetlands)
5. Restrictions of logging activities
6. Restrictions of oil and gas and mineral development, including allowing expired leases to remain expired
7. Restrictions on other human activities, as relevant
8. Prescribed natural fire (i.e., allowing fires to burn under predefined circumstances)

63

- The BLM wrongly considers the use of "SOPs identified in PEIS" (4-197) as an assumption for cumulative impacts assessment, as the DEIS indicates that the ten Standard Operating Procedures it identifies as mitigation for herbicide use "can be implemented at local level according to specific conditions" [emphasis added]. One of the "Standard Operating Procedures," "use native or sterile species for revegetation and restoration projects" cannot be assumed to be operating for the purposes of cumulative impacts, as it is not part of any alternatives being considered by the BLM (2-10 through 2-13). It is a part of the unanalyzed Restoration Alternative.

64

The DEIS later states (4-207):

> Alternative E places greater emphasis on passive restoration than the other alternatives. Passive restoration is often considered a critical first step in successful restoration of degraded areas since anthropogenic activities that are causing degradation or preventing recovery are halted. Under Alternative E, recovery of vegetation through passive management is expected to take longer than under alternatives A, B or D, where active management through treatments such as seeding with native species, establishing intermediate vegetation to control erosion, and use of pre-emergent herbicides to prevent weed establishment would be expected to promote faster recovery. [Emphasis added.]

This shows that Alternative E is not based on the Restoration Alternative, which does explicitly engage active management through treatments such as seeding with native species, establishing intermediate vegetation to control erosion, and using pre-emergent herbicides to prevent weed establishment The above statement also misrepresents Alternative B (2-11), which does not provide for seeding with native species or use of intermediate vegetation.

65

- The cumulative impacts section formulaically equates long-term success with number of acres treated. This is unwarranted and unsupportable, given the combination of approaches allowed in Alternative E, and the failure to analyze the Restoration Alternative which requires linkage of prevention treatments, active and passive direct

65 cont.

treatments, and native revegetation (if revegetation is needed) For instance, the DEIS claims (emphases added):

- "Based on the number of acres treated....long-term improvements to wetland and riparian area function and productivity would be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-204)
- "Based on the number of acres treated long-term improvements to hydrologic function and water quality would be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-203)
- "Based on the number of acres treated ...long-term improvements to vegetation would be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-207)
- "Based on the number of acres treated, long-term improvements to the health and productivity of aquatic organisms would be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-209)
- "Based on the number of acres treated...long-term improvements to wildlife and habitat would be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-214).
- "Based on the number of acres treated...long-term improvements to domestic livestock would be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-216).
- "Based on the number of acres treated...long-term improvements to the wild horses and burros would be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-218).
- "Based on the number of acres treated...long-term improvements to the visual qualities of public lands would be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-224).
- "Based on the number of acres treated...long-term improvements to the wilderness and special areas should be greatest under the Preferred Alternative, and least under the No Action Alternative" (4-226).

66

The DEIS discussion of wilderness and special areas notes that livestock grazing is a threat to wilderness and special areas and that the vegetation treatments do not address this threat (4-224), but in fact the unanalyzed Restoration Alternative does address this threat (G-13):

67

Action- RESTORATION 5
Except for treatment of small infestations without motorized equipment, prescribe direct treatments within designated wilderness or wilderness study areas only in conjunction with efforts to halt avoidable spread of invasive species into the wilderness from outside these areas.

Guideline- RESTORATION 1
Adopt the Carhart Model (Arthur Carhart National Wilderness Training Center) for completing minimum requirement analyses and minimum-impact tool analysis. The model assists managers in making administrative decisions concerning wilderness.

68

- "Based on the number of acres treated…long-term improvements to recreation resources on public lands would be greatest under the Preferred Alternative, and least under the No Action Alternative (4-228).
- "Based on the number of acres treated…long-term improvements to socioeconomic resources would be greatest under the Preferred Alternative, and least under the No Action Alternative (4-231)
- "…as the long-term objective of treatments is to restore native plant communities and habitats, including those of traditional importance to Native peoples, the greatest benefits [to cultural resources and traditional lifeway values) should accrue under the Preferred Alternative." (4-221)

69

- The cumulative impacts section assumes (4-200) that monitoring and evaluation will occur. However, the DEIS promises no monitoring (2-21), and notes (2-21)

  The BLM recognizes that many sites treated in the past lack monitoring data. In many cases, project monitoring was not done, was done sporadically without consistent documentation, or was done but the records were lost or destroyed.

70

The DEIS provides zero assurance that any particular monitoring will occur in the future and only says that the results of any monitoring that happens to be done "should" (not "shall") be made available to "interested parties" (2-11).

71

In contrast, the unanalyzed Restoration Alternative mandates monitoring and involves the public in all aspects of monitoring:

Action-OVR 5
Include realistic and dedicated funding for, and an institutional commitment to, assessment, monitoring and appropriate response to monitoring results. Design and implement assessment (including the gathering of baseline data) and monitoring systems before activities commence.

Action-OVR 6
Encourage and facilitate public participation by local, regional and national stakeholders in such activities as assessment, monitoring, early detection of invading species, provision of new and scientific information, review of assessment and monitoring protocols, and analysis of alternatives for actions.

Action- PRIORITIES 3
Vegetation prevention and restoration treatments must utilize:

1. a precautionary approach, which, in the face of uncertain outcomes, proceeds experimentally and cautiously
2. best available science and experiential and indigenous knowledge where applicable
3. an adaptive process that regularly incorporates revisions from monitoring and evaluation

71 cont.

4. a public process
5. the least intrusive techniques available to restore ecological integrity
6. the least risky interventions that are likely to provide the greatest ecological benefit
7. recovery plans for threatened and endangered species, or improvements on such plans
8. prevention strategies to reduce the need for chemical and mechanical treatments, and prescribed fire, so that the number of acres treated annually with these methods will decline over the life of the EIS.

72

Action-MONITOR 2

Monitoring must be used to:

1. inventory baseline conditions at the landscape, watershed, subwatershed, and project site levels
2. measure whether positive goals for native ecosystem recovery, conservation, and integrity are being attained
3. track biodiversity and health using an increaser/decreaser species procedure (including biological soil crusts, wildlife, and endemic/sensitive species).
4. practice precaution, retain flexibility, and respond to change, unforeseen harm, failure to reach objectives, and/or new information
5. quantify invasive species population changes
6. establish success/problems with specific prevention and restoration treatments in a variety of sites.

73

Action-MONITOR 3

Monitoring and evaluation of vegetation treatments shall:

1. relate to the clearly stated objectives of all restoration projects
2. be an integral component of each restoration project
3. be incorporated into the essential costs of each project
4. use scientific principles of experimental design including replication and measurements from untreated control areas for comparison with treated locations
5. use a process responsive to all-party and scientific input
6. encourage involvement of local, regional and national stakeholders
7. be documented in a sixteen-state central database with assessments, objectives, monitoring procedures, and analyses in comparable formats
8. outline clear procedures for responding to monitoring and evaluation results

74

Action-MONITOR 4

Monitoring methods shall be:

1. Relevant: evaluates progress toward stated objectives
2. Sensitive: quickly detects change, shows trends, identifies critical features
3. Available: inexpensive, easily applied
4. Measurable: accurately quantifiable with acceptable methods
5. Defensible: minimally subject to individual bias
6. Verifiable: allows others applying the same methods to achieve similar results

7. Inclusive: avoids reductionism, where feasible
8. Scheduled: monitoring interval firmly scheduled.

75 Action-MONITOR 7
Each District must prepare an annual monitoring report of all vegetation restoration projects (passive and active). These reports should be available at a central BLM location

76 Action-MONITOR 9
All proposals to undertake a vegetation restoration activity must include a description of the monitoring that will be necessary to determine the compatibility of the activity with specific goals, objectives, and standards; and the treatment efficacy.

77 Action-MONITOR 11
Annually monitor for five years all firelines, fire camps, helicopter spots, and fire retardant-treated areas for invasive species; eliminate introduced invasive species.

Action- MONITOR 12
Monitor progress toward attainment of long term health and integrity of the watershed, aquatic, riparian, native vegetation and soil resources.

78
- Many statements in the cumulative impacts section have no reference to underlying data. A few examples include:
  - "Approximately 4% of rangeland on public lands is achieving desired condition." (4-200)
  - "In a study of the Interior Columbia Basin, approximately 92% of federally-administered lands had none to low soil disturbance" (4-200)
  - "… 25% of wetlands on public lands in the lower 48 states are not functioning properly (USDI BLM 2005d), while 52% of riparian areas are considered non-functional, or functioning at risk. The poorest functioning riparian areas are found in the southwest and Montana, while most riparian areas in Alaska, Colorado, and Utah function properly." (4-202)

    In the above quote, presumably the claim that most riparian areas function properly in Utah is drawn from "USDI BLM 2005d" which refers to "Public Land Statistics Fiscal Year 2004," which is hardly a scientific reference for the claim that most Utah riparian areas function properly.

79
- The DEIS refers (4-196) to a "PER scoping process" as related to cumulative effects for protection of Threatened and Endangered species. As the Programmatic Environmental Report (PER) is not being developed under NEPA, there is no "scoping process"

80 Likewise, the DEIS claims (4-198):

> Thus, the proposed action, which includes over 4.3 million acres of fire use and mechanical treatments, in addition to 1.7 million acres of treatments using other methods, would be expected to provide greater improvement in ecosystem function and air quality than is projected under current treatment methods.

This is an unreferenced and unsupportable conclusion, given that the treatments on the 4.3 million acres are being proposed in a report which is not being developed under NEPA, and thus the public has no legal access to challenge the scientific accuracy of its conclusions.

81

- The DEIS inaccurately assumes that cumulative impacts at the site-specific level will be addressed. The DEIS states (4-197):

> Ground-disturbing activities on public lands are conducted only after any necessary site-specific NEPA analysis has been completed. Such analyses are required to describe the cumulative impacts of the site-specific alternatives on adjacent lands and resources, and on the watershed. <u>This provides opportunities to detect and minimize cumulative environmental effects that cannot be specifically determined at the broad level of this PEIS.</u>

This implies that livestock grazing and ORV use (the two most widespread ground-disturbing activities on BLM lands) are analyzed for cumulative impacts on the watershed or other resources at the site-specific level. In fact, the BLM does <u>not</u> undertake cumulative impacts analyses for these two ongoing ground-disturbing activities and on January 25, 2006 is proposing to allow term grazing permits to be issued <u>without</u> any NEPA analysis (USDI 2006), which means no cumulative analysis will be required, no consideration of alternatives to the grazing terms, and no scientific accountability.

IV. Increases in Vegetation Treatments and New Goals must be Proposed under NEPA

82 The Programmatic Environmental Report (PER) proposes a three-fold increase in vegetation treated directly, from 2 million to 6 million acres per year (PER ES-2). These treatments will have significant impacts in and of themselves. Likewise, they will include ground disturbances and removal of vegetation, favoring invasive species, the primary response to which will be herbicides, which will have additional impacts (PER ES-2).

This should not be examined in a report, but through NEPA, which will:

a. Fully analyze reasonable alternatives for vegetation treatments, including the Restoration Alternative (EIS, Appendix G) and
b. Insure public review of the scientific accuracy of conclusions regarding benefits and impacts.

83 1. As a non-NEPA document PER doesn't consider the Restore Native Ecosystem Alternative ("Restoration Alternative"), which proposes different actions (and combinations of actions) than the PER:

The overall goal of vegetation management within the Restoration Alternative (EIS G-1) is to:

> Enhance the ecological integrity of BLM land by restoring natural processes, native species, ecosystem function, and resilience of plant and animal communities.

This contrasts with the goal of the PER vegetation management (PER 2-1):

> The goals of vegetation management are to manage vegetation to sustain the condition of healthy lands, and, where land conditions have degraded, to restore desirable vegetation to more healthy conditions.

84 The BLM goal does not mention native vegetation but instead "desirable" vegetation (which could be exotic, as in introduced pasture grasses). Desirable for whom? Livestock permittees? Sage grouse? Ground cover in the midst of ground disturbance? Erosion control?

85 The Restoration alternative would have far different consequences for native species and ecosystems than that proposed by the PER, thus revealing the significance of environmental impacts under the different proposals.

86 Example: Differing Direction for Biological Soil Crusts

The Restoration Alternative provides the following detailed directions for biological soil crusts:

> (DEIS: G-8):
> Action- PREVENTION 3
> Reduce spread of invasive weeds caused by domestic livestock grazing:
> ...avoid grazing in systems still containing a strong component of native perennials, biological soil crusts, or other features known to act as natural barriers to invasion or increase of invasive exotic species
>
> (DEIS: G-12):
> GOAL- PREVENTION 6
> Biological soil crusts shall be maintained as a partial shield preventing establishment or spread of invasive exotic species
>
> Action- PREVENTION 35

86 cont.

Using existing data, map and describe the presence and integrity of biological soil crusts at the Ecoregion and watershed levels within the 16 western states; locally develop maps at the subwatershed level.

Action- PREVENTION 36
Prepare and implement a general plan for damaged biological soil crusts.

Action- PREVENTION 37
Prohibit livestock grazing for at least five years following a fire in areas capable of maintaining biological soil crusts. Return of livestock will be delayed past five years if significant recovery of the biological soil crust has not occurred.

(DEIS: G-14):
Action- RESTORATION 20
Consideration of the following must be documented prior to prescribed burns, if relevant:

1. long-term damage to biological soil crusts...

In contrast, the following vague statements constitute the sole PER direction for biological soil crusts:

(PER: 2-22):

[During manual treatments]: Minimize damage to soil crusts.

[During use of domestic livestock for vegetation management:] Minimize use of domestic animals if removal of vegetation may cause significant soil erosion or impact biological soil crusts.

(PER: 2-23)

[During mechanical treatments]: Minimize damage to soil crusts.

These differing directions for biological soil crusts are one example that reveals that significant impacts and significant linkages with promotion of invasive species will be associated with the vegetation treatments proposed in the PER. This necessitates the preparation of an EIS.

87

2. As a non-NEPA document, the PER "gets away" with making claims minus scientific evidence. This reveals the lack of "equivalence" of the PER to a NEPA document.

Example: Herbicides in sagebrush

As noted later in these comments [page 28] in the case study regarding sagebrush and invasive species treatments in sage grouse habitats, there is a far more complicated

87 cont.

relationship between herbicide and other sagebrush community treatments and sage grouse habitat than the simplistic conclusion that herbicide use leads to native vegetation (PER 4-53; notes in italics added):

> The use of herbicides would benefit plant communities [*i.e., apparently without regard to whether the plant communities are exotic European livesetock forage pastures*] with weed infestations by decreasing the growth, seed production, and competitiveness of target plants, thereby releasing native species from competitive pressures (e.g., water, nutrient, and space availability) and aiding in their reestablishment. [*This assumes, without evidence, that it is competitive pressures and not trampling, selective consumption, compaction, or other pressures that is reducing or eliminating the native species and favoring invasive species.*] The degree of benefit to native communities would depend on the toxicity of the herbicide to the target species, and its effects on non-target species as well as the success of the treatments over both the short and long term. [*The preceding is tautological: "The degree of benefit to native communities would depend on…the success of the treatments."*] Some treatments are very successful at removing weeds over the short term, but are not successful at promoting the establishment of native species in their place. In such cases, seeding of native plant species would be beneficial. [*Neither the PER nor the DEIS estimate what acreage would require seeding of native plant species; the amount of native seed this would require, nor the demonstrated success of such seedings under various habitat conditions*] The success of treatments would depend on numerous factors, and could require the use of a combination of methods to combat undesirable species [*Neither the PER nor DEIS estimate what acreage will require "a combination of methods" or what methods will be involved in those combinations.*]

There are no references offered for the above conclusions, and yet there is no effective way for scientists or others to challenge the conclusions, because the report is free of NEPA requirements for accuracy.

88

The PER provides no solid direction, no solid evidence for claims, and no comparison with alternative approaches to vegetation treatments. And yet, these vegetation treatments, particularly the mechanical, manual, and fire treatments, will disturb the ground, favoring invasive species, for which there is a NEPA document.

BLM Failed to Analyze the *Causes* of Invasive Species Spread in the DEIS/PER

89

NEPA regulations state that "accurate scientific analysis" (40 CFR §1500.1) is an essential mandate of the Act. Yet, in the DEIS the BLM ignores recent scientific analysis of the management of invasive species that state, unequivocally, that management of invasive plants will be successful only when management plans address the causes, rather than merely the symptoms, of invasive plant problems. Herbicides are potent tools for addressing the symptoms of invasive species spread, but do not address the causes; by focusing exclusively on herbicide use, therefore, the DEIS ignores NEPA's mandate to include accurate scientific analysis.

90 Roger Sheley is a weed ecologist now with the U.S. Department of Agriculture's Agricultural Research Service. In a recent (2003) article published in the journal *Weed Science*, he wrote, "It is becoming increasingly clear that prescriptions for rangeland weed control are not sustainable because they treat the symptoms of weeds rather than their cause." He continued by stating, "A generalized objective for ecologically based weed management is to develop and maintain a healthy plant community that is largely invasion resistant."

91 Another recent (2005) publication from the Pacific Northwest Research Station (USDA FS) has a similar conclusion. "Herbicides, prescribed fire, and other methods kill weeds, but without a source of native seeds or a long-term strategy for restoration, the treated areas are recolonized by the same species or by other, potentially more damaging, invasive plants." The publication does point out, however, that this problem can be solved by addressing the causes of invasive plant problems: "Research can contribute information on best practices to minimize invasive risks in road maintenance, recreation, range management, prescribed fire, thinning, wildlife habitat improvement, and timber management." Such an analysis is necessary for the DEIS/PER to succeed, but it has been ignored in both the EIS and NEPA-less PER.

92 Another consequence of BLM's failure in the DEIS/PER to adequately analyze current science about the causes of invasive plant problems is that BLM fails to recognize or address the way that activities authorized or conducted by the agency encourage the establishment and spread of invasive plants.

93 Dana Blumenthal is a rangeland ecologist, also with USDA's Agricultural Research Service. In a recent (2005) article published in the journal *Science*, he wrote that "anthropogenic increases in resource availability, ranging from small-scale disturbances to global climate change, may not just facilitate invasion, but facilitate invasion by exotic species in particular." He concludes, "Humans may therefore play an even larger role in invasions by exotic species than previously thought."

94 Blumenthal's analysis is supported by an article published in the journal *Rhodora* by Elizabeth Farnsworth of the New England Wild Flower Society. She found "a significant association of invasives with roads and with other anthropogenic threats." Similar conclusions were reached by Jonathan Gelbard (Duke University) and Jayne Belknap (U.S. Geological Survey) in an article published in the journal *Conservation Biology* in 2003. They state that: "roads can act as conduits for the invasion of adjacent ecosystems by converting natural habitats to those highly vulnerable to invasion." In another paper, Gelbard and Harrison (2003) state that: "Roadless areas are significant refuges for native species. However, to protect these habitats from the continued threat of invasion, land managers should consider means of preventing construction of new roads, limiting off-highway vehicle access into grasslands with low road densities...."

95 Plant communities can also shift to non-native invasive species following off-road vehicle use. With knobby tires and large undercarriages, non-native "weedy" species seeds can be unintentionally taken deep into wildlands. The spread of invasive weeds has been cited by the Chief of the U.S. Forest Service as one of the four "great issues" facing U.S. Forest Service lands today (Bosworth 2003). Several recent studies have documented how off-road vehicles are a

major vector for spreading invasive exotic species (Montana State Extension Service 1992, Gelbard and Harrison 2003, T. Rooney, *in prep.*). For example, on a ten-mile off-road vehicle course in Montana, 2,000 spotted knapweed (*Centaurea biebersteinii*) seeds were dispersed in just one circuit around the course. In Wisconsin, exotic species were found on 88 percent of the segments sampled along off-road vehicle trails (T. Rooney, *in prep.*). None of this science is addressed in the DEIS or PER.

96 The DEIS/PER also does not address the potential of removing roads to restore weed free habitats. Ripping roadbeds, restoring stream crossings, and recontouring roads were all found to reduce weed invasion. Bradley (1997) found that ripping the roadbed discouraged weed invasion in western Montana. In northern California, Madej et al. (2001) reported that following full recontour and stream crossing restoration some weeds emerged on hot dry terrain; however, very few weeds appeared in more common moister terrain. Following hundreds of miles of full road recontour, few weeds were reported in north central Idaho (USDA FS 2003).

The DEIS Lacks Required Analysis of Herbicide Risks

97 The evaluations of herbicide risks in the DEIS fall short of NEPA's mandate to include accurate scientific analyses of the following topics: nonlethal effects on fish; nonlethal effects on amphibians; nonlethal effects on plants; effects on birds of herbicide damage to habitat; hazards of inert ingredients; occupational hazards; and synergistic hazards. Examples of each of these issues follow.

98 1. Nonlethal effects on fish (effects on fish other than mortality): The DEIS (4-82) states, in reference to 2,4-D, "Routine acute and chronic exposure scenarios do not result in risk to fish." However, the DEIS omits recent research published in the journal *Marine Environmental Research* by scientists from the University of Maryland showing that concentrations as low as ten parts per billion cause proliferation of peroxisomes in fish. (Ackers, Johnston, and Haasch, 2000) In addition, the DEIS (4-86) states with respect to picloram, "An acute LC50 value for trout ranges from 0.8 mg/L to 19.3 mg/L." However, the DEIS omits research showing that concentrations as low as 0.04 mg/L reduce the size and survival of trout fry. This research was published by D. F. Woodward at the U.S. Fish and Wildlife Service in the *Journal of the Fisheries Research Board of Canada*. (Woodward, 1976)

99 2. Nonlethal effects on amphibians (effects on amphibians other than mortality): The DEIS (C-10) states that "mammals and birds were used as the surrogate species for reptiles and adult amphibians because of the lack of data for these taxa (fish were used as surrogates for juvenile amphibians)." However, scientific accuracy requires that at a minimum, available data should be used. For example, a study showing that 2,4-D interferes with normal hormone function and maturation of eggs in frogs should not be omitted. Such a study was conducted by researchers at Willamette University and published in the journal *Molecular Reproduction and Development*. (Stebbins-Boaz et al. 2004) In addition, a study conducted by biologists at Trent University, Carleton University, and the University of Victoria and published in the journal *Environmental Toxicology and*

Chemistry showed that environmentally relevant concentrations of Roundup (glyphosate) herbicides caused the development of intersex in frogs. (Howe et al. 2004)

100

3. Nonlethal effects on plants (effects on plants other than mortality): Although the DEIS (4-43) claims that in the evaluation of herbicide effects on nontarget plants the assessment endpoints include "adverse direct effects on growth, reproduction, or other ecologically important sublethal processes," the DEIS omits important recent research in this area. For example, the DEIS omits evaluation of recent research showing nonlethal effects of 2,4-D occur at exposure levels far below normal application rates. A recent study published in the journal *Mutation Research* showed that concentrations of 2,4-D "that did not have any visible physiological effects" caused genetic damage in plants. The study was conducted by biologists at the University of Lethbridge. (Filkowski et al 2003)

101

In addition, the DEIS omits evaluation of a series of studies that showed glyphosate increases the frequency of disease in a variety of non-target plants. These diseases include fusarium head blight in cereal crops, sudden death syndrome in soybeans, root rot in sugarcane, and white mold in soybeans. The studies were conducted by scientists at Agriculture and Agri-Food Canada, Iowa State University, Louisiana State University, and Michigan State University, and were published in the *Canadian Journal of Plant Pathology*, *Phytopathology*, and the *Agronomy Journal*. (Hanson and Fernandez 2003, Sanogo, Yang, and Scherm 2000, Dissanayake, Hoy, and Griffin 1998, and Nelson, Renner, and Hammerschmidt 2002)

102

4. Effects on birds of herbicide damage to habitat: In reference to chlorsulfuron, the DEIS (4-100) states, "Its use in forested rangeland and other wildlife habitat areas could benefit wildlife over the long term by controlling invasive plant species and promoting the establishment and growth of native plant species that may provide more suitable wildlife habitat and forage." However, the DEIS omits discussion of a series of studies showing that minute of amounts of chlorsulfuron can disrupt the production of seeds and fruits by many species of plants, destroying an important food source for birds. The studies were conducted by researchers from the U.S. Environmental Protection Agency and the University of Oklahoma, and published in the journals *Environmental Science and Technology*, *Physiologiia Plantarum*, and *Environmental Toxicology and Chemistry*. (Fletcher, Pfleeger, and Ratsch 1993, Fletcher, Pfleeger, and Ratsch 1995,Fletcher, J.S. et al 1996)

103

In addition, the DEIS (4-102) states that "tebuthiuron is used to thin shrubs, creating a more favorable habitat for shrub-dependent species." However, the DEIS ignores research showing, for example, that lesser prairie-chickens prefer untreated nesting areas to those treated with tebuthiuron. This research was done by scientists at Texas Tech University and published in the journal *Great Basin Naturalist*. (Haukos and Smith 1989)

104

5. Hazards of inert (unidentified) ingredients in herbicides: The DEIS (C-84) states that "minimal impacts to the environment would result from these inert ingredients." However, the DEIS ignores recent research showing that the combination of inert ingredients with the herbicidal ingredients in a commercial herbicide product can pose

104 cont.

hazards not identified when ingredients are tested singly. For example, scientists from the University of Caen showed that the combination of inerts and herbicidal ingredients in Roundup is toxic to human placental cells and disrupts the synthesis of sex hormones. This research was published in the journal *Environmental Health Perspectives*. (Richard et al 2005) In another example, researchers from the University of Minnesota showed that the combination of inert ingredients and herbicidal ingredients in two commercial 2,4-D products acts like estrogens in breast cancer cells. This research was published in the *Journal of Toxicology and Environmental Health*. (Lin and Garry 2000)

105

6. Occupational hazards: The DEIS (4-173) states that human health risks are based on "both acute (short-term) and chronic (long-term) toxicity information." However, the DEIS omits health risks identified through epidemiological studies of people exposed to herbicides occupationally. For example, occupational exposure to 2,4-D has been associated with genetic damage, changes in levels of sex hormones, and increased incidence of cancer. These studies were conducted by researchers from the University of Minnesota and the University of Saskatchewan and published in the journals *Environmental Health Perspectives* and *Cancer Epidemiology, Biomarkers and Prevention*. (Garry et al 2001 and McDuffie et al. 2001)

106

In another example, occupational exposure to glyphosate is associated with increased incidence of cancer in a series of studies. The studies were conducted by scientists at the University of Saskatchewan, Örebro University, and the National Cancer Institute, and published in the journals *Cancer Epidemiology, Biomarkers and Prevention*, *Leukemia and Lymphoma*, and *Occupational and Environmental Medicine*. (McDuffie et al 2001, Hardell, Eriksson, and Nordström 2002, De Roos et al 2003)

107

7. Synergistic effects: The cumulative effects analysis in the DEIS does not consider effects of exposure to multiple herbicides. For example, it was shown over 20 years ago that picloram and 2,4-D are synergistically toxic to trout. This research was conducted by Daniel Woodward at the U.S. Fish and Wildlife Service and published in the *Journal of Range Management*. (Woodward 1982) In addition, imazapic herbicides and commonly used organophosphate insecticides are synergistically toxic to non-target plants, according to imazapic's manufacturer. (BASF Corporation 2004)

108

Case Example: Management of Sagebrush Steppe and Sage Grouse under the DEIS/DER

Sagebrush Steppe and Sage Grouse in the DEIS/PER

The BLM manages large areas of sagebrush steppe, identified as the "temperate desert ecoregion" in the DEIS/PER (PER: 3-49), which is habitat for sage grouse species (PER: 3-49). The greater sage-grouse is a BLM "sensitive species" in eight states (DEIS II: H-33) and the Gunnison sage-grouse is a Candidate Species under the Endangered Species Act (DEIS II: H-33).

109 Approximately seventy percent of herbicide applications and most non-chemical treatments described in the DEIS (preferred alternative) and PER are intended for sagebrush steppe habitats (DEIS: 4-64), particularly to benefit sage grouse and other wildlife (PER: 4-54; DEIS: 4-106).

110 Sage grouse are identified as a species that would benefit from the preferred alternative (Alternative B) in the DEIS (DEIS: 2-32). Herbicide treatments would target non-native broadleaf plants (to increase native grasses) (PER: 4-54) and sagebrush and other desert shrubs (to create openings in the canopy for wildlife and increase native grasses). The DEIS contemplates continued use of 2,4-D, glyphosate, picloram and tebuthiuron, and other herbicides in sagebrush steppe (sage grouse) habitats (DEIS: 4-63).

111 Approximately sixty-three percent of fire treatments described in the PER would occur in sagebrush steppe, purportedly to benefit sage grouse and other wildlife (PER: 4-73; 4-84). Some prescribed fire treatments would focus on reducing pinyon-juniper encroachment into sagebrush steppe and grasslands habitats (PER: 4-75).

112 Mechanical treatments would also be used in sagebrush steppe to "create openings in sagebrush habitats for use as foraging habitat and sage grouse leks" (PER: 4-78).

Past and Present Management of Sagebrush Steppe

113 Native sagebrush habitats have undergone drastic declines in the last century (Hann et al. 1997, West 1999, Miller and Eddleman 2000), with concomitant declines in populations of greater and Gunnison Sage-Grouse (Connelly and Braun 1997, Braun 1998, Leonard et al. 2000, Oyler-McCance et al. 2001, Beck et al. 2003). Publicly owned sagebrush steppe continues to be fragmented and degraded by livestock grazing, off-road vehicle use, energy development, mining, agriculture, (sub)urban sprawl, fire suppression, invasive species, and the placement and construction of roads, fences and utility corridors.

114 Sagebrush habitats used by sage-grouse have been significantly altered by land management practices (Patterson 1950; Kufeld 1968; Braun 1987; Drut 1994; Connelly and Braun 1997; Schroeder et al. 1999, 2004; Miller and Eddleman 2000; Wisdom et al. 2000, 2002). By 1974, about 10 to 12 percent of the 40 million hectares of sagebrush rangelands in North America had been treated to provide forage for livestock (Vale 1974). Overall, more than 80 percent of sagebrush rangelands have been altered in some way by human activities (West 1999).

115 Historically, brush control was used widely to eliminate sagebrush, especially from 1960 to 1970 (USDI Bureau of Land Management et al. 2000). Sagebrush control efforts diminished in the 1970's, primarily due to reduced federal funding and increasing environmental concern (Donoho and Roberson 1985). However, "treatments" (efforts to control sagebrush) to increase grasses for domestic livestock forage are still common. Treatments include the use of herbicides, blading (bulldozing of sagebrush), fire, mechanical and other methods (often followed by seeding non-native pasture grasses). Sagebrush has been removed to allow for cultivation of crested wheatgrass (*Agropyron cristatum*) for livestock forage (Drut 1994: 21).

116 Livestock grazing is a principal use of publicly-owned sagebrush lands. Grazing has affected the entire range of the sage grouse, and grazing and associated infrastructure and support systems may be the most important threat to the continued existence of sage grouse species. No sage grouse habitat is known to have escaped degradation by livestock grazing (Braun 1998). Indeed, livestock grazing is the most widespread influence on native ecosystems in western North America (Fleischner 1994, Wagner 1978, Crumpacker 1984). Approximately 165 million acres of BLM land are open to livestock grazing (PER: 3-55).

117 Grazing changes habitat structural characteristics and species composition on both upland and riparian sites, spreads exotic invasive species, and causes soil erosion (Rasmussen and Griner 1938; Patterson 1952; Autenrieth, et al. 1982; Klebenow 1982, 1985; Call and Maser 1985, Belsky, et al. 1999). Grazing has rendered many areas unusable for sage grouse and other wildlife. Some areas may be irreparably damaged, and may not be able to return to a desirable condition due to continued grazing (Autenrieth 1981, Laycock 1991). Even light grazing is known to stress herbaceous plants, grasses and shrubs required by sage grouse for hiding cover, nesting habitat and food (West 1996). Thus, even light grazing has the potential to reduce habitat quality for sage grouse.

118 The scientific literature is replete with studies showing the serious ecological costs of livestock grazing domestic livestock in arid ecosystems (Fleischner 1994, Robbins and Wolf 1994, Brown and McDonald 1995, Paine, et al. 1996, Brown and McDonald 1997, Clements and Young 1997, Dudley 1997, Bork, et al. 1998, Dobkin, et al. 1998, Belsky, et al. 1999). Grazed sites may have only one-third the species richness of ungrazed sites (Reynolds and Trost 1980, Rummell 1951). Removal of livestock can double grass densities, but an area may take 110 years to recover (Gardner 1950). Webb and Stielstra (1979) found that grazing caused the aboveground biomass of annuals to decrease by 60 percent and decreased the above ground biomass of perennial shrubs by 16 to 29 percent. Domestic livestock grazing reduces water infiltration rates, reduces cover of herbaceous plants and litter, disturbs and compacts soils (creating microsites for invasion of invasive species such as cheatgrass), and increases soil erosion, which reduces the productivity of vegetation.

1. Effects of Herbicides on Sage Grouse

119 The following information on the effects of herbicides on sage grouse is excerpted from Rowland (2004), which was not referenced in the DEIS.

> Until the 1980's, herbicides such as 2,4-D were the most common method of eliminating large blocks of sagebrush (Connelly et al. 2000*b*). Lands after treatment often were planted with crested wheatgrass or other non-native perennial grasses for livestock forage. Application of herbicides affects all seasonal ranges of sage-grouse (Connelly et al. 2000*b*), and its effects have been widely reported compared to other land management practices (e.g., Gill 1965, Martin 1970, Carr 1967, Klebenow 1970, Pyrah 1970, Braun and Beck 1976, Rowland and Wisdom 2002).

120 Spraying of herbicides primarily degrades habitat for sage-grouse by increasing fragmentation and removing shrubs used as nesting cover. Long-term studies in North

120 cont.

Park, Colorado, revealed that applying 2,4-D resulted in reduced cover of sagebrush, fewer sagebrush plants and forbs, and lek abandonment (Braun and Beck 1976, 1996). Production of sage-grouse, as measured by percentage young in the harvest and chicks per hen, declined in the 5 yr following treatment but rebounded by 15 year post-treatment (Braun and Beck 1996). Hens with broods avoided sprayed blocks while moving toward traditional brood-rearing habitats (Carr 1967, Carr and Glover 1971). In another study in North Park, in which >120 flocks (>3,000 birds total) were observed during two winters, only 4 flocks were found in altered (by spraying with 2,4-D, plowing, burning, or seeding) sagebrush habitats, although >30% of the study area had been treated (Beck 1977).

121

In Montana, 693 ha of big sagebrush in a 777-ha study area were strip-sprayed with 2,4-D in one year; 3 yr of subsequent study revealed nearly complete mortality (97%) of sagebrush in sprayed areas (Martin 1970). Only 4% of 415 observations of sage-grouse were in sprayed strips. Shifts in sage-grouse distribution were attributed to differences in vegetation composition; unsprayed strips had a greater proportion of forbs to grasses (40:60, vs. 20:80 in sprayed strips) and more live sagebrush, as well as more abundant forbs (Martin 1970). In southeastern Idaho, spraying of >1,300 ha of threetip and big sagebrush appeared to effectively eliminate nesting in sprayed areas, at least for 5 yr post-treatment (Klebenow 1970). Sprayed plots also had less basal area of forbs and lower crown cover of big and threetip sagebrush than control plots, in both brood sites and sites with no broods recorded (Klebenow 1970).

122

Herbicides may also be toxic to sage grouse, although sage grouse are not mentioned once in the DEIS Ecological Risk Assessment (DEIS II, Appendix C) or draft Biological Assessment. Wallestad (1975) and Blus et al. (1989) have noted the detrimental effects on sage grouse populations from application of herbicides and pesticides. Besides their acute effects, many herbicides have chronic effects, and may act as endocrine disrupters. Further, sage grouse in areas that have been treated with tebuthiuron (Spike) have been observed engaging in atypical behaviors. For example, during a period when most males were flocking, "one male [was] consistently alone in an area where sagebrush has been treated with Spike" (Brigham 1995). Another male was observed sitting out "in the open" in "the heat of the day" even though a sagebrush provided shade only 50 meters away (Brigham 1995). Although anecdotal, such observations may reflect contaminant mediated behavioral alterations.

2. Effects of Fire on Sage Grouse

123

The following information on the effects of fire on sage grouse is excerpted from Rowland (2004), which was not referenced in the PER.

> Prescribed fire has been used not only to remove sagebrush, primarily to enhance livestock forage, but also with the expressed goal of improving habitat conditions for sage-grouse and other wildlife (Klebenow 1973). Although some studies have demonstrated neutral or even positive effects on sage-grouse habitats from fire (e.g., Martin 1990, Fischer 1994, Pyle and Crawford 1996, Crawford and Davis 2002), others have documented population declines and long-term habitat degradation (Connelly et al.

123 cont.

2000*a*, Nelle et al. 2000). While some short-term benefits, such as increases in annual forbs, may accrue from prescribed burning, nesting cover in particular may be reduced and thus become less suitable (Wrobleski 1999, Nelle et al. 2000). A 9-yr study in southeastern Idaho examined lek attendance in relation to prescribed burning and suggested that declines in breeding populations of sage-grouse were more severe following fire (Connelly et al. 2000*a*). The study area was a Wyoming big sagebrush/bluebunch wheatgrass (*Pseudoroegneria spicata*) site, with 23 cm average annual precipitation. Four years of pre-treatment data were obtained before a 5,000-ha portion was burned; nearly 60% of the sagebrush was eliminated, leaving a mosaic of sagebrush and grassland types. Although declines in lek attendance occurred throughout the study in both treatment and control sites, declines were greater in the burned area. Following the burn, the number of active leks declined 58%, from 12 to 5, in the treatment versus 35%, from 17 to 11, in the control. Furthermore, mean number of males/lek postburn was 6 in the treatment versus 17 in the control, whereas these variable values had been similar at both sites prior to treatment. Attendance at the major leks following the fire declined 90% at the treatment site versus 63% at the control.

124

In southeastern Idaho, Nelle et al. (2000) examined characteristics of 20 burns of differing ages and sizes in mountain big sagebrush-dominated communities in relation to sage-grouse habitat. Mean size of four wildfires in the study area was 390 ha, whereas the mean size of 12 prescribed burns was 975 ha. Canopy cover of forbs, grasses, and shrubs was measured, along with invertebrate abundance. The authors concluded that burning conferred no benefits to sage-grouse nesting or brood-rearing habitat, and that long-term negative impacts resulted from fires in nesting habitat, due to the lengthy time (>20 yr) for the sagebrush canopy to recover to suitable levels for nesting.

* * *

125

Fischer (1994) investigated effects of a 5,800-ha prescribed fire on sage-grouse habitat in southeastern Idaho. The study area was primarily Wyoming big sagebrush/bluebunch wheatgrass, but three-tip sagebrush also was common. During the 3 years after the fire, 655 grouse were captured and 127 followed with radiotelemetry. Data had been collected on sage-grouse for 3 years prior to the burn. Nest success and habitat characteristics did not differ between burned and unburned areas, and no positive response by sage-grouse to the burned habitat was noted. Abundance of Hymenoptera, an important grouse food item, declined significantly following the fire (Fischer 1994).

126

The relationship between fires and leks is inconsistent. At the U.S. Sheep Experiment Station near Dubois, Idaho, fires (both wild and prescribed) apparently caused the abandonment of two active leks, enhanced the creation of one, and had no apparent effect on the fourth (Hulet et al. 1986). Also in Idaho, Fischer (1994) found that, although the number of active leks declined during the 3 years after a prescribed burn, this decline was similar in burned and control areas.

127

Coupled with the outright loss of sage-grouse habitat from fire, altered fire regimes have resulted in severe habitat degradation in sagebrush steppe from invasion of cheatgrass

127 cont. (*Bromus tectorum*) and other exotic vegetation following wildfires (Pellant 1990, Billings 1994, Knick 1999, West 1999). This problem is most severe in Wyoming big sagebrush communities at lower elevations (Miller and Eddleman 2000, Hemstrom et al. 2002) and is uncommon in cooler, more mesic areas such as Montana and Wyoming. It is estimated that >50% of the sagebrush ecosystem in western North America has been invaded to some extent by cheatgrass (West 1999), with losses projected to accelerate in the future (Hemstrom et al. 2002).

3. Effects of Livestock Grazing on Sage Grouse

128 Livestock grazing is associated with the widespread decline of sage grouse across their range through habitat degradation, loss, and fragmentation. (Connelly and Braun 1997; Webb and Salvo 2002). Connelly et al. described the impacts of livestock grazing on greater sage-grouse (Connelly et al. (2004): 7-26 – 7-35). Beck and Mitchell (2000) reviewed literature for positive and negative direct and indirect impacts of livestock grazing on sage grouse. Their review found more negative than positive impacts from grazing. (Beck and Mitchell 2000: 994, Table 1). However, of more importance is the scope of the reported positive and negative impacts on sage grouse and sagebrush-steppe habitats. While positive impacts are generally limited to specific areas and circumstances (e.g., light grazing regenerates upland meadow), negative impacts often affect much larger areas, rendering them unusable for sage grouse.

> Impacts should be considered in the context of their scale. For example, a sage grouse population in southeastern Idaho may have benefited indirectly from presence of livestock when they established strutting grounds on sheep salting areas [very small areas relative to overall habitat], whereas weed infestations induced by livestock grazing in the Great Basin may reduce quality of habitat for sage grouse populations across this vast region.

(Beck and Mitchell 2000: 997, *citations omitted*).

129 Beck and Mitchell (2000) concluded, and significant other research indicates that livestock grazing appears to most affect productivity of sage grouse populations. Hockett (2002) reviewed the many ways that grazing affects nesting and brood-rearing habitats. Livestock eat and trample sagebrush, and grasses and forbs around sagebrush, which can degrade or eliminate nesting habitat (Webb 1993; Gregg and Crawford 1991; *see also* Holloran et al. 2005), which affects both nesting success and chick survival. (Gregg et al. 1994; DeLong et al. 1995; Sveum et al. 1998). Significant research indicates:

- Adequate availability of forbs (that are also grazed by livestock) during the pre-laying period may affect the nutritional status of hens and their reproductive success. (Barnett and Crawford 1994).
- Herbaceous cover is an important factor in nest site selection (Connelly et al. 1991; Wakkinen 1990), and nest success is positively correlated with the presence of big sagebrush (*Artemisia tridentata*) and thick grass and forb cover. (Beck and Mitchell 2000; Connelly et al. 1991; Greg et al. 1994; Schroeder and Baydack 2001; Bergerud 1988).

130

- Herbaceous cover is important for nesting sage grouse for concealment, security and shelter from weather and predators. (Schroeder and Baydack 2001; Sveum et al. 1998); unsuitable nesting habitat (exposing nests to the sun, wind, and predators) may contribute to lower nesting success. (Connelly and Braun 1997).
- The presence of livestock can cause sage grouse to abandon their nests. (Rasmussen and Griner 1938; Patterson 1952; Call 1979).
- Consumption of forbs by livestock in late spring and early summer may limit their availability for sage grouse chicks. (Call 1979).
- Insects (arthropods), which are an important food source for sage grouse chicks (Pyle and Crawford 1991; Johnson and Boyce 1990), are less abundant in degraded habitats. Dense stands of sagebrush with little herbaceous understory support fewer ant colonies. (Sneva 1979). Beetles are most abundant in a mosaic of shrub-dominated sites and open areas with some bare ground. (Rickard and Haverfield 1965).
- The availability of primary foods directly affects diets of sage grouse chicks. Where forbs and insects comprised >75 percent of chick diets where forbs and arthropods were more available, whereas chicks consumed 65 percent sagebrush in less productive habitat. (Drut et al. 1994b).

131 Livestock grazing also affects other seasonal habitats for sage grouse. Livestock damage riparian areas and associated meadows (Belsky et al. 1999) that are important for sage grouse. Livestock also eat and trample sagebrush (Owens and Norton 1992), the sole food source for sage grouse during the winter. Wandering livestock can stress sage grouse, and their grazing opens the vegetative cover, exposing sage grouse to predators. Livestock grazing also introduces and spreads unpalatable weeds in sagebrush habitat (Bedunah 1992; Lacey 1987), reducing food sources for sage grouse.

132 Range developments to support livestock grazing also harm sage grouse. Raptors perch on fence posts and telephone poles to spy sage grouse. Livestock water developments may artificially increase predators or competitors for sage grouse. The conversion of sagebrush steppe to crested wheatgrass or other forage species for livestock eliminates sage grouse habitat (Autenrieth 1981). Low fliers, sage grouse frequently collide with fences used to manage livestock, often while attempting to escape from predators. (Wilkinson 2001: 1). Fence strikes are frequently lethal for sage grouse.

133 In an assessment of the ecological conditions of Great Basin habitat, the U.S. Department of Agriculture noted that vast areas of sagebrush habitat in Nevada are at risk of cheatgrass invasion and may be especially sensitive to inappropriate livestock grazing. (Wisdom et al. 2003: xiv; Rowland et al. 2003). These sagebrush stands "may be sensitive to inappropriate grazing by domestic and wild ungulates, which results in the reduction or elimination of native grasses and forbs, and thereby conveys competitive advantage to cheatgrass establishment and dominance." (Wisdom et al. 2003: xiv).

The DEIS/PER will Not Benefit Sage Grouse

134 As described in these comments and other sources, habitat manipulation (by fire and mechanical methods), herbicides, and land uses, such as livestock grazing, harm sage grouse.

135 The DEIS/PER fail to address the individual and cumulative negative impacts of herbicide use, fire, and livestock grazing on sage grouse, or their contributions to the spread of invasive species; and the agency's refusal to address livestock grazing and other land uses as the cause of invasive species spread will worsen habitat conditions for sage grouse.

136 The BLM scarcely acknowledges the effects of livestock grazing on sage grouse (PER: 4-80 - 81) and its role in the spread of invasive species, and ultimately shirks responsibility for managing grazing in the DEIS/PER by stating that such land use decisions are outside the scope of either document. "Although this PER addresses vegetation treatments, it will not directly address any other aspects of the livestock grazing program" (PER: 1-6). Similarly, the PER only addresses soil stabilization as it specifically relates to vegetation treatment activities (and not soil disturbance related to land use, such as livestock grazing, which creates seed beds for invasive weeds) (PER: 1-6). The BLM claims that it is not permitted to "to restrict, limit, or eliminate FLPMA-authorized activities as a means to restore land health" in the DEIS/PER (PER: 1-6).

137 However, BLM is also required by FLPMA to manage public lands "in a manner that will protect the quality of ...environmental ...resources" (PER: 1-7). There are many cases across the West where the agency has adjusted grazing intensity, duration, and season of use to achieve resource goals on public lands without compromising multiple-use management. FLPMA allows the BLM to make such adjustments, and the Restore Native Ecosystems Alternative includes a full set of grazing prescriptions to control invasive species and restore native vegetation. Unfortunately, the BLM failed to develop its own grazing rules for public lands beset by invasive species.

138 Ironically, while claiming that grazing management cannot be addressed in the PER, the BLM includes "livestock" as a "public land resource" (akin to water, wildlife, wilderness and other public values) (PER: 3-55) that will benefit from vegetation treatments described in the invasive species management. Livestock grazing is also identified as a tool for managing invasive species, even though grazing is a vector for invasive weeds (PER: 4-88).

139 BLM's failure to address the link between livestock grazing and invasive species; the lack of grazing prescriptions in the DEIS/PER; and the agency's oft-stated goal to reduce sagebrush and increase grasses and forbs (purportedly to improve sage grouse habitat) would have us believe that the DEIS/PER are in fact an elaborate (veiled) grazing plan. And under this program, federal grazing permittees will be the only beneficiaries. As stated above, and as demonstrated daily across the sagebrush steppe, grazing harms sage grouse. Livestock will continue to consume the bulk of grasses and forbs that result from vegetation treatments described in the DEIS/PER, and will continue to cause weed problems wherever they are allowed to graze among weeds, on burned sites or in areas sprayed with herbicides.

140 In addition to myriad nonnative species that have spread across public lands, the BLM is also rightly concerned about the spread of native pinyon pine and juniper trees into sagebrush habitats. Fire is identified as a tool to control encroaching pinyon-juniper (PER: 4-75). However, the BLM does not direct that areas be rested from livestock grazing following a burn to allow for proper recovery. Miller et al. (2005) (another reference missing from the DEIS/PER) notes that

(1) livestock grazing is primarily to blame for pinyon-juniper encroachment onto western landscapes and (2) livestock should be (at least temporarily) excluded from areas where juniper has been burned to allow grasses, forbs and sagebrush to recover following a prescribed burn. If livestock are not excluded from burned areas, then they will continue to remove emerging grasses and forbs, damage sagebrush and disturb the soil, creating conditions that encouraged pinyon-juniper encroachment in the first place.

141 As described above, the use of fire to restore sagebrush habitats has had mixed success. This is probably due to the fact that most sites are subjected to livestock grazing soon after they are burned. It is not surprising that Hart Mountain National Antelope Refuge and Sheldon National Wildlife Refuge, both of which have been free of domestic livestock for more than fifteen years, are the setting for successful restoration burns. Recent burns have also improved habitat on Steens Mountain in southeast Oregon, which has been livestock-free since 2000. Rowland (2004):

142 Retrospective studies of burns (5- to 43-yr old) at Hart Mountain and Steens Mountain in southeastern Oregon revealed that key components of sage-grouse habitat used during the breeding period were available in burned areas ranging from 25- to 35-years old (Crawford and McDowell 1999, McDowell 2000). Sagebrush cover was the only habitat component "substantially affected" in the long term by burning (McDowell 2000). During the first 2 years after prescribed burning in mountain big sagebrush at Steens Mountain, forage quality (e.g., percentages of calcium and crude protein) was generally superior in burned sites compared to control sites (McDowell 2000). The fires in this study covered 619 and 1,352 ha.

143 Wrobleski (1999) evaluated the response of vegetation to prescribed fire in a Wyoming big sagebrush site at Hart Mountain National Antelope Refuge in eastern Oregon. Vegetation was sampled in eight 400-ha plots, of which four were subsequently burned, creating 27 km of burned/unburned edge. Measurements were obtained for 1 year postfire; annual forb cover increased in burned versus control plots, but perennial grass cover decreased. Most pronounced differences were large increases in sagebrush vigor (number of reproductive and vegetative shoots) along the edge of the burned areas.

144 At Sheldon NWR in Nevada … arthropod abundance did not decline following wildfire (Crawford and Davis 2002). [Arthropods are a key food source for sage grouse chicks.]

145 Hart Mountain National Antelope Refuge is a model of how an integrated vegetation management program can benefit sage grouse—similar to what commenters have recommended in the Restore Native Ecosystems Alternative. Sage grouse populations have increased significantly since livestock grazing ended on Hart Mountain in 1990. Monitored trend leks on Hart Mountain showed a 223 percent increase in grouse counted since 1990. The average lek count since 2000 is 156 percent (2.5 times) higher than the average count in the 1980s, when grazing was permitted on the refuge. The refuge pronghorn population has also increased to its highest level ever since the refuge was established in 1938.

146 Anecdotal evidence is that native vegetation has flourished since livestock were removed from Hart Mountain, providing better nesting habitat, brooding habitat, and summer habitat for sage grouse. Refuge managers have reintroduced fire into the ecosystem and without the concern that livestock will graze and trample the burned areas. Finally, refuge staff have observed invasive species retreating from the refuge as a result of passive restoration treatments.

Thank you for this opportunity to comment on the DEIS/PER.

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